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5011632500-EH00

# **DOP** Series HMI User Manual



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#### About this Manual...

#### **User Information**

Be sure to store this manual in a safe place.

Due to constantly growing product range, technical improvement and alteration or changed texts, figures and diagrams, we reserve the right of this manual contained information change without prior notice.

Coping or reproducing any part of this manual, without written consent of Delta Electronics Inc. is prohibited.

#### **Technical Support and Service**

Welcome to contact us or visit our web site (http://www.delta.com.tw/industrialautomation/) if you need any technical support, service and information, or, if you have any question in using the product. We are looking forward to serve you needs and willing to offer our best support and service to you. Reach us by the following ways.

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Thank you very much for purchasing DELTA's DOP-A Series and DOP-AE Series Human Machine Interface (hereinafter "HMI") products.

This manual will be helpful in the installation, wiring, and operation of Delta HMI product and HMI Screen Editor software program (hereinafter "ScrEdit"). Before using the product, please read this user manual to ensure correct use.

You should thoroughly understand all safety precautions (DANGERS, WARNINGS and STOPS) before proceeding with the installation, wiring and operation. If you do not understand please contact your local Delta sales representative. Place this user manual in a safe location for future reference.

## Using This Manual

#### Contents of this manual

This manual is a user guide that provides the information on how to install and operate
 Delta HMI products and ScrEdit.

#### ■ Who should use this manual

This user manual is intended for the following users:

- Those who are responsible for designing.
- Those who are responsible for installing or wiring.
- Those who are responsible for operating or programming.

#### Important precautions

Before using the product, please read this user manual thoroughly to ensure correct use and store this manual in a safe and handy place for quick reference whenever necessary. Besides, please observe the following precautions:

- Install the product in a clean and dry location free from corrosive and inflammable gases or liquids.
- Ensure that HMI is correctly connected to a ground. The grounding method must comply with the electrical standard of the country.
- Do not modify or remove wiring when power is applied to HMI.
- Before starting the operation, make sure the emergency stop equipment can be energized and work at any time.
- Do not touch the power supply during operation. Otherwise, it may cause electric shock.

## Preface | ScrEdit Software User Manual

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## Chapter 1 Introduction

#### 1.1 DOP-A and DOP-AE Series Human Machine Interface

DOP-A and DOP-AE series HMI are manufactured by adopting high-speed hardware to provide you a powerful and programmable interface. ScrEdit software is a really user-friendly program editor of DOP-A and DOP-AE series HMI for Windows. Please refer to the following section for its features and function introduction. If there is any suggestion or comments on ScrEdit software, please do not hesitate to contact us. We are looking forward to serve your needs and willing to offer our best support and service to you.

#### 1.2 Features

#### ■ PLC serial drives support

DOP-A series HMIs support more than twenty brands of PLC, including Delta, Omron, Siemens, Mitsubishi, etc. All of the newly supported PLCs' communication protocol could be found on our website (http://www.delta.com.tw/industrialautomation/) for upgrade to meet your requirements. (All other trademarks in this manual are property of their respective companies.)

## ■ Windows® Fonts support for ScrEdit software

Except Simplified Chinese, traditional Chinese and English these three languages, ScrEdit software also provides those fonts that Windows® uses.

## Quick execution and communication macro

It can handle complicated calculation by executing macro. Users can also write communication protocol with communication macro command to connect specific system via COM port.

#### ■ Rapid USB upload/download

It will shorten upload/download time by using USB Ver1.1.

#### Recipes

It provides useful recipe editor that is similar to Microsoft excel for user to edit recipe easily and input multiple recipes simultaneously (size limit is 64K). When downloading multiple recipes at the same time, it can exchange by internal memory of HMI. If data has finished editing when downloading, you can download recipe individually.

## Support multiple PLCs connections

Connect to multiple controllers in serial through COM2 of RS485 port.

## Chapter 1 Introduction | ScrEdit Software User Manual



1) The controller should provide RS485 interface.

#### On-line Simulation

HMI on-line simulation feature allows users to develop and debug software on the PC connected to DOP series HMI before downloading it to DOP series HMI.

#### ■ Off-line Simulation

HMI off-line simulation feature allows users to develop and debug software on the PC alone before downloading it to DOP series HMI.

#### Using SMC card to backup data

SMC card can also be used to backup data or transfer data to another HMI. After data transmission, the data can be saved into the FLASH memory of HMI. History list and alarm message can be also saved in SMC card and users can read these files by card reader for collecting data and printing.

#### Multiple security protection

It provides passwords to protect designer's intellectual property rights and also for users to set users priority for important component. Only the users, whose priority is higher than the component, can use the component.

#### ■ USB host port (USB Host) equipped (DOP-AE series only)

DOP-AE series HMI have a built-in USB Host interface for the connection to USB disk, card reader and printer with USB socket. The users can save data, copy program and print the screen immediately and increase the data storage space.

## ■ Multiple security protection

It provides passwords to protect designer's intellectual property rights and also for user to set user priority for important component.

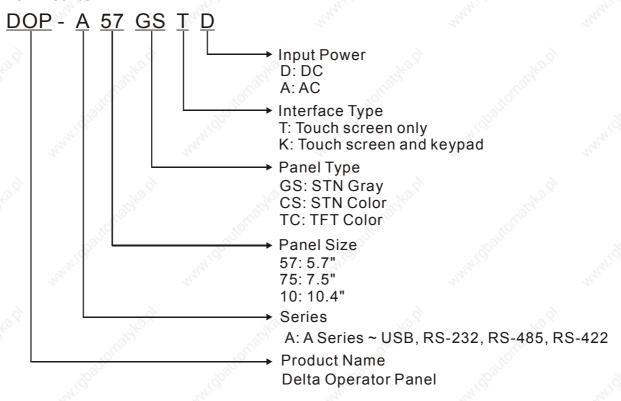
#### Multi-language support

Eight available languages can be selected and used without installing a multilingual operating system. It is easy for the users to switch the desired language via HMI or the external controller. Furthermore, Unicode editing is supported, and therefore it is convenient for the user to create and edit more quickly.

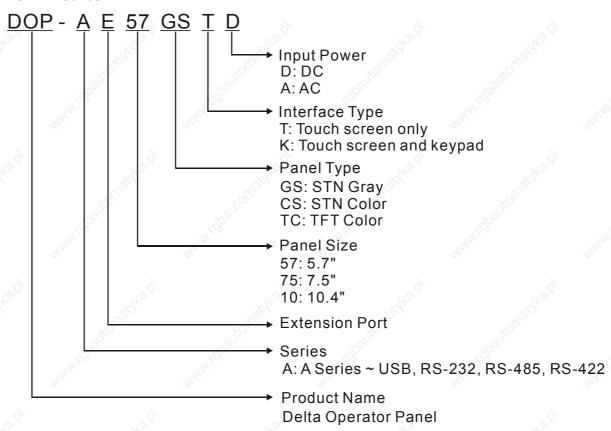
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## 1.3 Model number

#### **DOP-A Series**



#### **DOP-AE Series**



## Chapter 1 Introduction | ScrEdit Software User Manual

## 1.4 Caution

## Operation Environment (temperature and humidity)

HMI should be operated in the following environment parameters to adjust screen brightness and contrast for getting the best image. If operating out of the range, LCD may be improperly displayed when using for long time.

Ambient Operating Temperature: 0 °C to 50 °C (32 °F to 122 °F)

Relative Humidity: 10% ~ 90%, no condensation allowed

#### SMC Card

SMC card can be used to save and transmit data. Only SMC card that formatted by HMI can be used on both HMI and Windows® OS system. (Even it can be read/written in some format, but faults may occur due to different format among Win95/98/2000/XP versions)

## ■ DO NOT plug/unplug the cable from COM port during operation

Please turn the power off before you plug or unplug the COM ports cable.

## ■ Recommend System Requirements

- Pentium III, 500MHz or greater
- 256MB RAM
- Windows® 2000 & Windows® XP

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## Chapter 2 Creating and Editing Screens

## 2.1 ScrEdit (Screen Editor) Setup

In this chapter, it will introduce general functions of Screen Editor with Windows. User can use it to design what he wants. Detail information for each function will be discussed in following chapters.

## ■ Minimum System Requirement

What follows is the system requirement to comply with the operation environment of ScrEdit:

| Item             | System Requirement   |
|------------------|--|
| Operation System | Windows® 2000 & Windows® XP  |
| CPU              | Pentium III, 500MHz or greater is recommended  |
| Memory           | 256MB and above is recommended   |
| Hard Disk        | Capacity: 100MB and above  |
| Monitor          | Resolution: 800×600. It is recommended to set display setting of Windows to 256 colors or above. |
| Mouse            | General mouse or the device compatible with Windows  |
| Printer          | Printer with Windows driver  |

#### Software installation

To start the Delta HMI ScrEdit setup, please refer to the following steps:

1. Step 1: Please start-up your computer to Win2000/WinXP system. (Fig. 2.1.1)

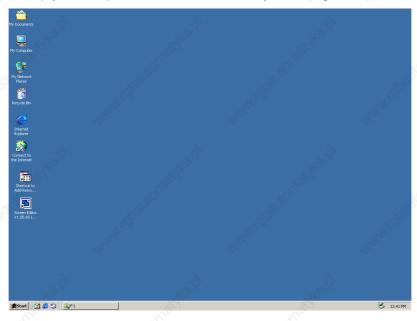


Fig. 2.1.1 Open Microsoft Windows

2. Step 2: Execute setup.exe from Windows taskbar by clicking "Start" > "Run". (Fig. 2.1.2)

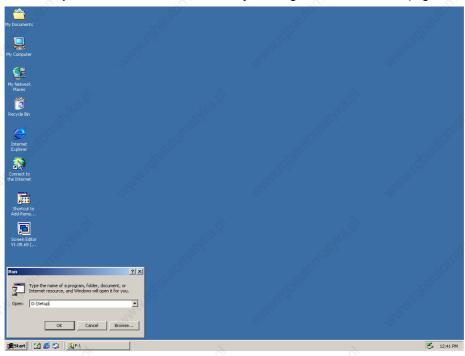


Fig. 2.1.2 Execute setup.exe under Windows system

3. Step 3: After pressing **OK**, system will setup automatically and you will get the following dialog box to choose destination location.

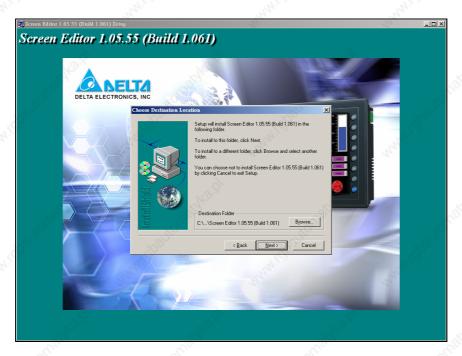


Fig. 2.1.3 Directory for installing ScrEdit

To select the default directory **C**: \Program File\Delta\Screen Editor 1.05.55 (Build 1.061)\, click Next> for the next step. Setup will install in the directory indicated in the Destination Directory box at the bottom of the dialog box.

To select a directory other than the default directory, click **Browse**. A list of available directories appears. Highlight the desired directory for the Delta HMI ScrEdit and click **OK**, then **Next>** for the next step.

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If necessary, click < Back button to take you back through Setup dialog boxes one by one.

4. Step 4: In this dialog box, you can choose setup language: Traditional Chinese, Simplified Chinese or English. And then click **Next>** button to get following program folder selection dialog box.

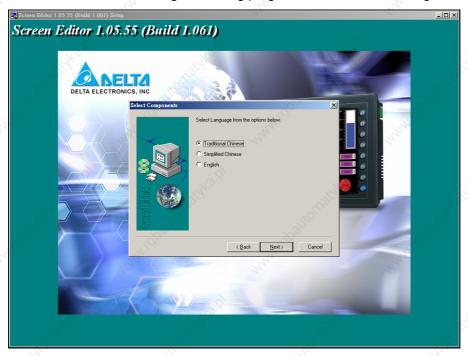


Fig. 2.1.4 Language installation

5. Step 5: This dialog box displays the progress of copying files while the Setup program copies all necessary files into the designated directory. (Fig. 2.1.5, Fig. 2.1.6)



Fig. 2.1.5 Starting ScrEdit installation

6. Step 6: At this time, you have finished setup. Please click Finish to complete setup. (Fig. 2.1.7)

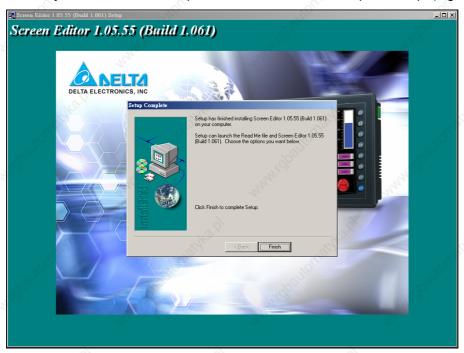


Fig. 2.1.6 Finish installing ScrEdit

7. Step 7: Click **OK** to allow Setup to restart your computer and finish setup. Otherwise, choose "No, I will restart my computer later." option and click OK. You will have to restart your computer before you can use the Delta HMI ScrEdit.

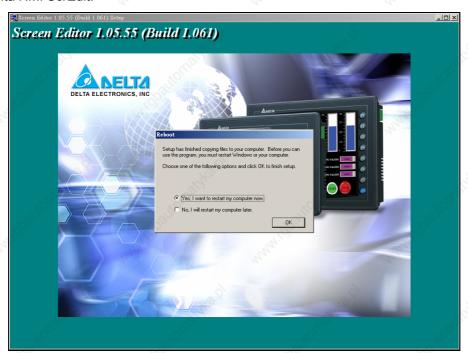


Fig. 2.1.7 Completing installation

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## 2.2 How to Start ScrEdit

After setup, you can start ScrEdit from Windows taskbar, click **Start > Programs > Delta HMI > Screen Editor**. (Refer to Fig. 2.2.1)

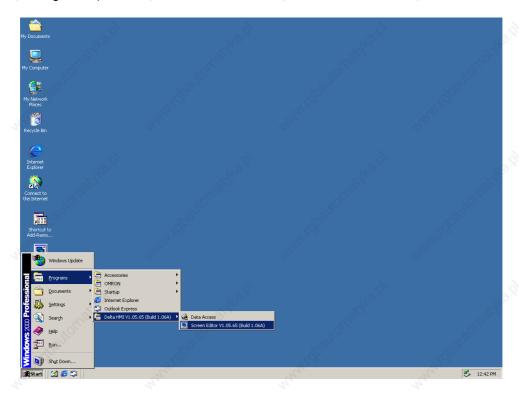


Fig. 2.2.1



Fig. 2.2.2 Start-up display

When you start ScrEdit at the first time, the ScrEdit will install USB drive program automatically. Therefore, the speed will be slower when initial setup. It is normal and please be patient and wait just a moment.

- 1. It will open last file automatically if you check "auto open last file automatically" in environment setting.
- 2. If you didn't check "auto open last file automatically" in environment setting or you didn't save last file, it will show basic function as Fig. 2.2.3.
- 3. There are only File (F), View(V), Option(O) and Help(H) on the toolbar when executing ScrEdit without editing new file.

When ScrEdit is activated at the first time, the first window to show up is as follows.

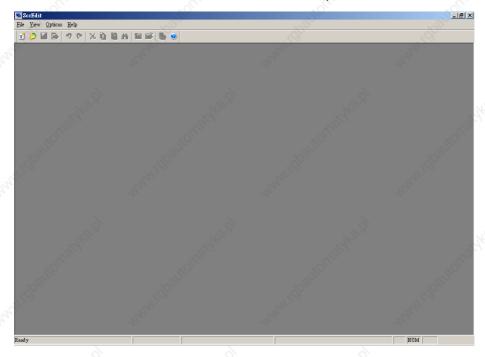


Fig. 2.2.3 Screen without editing file

After pressing or click **File> New**, it can create a new application and you will get a dialog box as shown in the following. (Fig. 2.2.4)

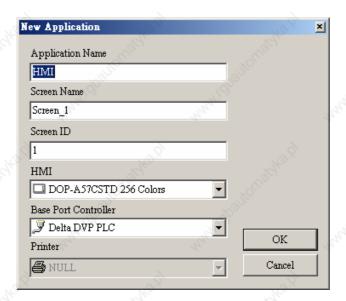


Fig. 2.2.4 Creating a New application

Enter the Application Name, Screen Name, Screen ID and select connected HMI, controller or printer. Then, click **OK**, it can create a new application in ScrEdit as shown in the following. (Fig. 2.2.5)

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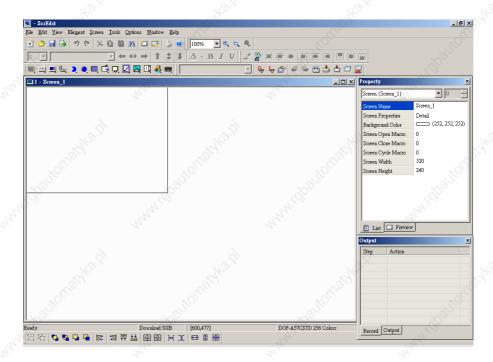


Fig. 2.2.5 New application screen of ScrEdit

There are five parts in the following for ScrEdit application window.

#### ■ Menu Bar

There are nine functions for selection: File, Edit, View, Element, Screen, Tools, Options, Window, and Help.



#### ■ Toolbar

Toolbar (Fig. 2.2.6) is like those toolbar in Windows® program. It is easy to use for editing and the users can arrange its position freely. For example, the users can move the Toolbar to the left side of the screen. Also, the users can arrange the toolbar position by their usage. The followings are the available toolbar on ScrEdit.

#### 1. Standard Toolbar



## 2. Zoom Toolbar



#### 3. Text Format Toolbar



## 4. Bitmap Toolbar



#### 5. Element Toolbar



## 6. Build Toolbar



## 7. Layout Toolbar



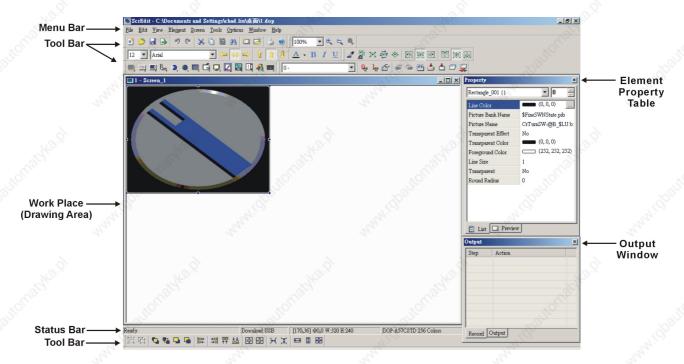


Fig. 2.2.6 ScrEdit Toolbar

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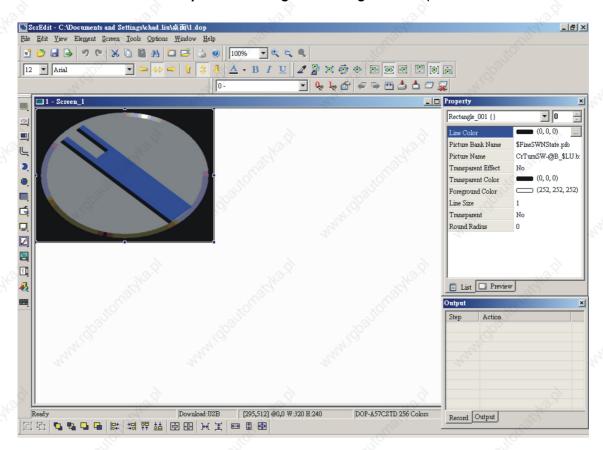


Fig. 2.2.7 Moves ScrEdit toolbar and property table

## Property Table

It provides element property settings for each element. Please refer to Chapter 3 for detailed description.

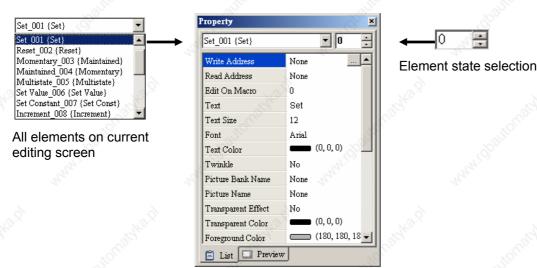


Fig. 2.2.8 Property table

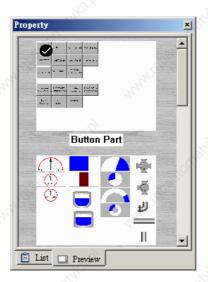


Fig. 2.2.9 Editing screen preview

## Output Window

All editing actions and output message when compile function is enabled will be shown here. When compiling, ScrEdit will detect the error of user program automatically. Once error occurs, the correspondent message will display in output window. User clicks error message to get error element window.



Fig. 2.2.10 Output window

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## ■ Work Place

Getting suitable editing work place by different HMI type of DOP series. Following is an editing example display (Fig. 2.2.11).

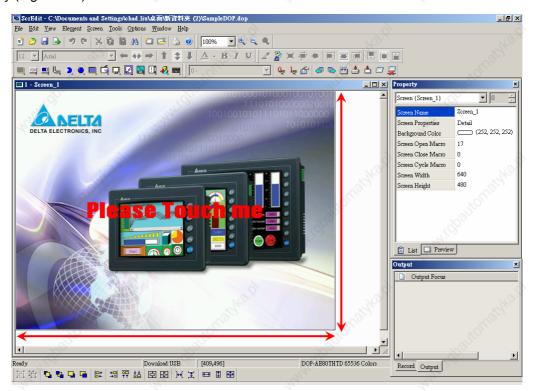
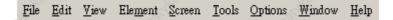


Fig. 2.2.11 ScrEdit Work Place

## 2.3 Menu Bar and Toolbar (File)

ScrEdit provides the convenient pull-down Menu and makes it easy for the users to create, edit and manage includes elements, pictures, graphs, macro program, recipes and displays in DOP series HMI. The pull-down menu options of Menu bar are described as follows:



#### ■ File

The "File" menu performs many common functions.

- 1. Provide the users to create new application, open old application, close file, save current file and save current file to another file name, etc. options.
- 2. Make and Open SMC screen data.
- 3. Upload the editing display and data of DOP series HMI to PC and save in hard disk.
- 4. Update the firmware of DOP series HMI.
- 5. Password protect function.
- 6. Screen print, print preview and print setup functions.
- 7. By default, ScrEdit presents a list of the four most recent used files on the File menu for quick access. Just click the file name to open the file.
- 8. Exit command is to close all open editing files and offer to save those which have not been save yet and finally exit the ScrEdit.

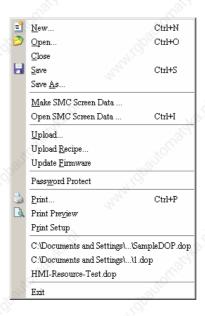
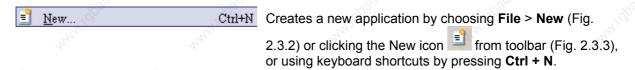


Fig. 2.3.1 File options

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## ■ Create a New Application



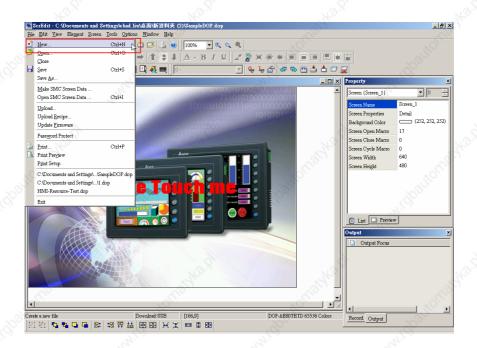


Fig. 2.3.2 Create new application (Choosing New command from menu bar)

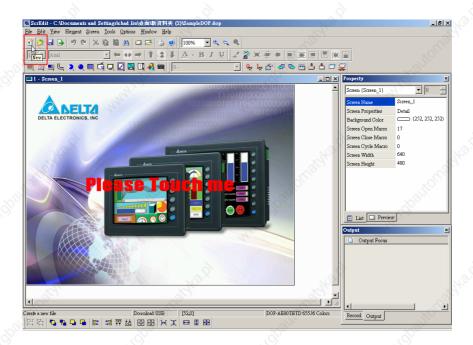


Fig. 2.3.3 Create new application (Choosing New icon from toolbar)

1. If this is the first time use and there is no old application, the following dialog box (Fig. 2.3.4) will show up for the users to input application name, screen name, screen ID, HMI type and connecting base port controller after creating a new application.

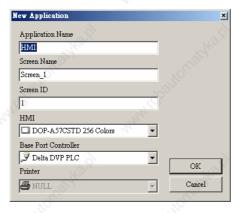


Fig. 2.3.4 New application dialog box

2. If other application files already exist and are open, the users will get the following dialog box to remind the users of saving application (Fig. 2.3.5) before creating new application. Press Yes button to save the existed file, press No button not to save the file and press Cancel button to cancel the save operation. After the users press the Yes or No button, the new application dialog box will appear again (Fig. 2.3.4).



Fig. 2.3.5 Saving dialog box

3. Input application name, screen name, select HMI model and connecting base port controller (Fig. 2.3.6), and then press **OK** button.

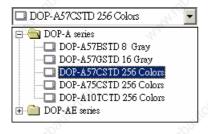
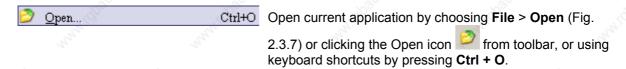




Fig. 2.3.6 HMI model and base port controller options

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## ■ Open Old Application



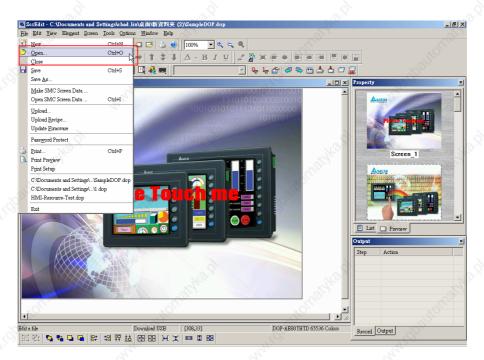


Fig. 2.3.7 Open old application (Choosing Open command from menu bar)

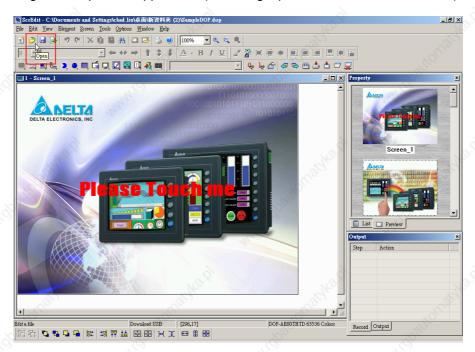


Fig. 2.3.8 Open old application (Choosing Open icon from toolbar)

- 1. If other application files exist before opening an old application, the users will get the Saving dialog box (Fig. 2.3.5) to remind the users of saving file and then get the following dialog box for opening existing dop file (Fig. 2.3.9).
- 2. If save operation is complete or there is no old application files, the following dialog box for opening existing dop file will show up directly.



Fig. 2.3.9 Open an old application in ScrEdit

#### ■ Close File

<u>Closes application by clicking File > Close (Fig. 2.3.10).</u>

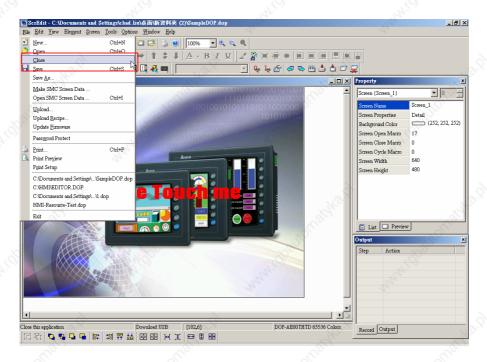


Fig. 2.3.10 Close application (Choosing Close command from menu bar)

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1. If application didn't get saved before issuing the command of closing application, the users will get saving dialog box (Fig. 2.3.11) to remind the users of saving application.

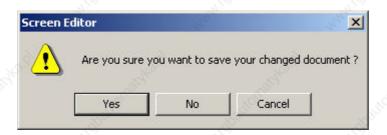


Fig. 2.3.11 Saving dialog box

#### Save File



Save current application into hard disk with extension file "dop" by choosing **File > Save** (Fig. 2.3.12) or clicking the

Save icon (Fig. 2.3.13), or using keyboard shortcuts by pressing **Ctrl** + **S**. If the application is a new file, the Save as dialog box will show up (Fig. 2.3.15). If the application is an old file, the Save function will perform immediately and the Save as dialog box will not show up.

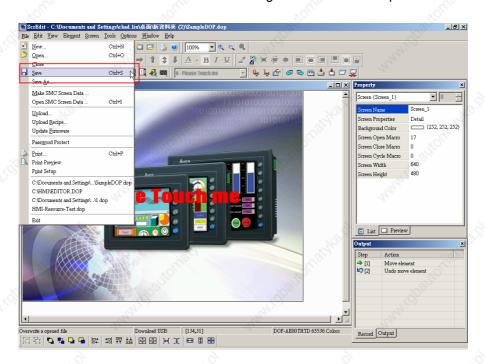


Fig. 2.3.12 Save file (Choosing Save command from menu bar)

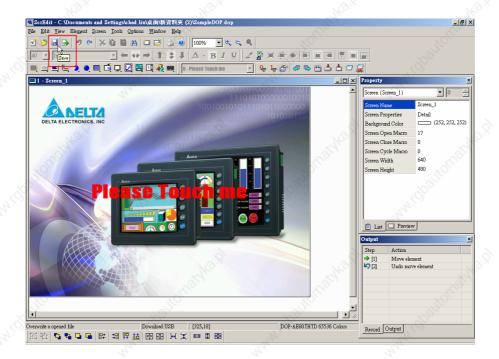


Fig. 2.3.13 Save file (Choosing Save icon from toolbar)

#### Save As



Save current application to another file name by clicking **File** > **Save As** (Fig. 2.3.14). The users will get Save as dialog box (Fig. 2.3.15) to input application name with extension file dop. This dialog also appears automatically when the first time any application file is saved no matter whether Save As or Save command is used.

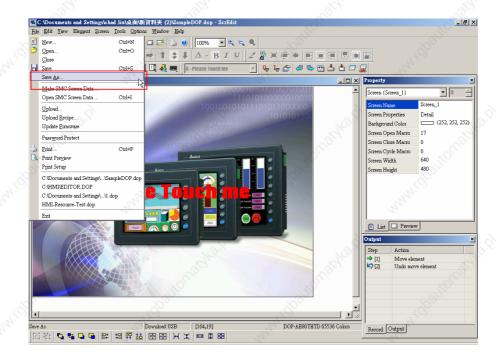


Fig. 2.3.14 Choosing Save As command from menu bar

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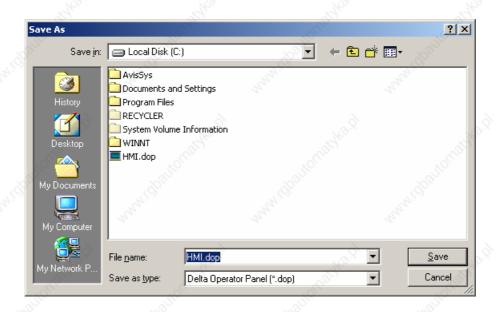


Fig. 2.3.15 Save as dialog box (Dialog box that let user input application name to save as.)

#### ■ Make SMC Screen Data

Make SMC Screen Data ...

Before using this command, ensure to compile the editing screen data. If not execute the compilation first, the ScrEdit cannot make screen data and an error message dialog box will show up (Fig. 2.3.16). Please execute the compilation first and then clicking **File > Make SMC Screen Data** to copy the compiled HMI program into SMC card (Fig. 2.3.17). If the SMC card with compiled HMI program stored inside is inserted into HMI, HMI will startup by reading the data of SMC card directly.

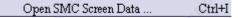


Fig. 2.3.16 Error message dialog box when making SMC screen data



Fig. 2.3.17 Make SMC Screen Data Dialog Box

## ■ Open SMC Screen Data



In HMI, the users can move the screen data saved in the flash memory into SMC card through folder manager. Then, perform **Open SMC Screen Data** function and the users will get the users will get Fig. 2.3.17 dialog box. At this time, the users can open the screen data and edit the HMI screen data directly.

#### Upload Screen Data and Recipe

Upload...

After clicking **File** > **Upload** (Fig. 2.3.18), the password dialog box will show up first, the users need to input password (the password is the highest priority saved in HMI) to get save as dialog box (Fig. 2.3.15). After inputting application file name, the uploading will start (Fig. 2.3.20). The users can get the progress with progress box and stop uploading by clicking **Stop** button. When progress goes to 100%, it indicates that the uploading is complete. The users can press **Stop** button to exit the dialog box. The file that is uploaded from HMI can be restored to original editing file for user to edit. This option is to avoid losing the original editing file.

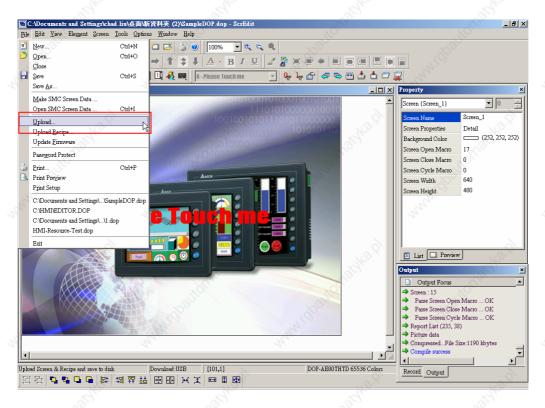


Fig. 2.3.18 Choosing Upload command from menu bar



Fig. 2.3.19 Enter password dialog box

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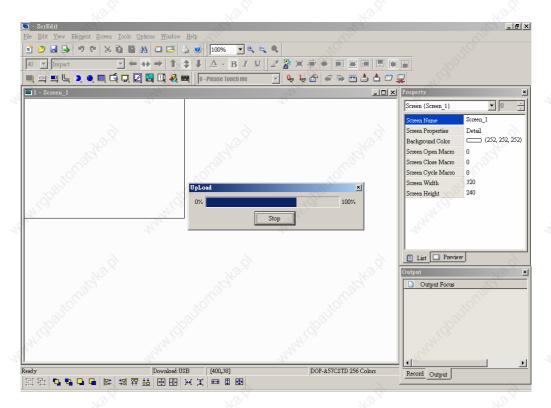


Fig. 2.3.20 Uploading screen

## ■ Upload Recipe

Upload <u>R</u>ecipe...

This function is similar to upload function (Fig. 2.3.20) but it can only upload recipe (Fig. 2.3.21). It also needs password (the highest priority password saved in HMI) before uploading.

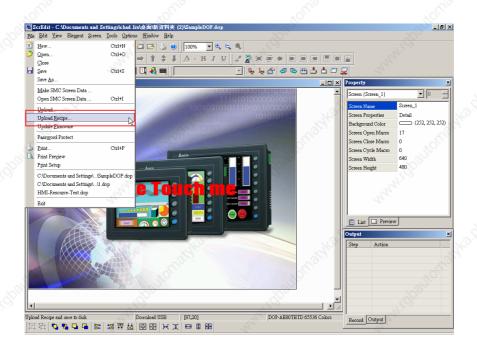


Fig. 2.3.21 Choosing Upload Recipe command from menu bar

## ■ Update Firmware

Update Firmware

This option is for upgrading HMI firmware or adding function for HMI (Fig. 2.3.22).

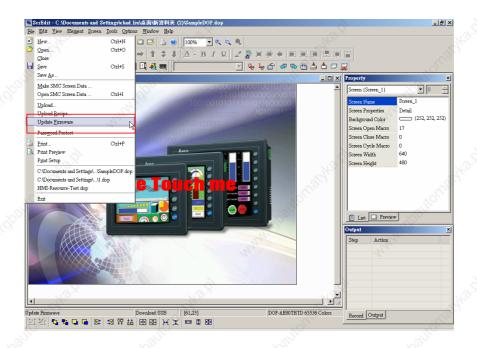


Fig. 2.3.22 Choosing Update Firmware command from menu bar

#### ■ Password Protect

Password Protect

The users can enable and disable password protect function by clicking File > Password protect (Fig. 2.3.23). Once password protect function is enabled, the users will get Fig. 2.3.24 dialog box and symbol before "Password Protect" command. If the symbol shows before "Password Protect" command from File menu, it indicates that this dop file is password protected and the users will need to input password before opening dop file. The password is set by clicking Option > Workstation Setup (Fig. 2.3.26). If the password protect function is disabled, the Fig. 2.3.25 dialog box will show up.

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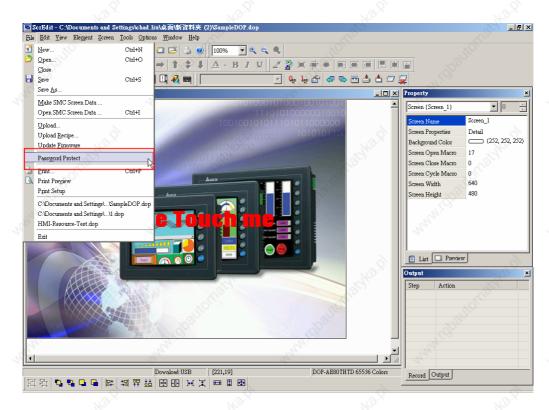


Fig. 2.3.23 Choosing Password Protect command from menu bar



Fig. 2.3.24 Password protect function is enabled



Fig. 2.3.25 Password protect function is disabled

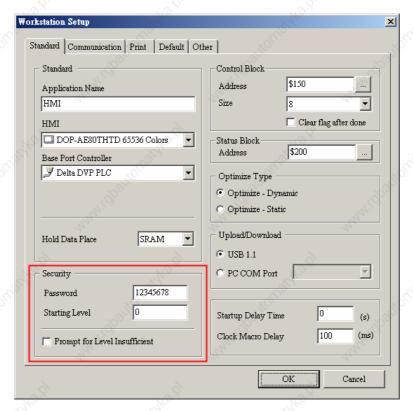
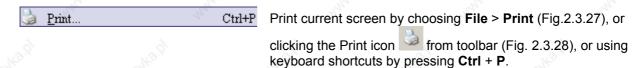


Fig. 2.3.26 Password settings

#### ■ Print



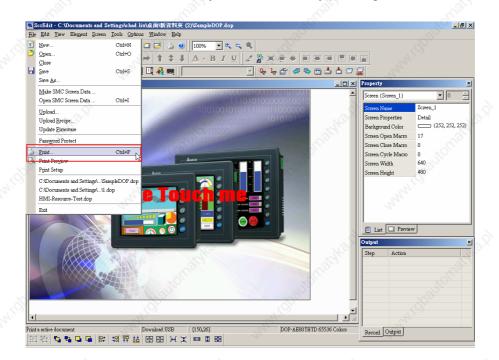


Fig. 2.3.27 Choosing Print command from menu bar

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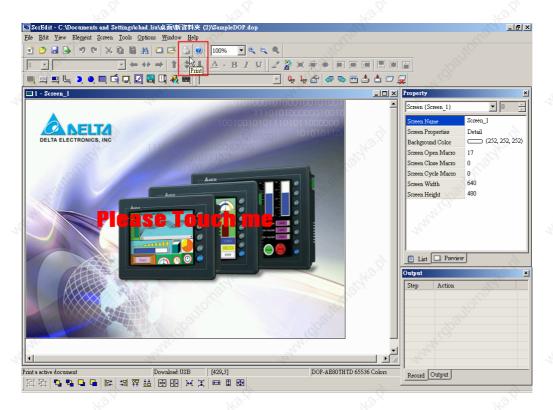


Fig. 2.3.28 Choosing Print icon from toolbar

#### ■ Print Preview



Select this function by clicking **File** > **Print Preview** (Fig. 2.3.29). Using this function can preview the full page after printing (Fig. 2.3.30).

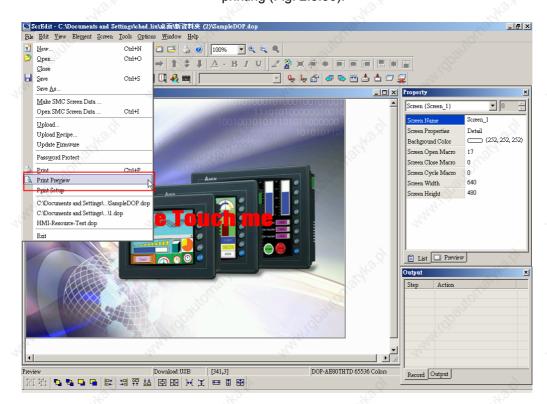


Fig. 2.3.29 Choosing Print Preview command from menu bar

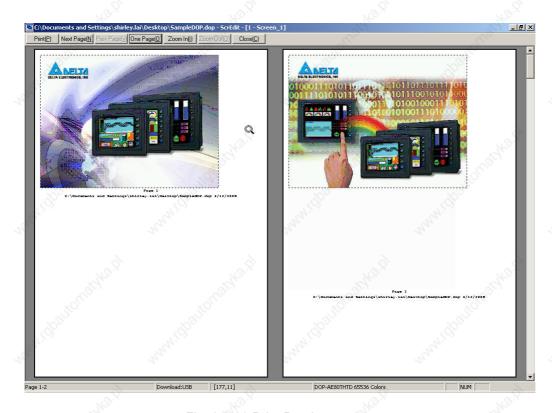


Fig. 2.3.30 Print Preview screen

## ■ Print Setup

Print Setup

Printer and paper settings. Select this function by clicking **File > Print Setup** (Fig. 2.3.31). Using this function can set the property of printer, print paper and print direction, etc. several functions (Fig. 2.3.32).

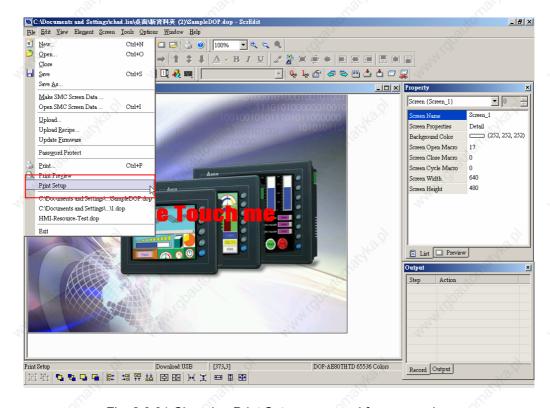


Fig. 2.3.31 Choosing Print Setup command from menu bar

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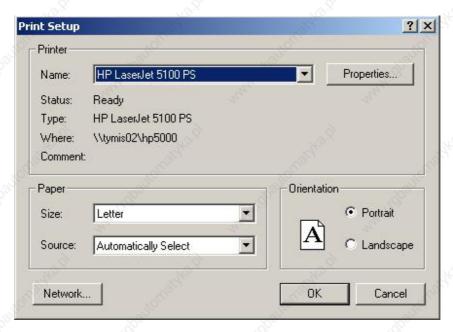


Fig. 2.3.32 Print Setup dialog box

#### **■** File Quick Access

By default, ScrEdit presents a list of the four most recent used files on the File menu for quick access (Fig. 2.3.33). Just click the file name to open the file. This function is similar to the Open command and the users can refer to the description of Open command on the page 2-15. If the saving path is too long, the too long path will display as "....". The users still can see the complete dop file name.

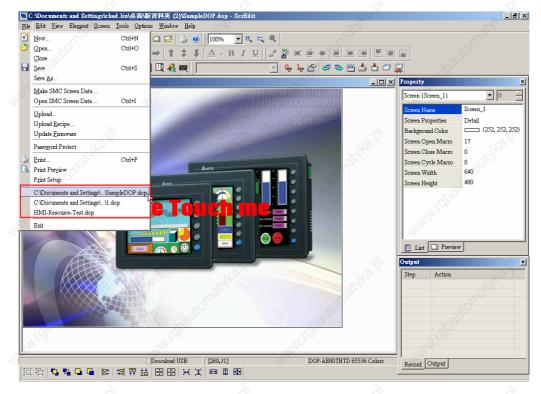


Fig. 2.3.33 Most recent used files

#### ■ Exit

Exit

Exit function is to close all open editing files and offer to save those that have not been save yet and finally exit the ScrEdit. Select this function by clicking **File > Exit** (Fig. 2.3.34). If the file has been changed or not saved yet, the saving dialog box (Fig. 2.3.11) will show up to remind the users of saving application. If the users press **Cancel** button at this time, the exit command is cancelled. Either pressing **Yes** button to save the file, or pressing **No** button not to save the file can exit the ScrEdit. After the users press the **Yes** button, the Save As dialog box will appear (Fig. 2.3.15) for saving the file.

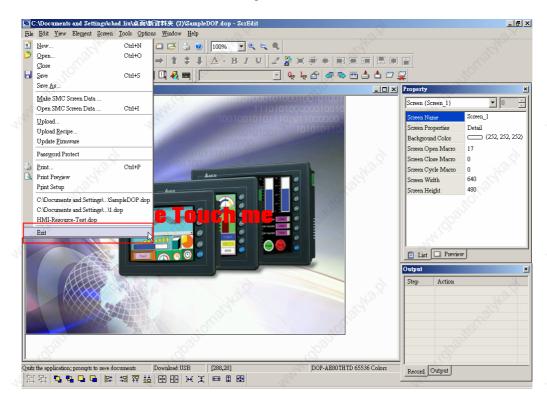


Fig. 2.3.34 Choosing Exit command from menu bar

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## 2.4 Menu Bar and Toolbar (Edit)

#### ■ Edit

Adopt Microsoft Office style pull-down menu and provide user-friendly Edit pull-down menu (Fig. 2.4.1).



Fig. 2.4.1 Edit options

#### ■ Undo

Undo the last action. Select this function by choosing Edit > Undo

(Fig.2.4.2) or clicking the Undo icon from toolbar (Fig.2.4.3), or use keyboard shortcuts by pressing **Ctrl** + **Z**. All actions are recorded in output window.

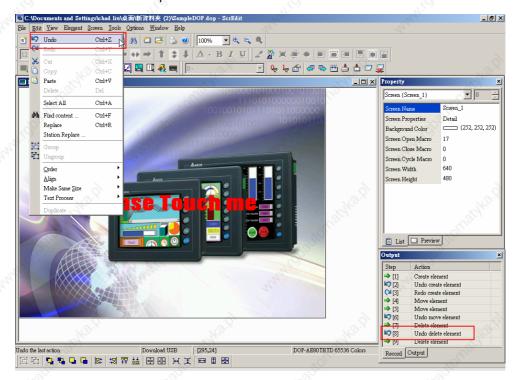


Fig. 2.4.2 Choosing Undo command from menu bar

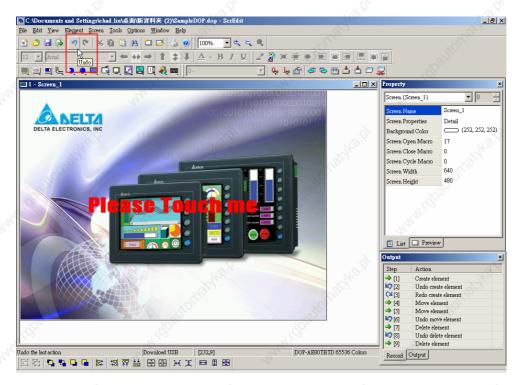
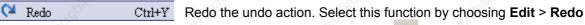


Fig. 2.4.3 Choosing Undo icon from toolbar

#### ■ Redo



(Fig.2.4.4 or clicking the Redo icon keyboard shortcuts by pressing **Ctrl** + **Y**. All actions are recorded in output window.

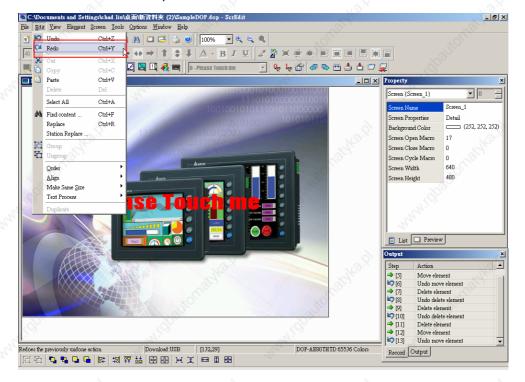


Fig. 2.4.4 Choosing Redo command from menu bar

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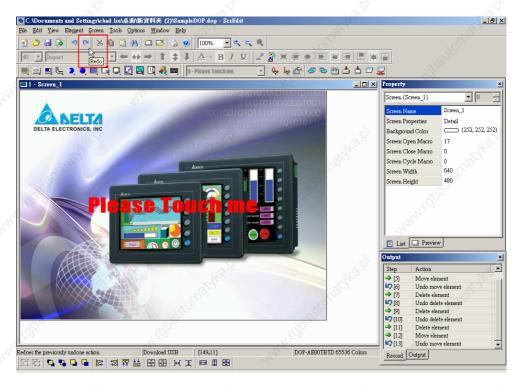


Fig. 2.4.5 Choosing Redo icon from toolbar

#### ■ Cut



Deletes the selected element and save it in clipboard to paste to other place. Select this function by choosing **Edit** > **Cut** (Fig. 2.4.6) from

menu bar or clicking the Cut icon from toolbar (Fig.2.4.7), or use keyboard shortcuts by pressing **Ctrl** + **X**.

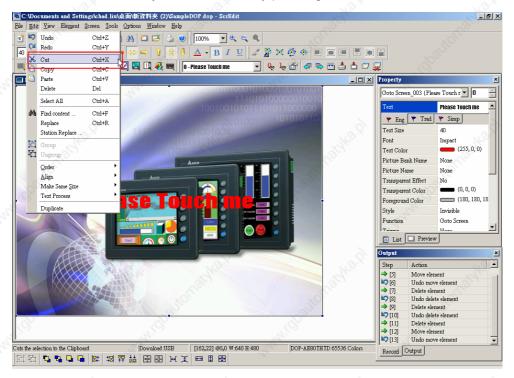


Fig. 2.4.6 Choosing Cut command from menu bar

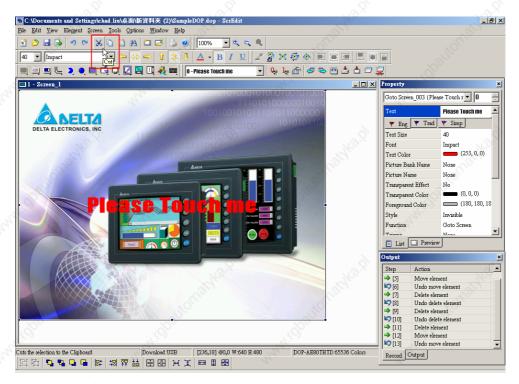
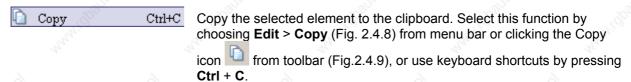


Fig. 2.4.7 Choosing Cut icon from toolbar

#### ■ Copy



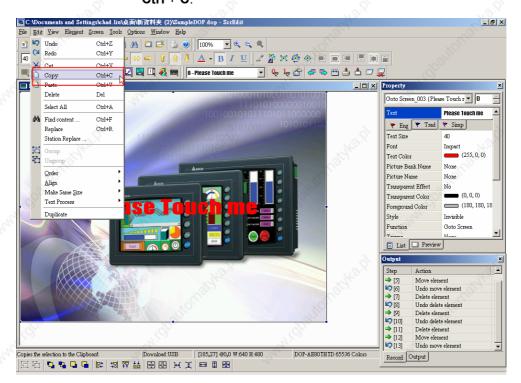


Fig. 2.4.8 Choosing Copy command from menu bar

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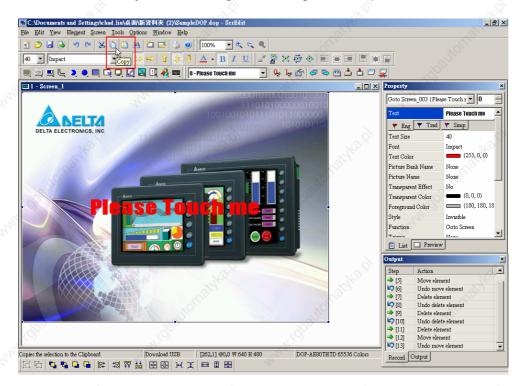


Fig. 2.4.9 Choosing Copy icon from toolbar

#### ■ Paste

Paste Ctrl+V Paste element from clipboard. Select this function by choosing Edit >

Paste (Fig. 2.4.10) from menu bar or clicking the Paste icon toolbar (Fig.2.4.11), or use keyboard shortcuts by pressing Ctrl + V.

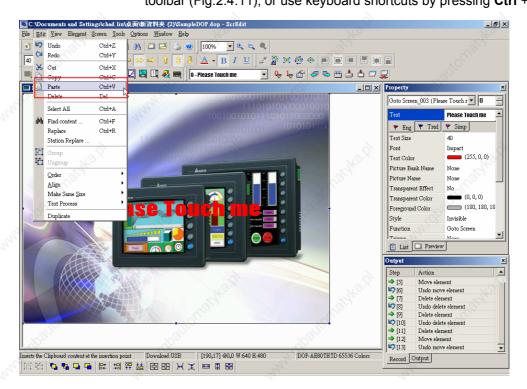


Fig. 2.4.10 Choosing Paste command from menu bar



Fig. 2.4.11 Choosing Paste icon from toolbar

#### ■ Delete

Delete Del Delete selected element. Select this function by choosing **Edit > Delete** (Fig. 2.4.12) from menu bar or use keyboard shortcuts by pressing **Del**.

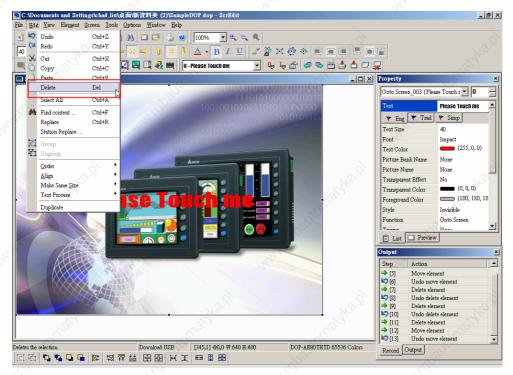


Fig. 2.4.12 Choosing Delete command from menu bar

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#### ■ Select All



It is used to select all elements. Select this function by choosing **Edit** > **Select All** (Fig. 2.4.13) from menu bar or use keyboard shortcuts by pressing **Ctrl** + **A**. When selecting all, the element at the left upper corner will be selected with square filled with blue and white border as a <u>base element</u>. Others will be selected with square filled with white and black border. The base element is used to align or resize.

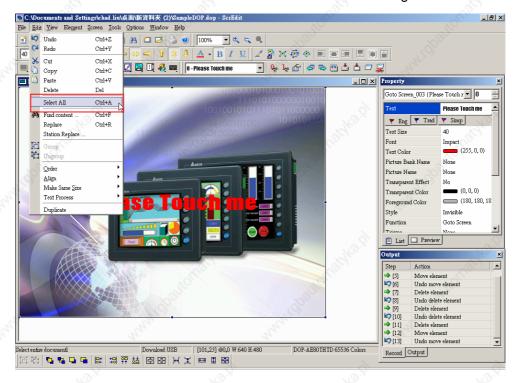
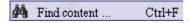


Fig. 2.4.13 Choosing Select All command from menu bar

#### ■ Find content



It is used to find the content matches the find criteria. Select this function by choosing **Edit** > **Find content** (Fig. 2.4.14) from menu bar or use keyboard shortcuts by pressing **Ctrl** + **F**. The users can find element text, read address, write address or memory address in current screen, or all screens (Fig. 2-4-15). Once it finds, the result of find content will be shown in the output window. Click some of the result of find content, it will jump to its location in ScrEdit.

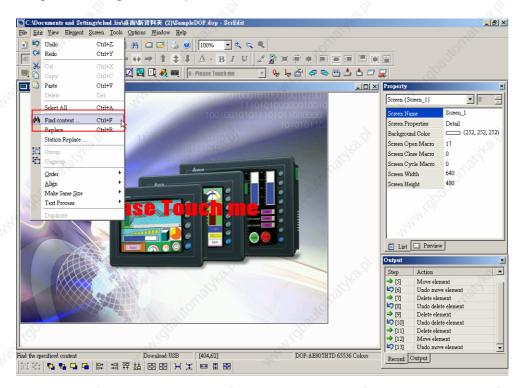
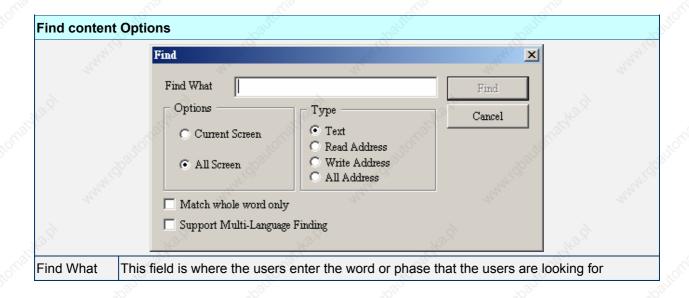
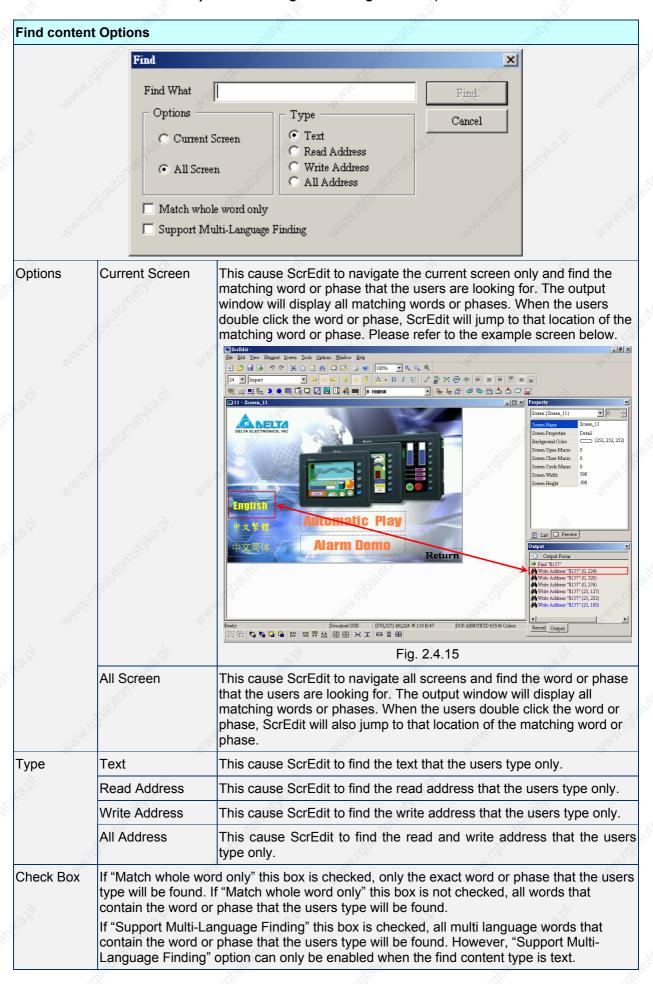


Fig. 2.4.14 Choosing Find content command from menu bar



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## ■ Replace

Replace Ctrl+R

It is used to replace the content matches the replace criteria. Using this command can replace text, read address and write address in current screen or all screens. Its function is very similar to Find command expect that it not only can find the word or phase that the users are looking for but also can replace it with a new entry. The replace content type could be text, read and write address and the replace content data type could be Bit, Word or Double Word. The function of replace content data type is enabled only when the replace content type is either read or write address. Select this function by choosing **Edit** > **Replace** (Fig. 2.4.16) from menu bar or use keyboard shortcuts by pressing **Ctrl** + **R**.

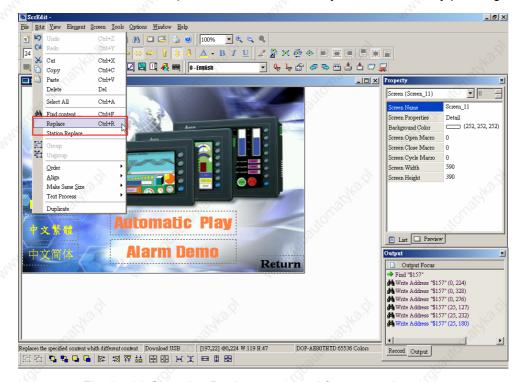
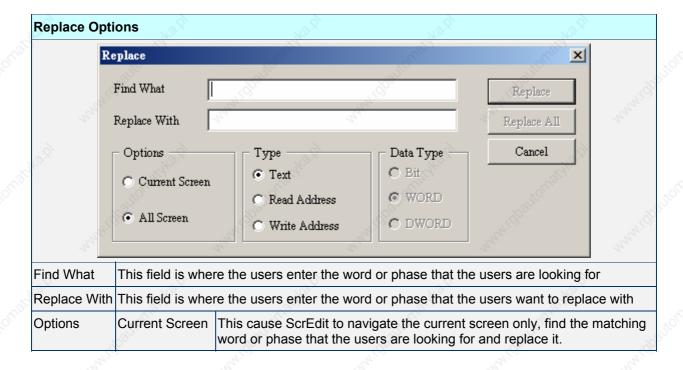
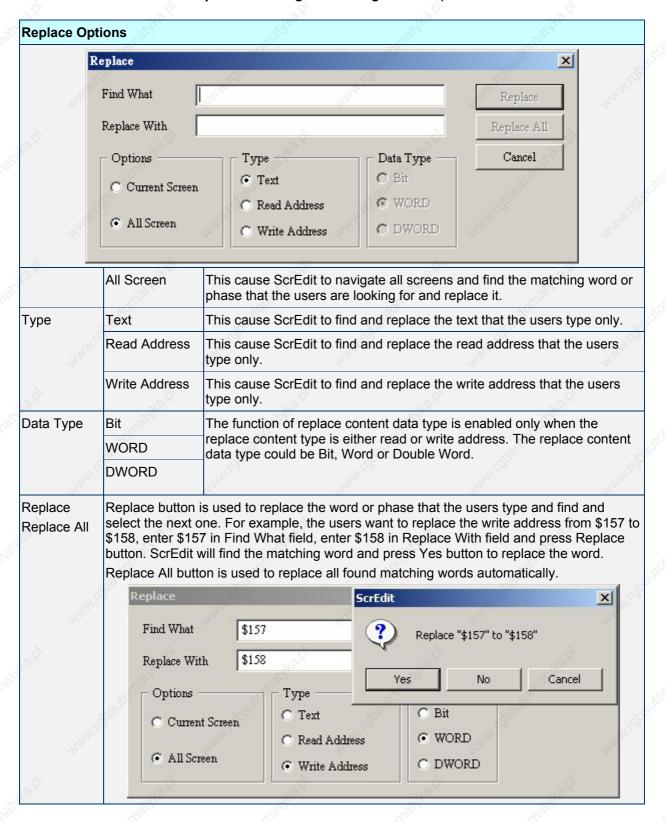


Fig. 2.4.16 Choosing Replace command from menu bar



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## ■ Group



It is used to group elements in ScrEdit. Select this function by choosing **Edit > Group** (Fig. 2.4.17) from menu bar or clicking the Group icon

from toolbar (Fig.2.4.18). When two or more elements are grouped, it will be regarded as a single unit and move together but the element size cannot be changed.

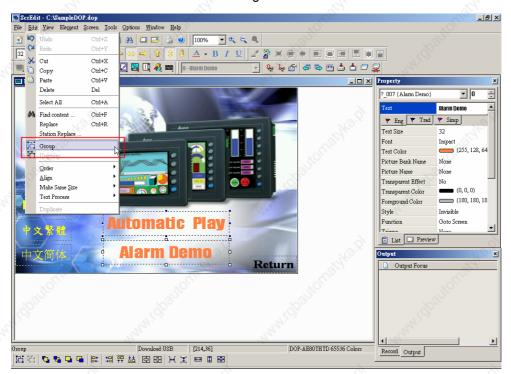


Fig. 2.4.17 Choosing Group command from menu bar



Fig. 2.4.18 Choosing Group icon from toolbar

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## Ungroup



It is used to ungroup elements in ScrEdit. Select this function by choosing **Edit** > **Ungroup** (Fig. 2.4.19) from menu bar or clicking the Group icon from toolbar (Fig.2.4.20).



Fig. 2.4.19 Choosing Ungroup command from menu bar



Fig. 2.4.20 Choosing Ungroup icon from toolbar

#### ■ Order

<u>O</u>rder

It is used to set and change the stacking order of the selected element. Select this function by choosing **Edit** > **Order** (Fig. 2.4.21)

from menu bar or clicking the Order icons toolbar (Fig.2.4.22).

- Bring to Top. Move the selected element to the front of all other elements.
- Send to Bottom. Move the selected element behind all other elements.
- Bring Forward. Move the selected element forward one position.
- Send Backward. Move the selected element behind one position.

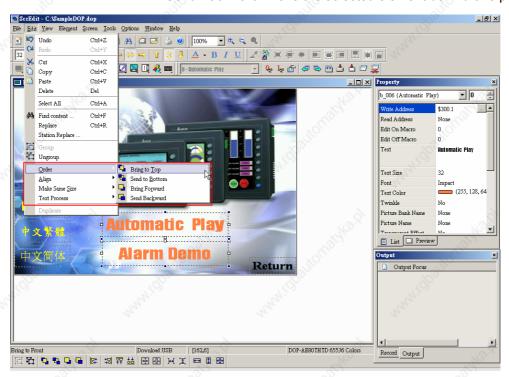


Fig. 2.4.21 Choosing Order commands from menu bar

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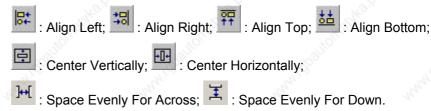
Fig. 2.4.22 Choosing Order icons from toolbar

#### ■ Align



It is used to align the element. The users can select this function by choosing **Edit** > **Align** (Fig. 2.4.23) from menu bar or clicking the Align icons from toolbar (Fig.2.4.24).

The Align icons includes:



Align Left, Align Right, Align Top and Align Bottom commands are available when two or more elements are selected. That is because the element only can be left, right, top and bottom aligned relative to another element. Align Vertical Center and Align Horizontal Center commands are available when one or more elements are selected. Across Space Evenly and Down Space Evenly are available when three or more elements are selected.

After Align commands are used, the coordinates of the elements will changed to the coordinates of the new position.

Center Vertically: Set the element to be the vertical position of the work place.

Center Horizontally: Set the element to be the horizontal position of the work place.

Space Evenly For Across: Make all the elements align in a consistent width.

Space Evenly For Down: Make all the elements align in a consistent height.

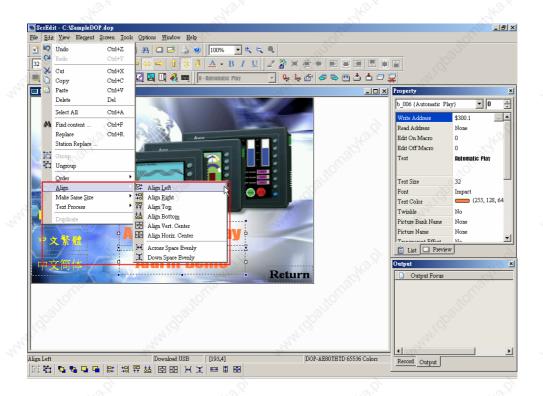


Fig. 2.4.23 Choosing Align commands from menu bar



Fig. 2.4.24 Choosing Align icons from toolbar

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#### ■ Make Same Size

Make Same Size

It is used to make the element to be the same size. The users can select this function by choosing **Edit** > **Make Same Size** (Fig. 2.4.25) from menu bar or clicking the Make Same Size icons from toolbar (Fig.2.4.26).

This function is available only when two or more elements are selected. The users have to select one element first and treat it as standard, and use this command to make other two or more elements to be the same size.

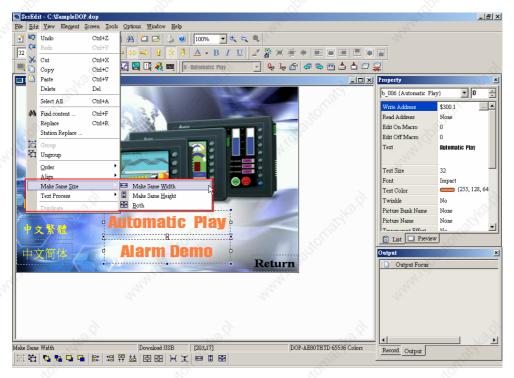


Fig. 2.4.25 Choosing Make Same Size commands from menu bar

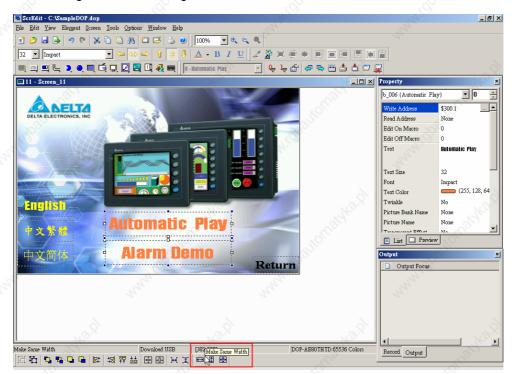


Fig. 2.4.26 Choosing Make Same Size icons from toolbar

#### ■ Text Process

Text Process

It is used to set and change text direction and import text in ScrEdit. The users can select this function by choosing **Edit** > **Text Process** (Fig. 2.4.27) from menu bar or clicking the Text Process icons from toolbar.

next to the Text Process command represents that this function is enabled. In the Import Text dialog box, the users can decide if use Text Bank Edit Font or not. If the users check the box next to Text Bank Edit Font, the imported text will be display by adopting the fonts of Text Bank. For the settings of Text Bank, please refer to **Option > Text Bank**.

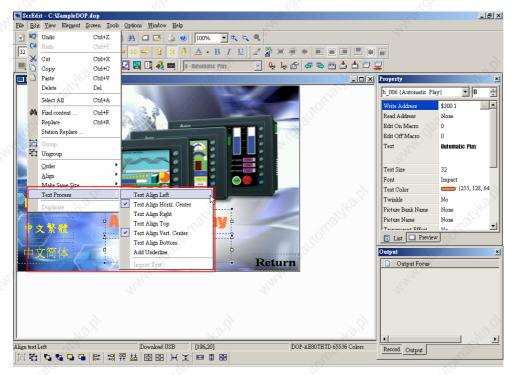


Fig. 2.4.27 Choosing Text Process commands from menu bar

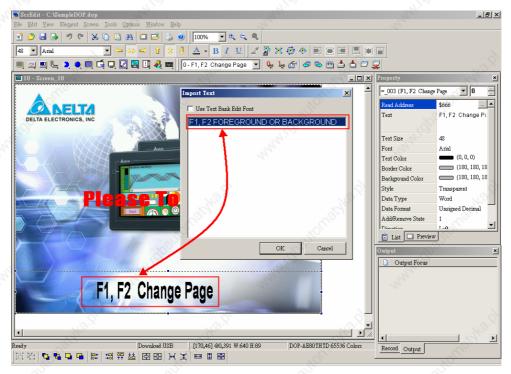


Fig. 2.4.28 Import Text dialog box

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## ■ Duplicate

Duplicate

It allows the users to copy one or more elements at the same time. After selecting this function by choosing **Edit** > **Duplicate** from menu bar, the Fig. 2.4.29 dialog box will show up. The users can enter the number of columns and rows to get the total copy numbers. The minimum entry number should be more than 2 as the original element is also one of the total copy numbers. If the users only want to copy the number of Rows, please uncheck the box next to Columns and vice versa.

Spacing (pixels): This option is used to set the spacing between every element. After this option is set, the duplicated elements will be placed in this spacing.

Increase / Decrease Address: This option is used to place the element that the users copy by ascending or descending address. The unit of the address can be Word or Bit.

X-direction / Y-direction: This option is used to place the element that the users copy by horizontal (X-direction) or vertical (Y-direction) direction.

Please refer to Fig 2-4-30 and Fig. 2-4-31 for example.

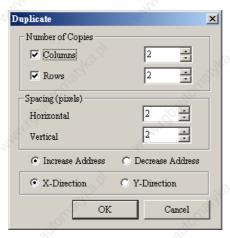


Fig. 2.4.29 Duplicate dialog box

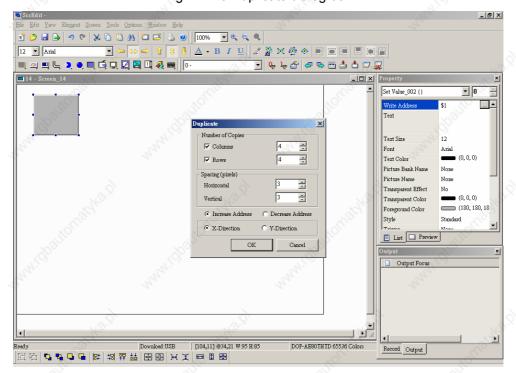


Fig. 2.4.30 Duplicate Example 1

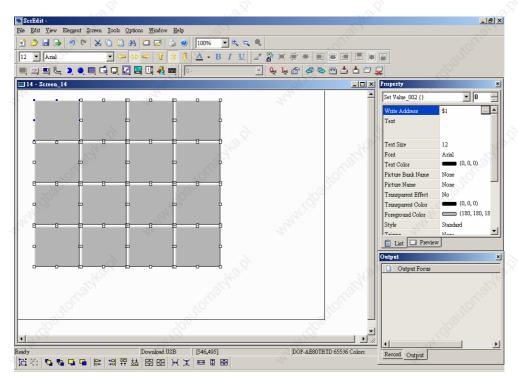


Fig. 2.4.31 Duplicate Example 2

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## 2.5 Menu Bar and Toolbar (View)

#### View

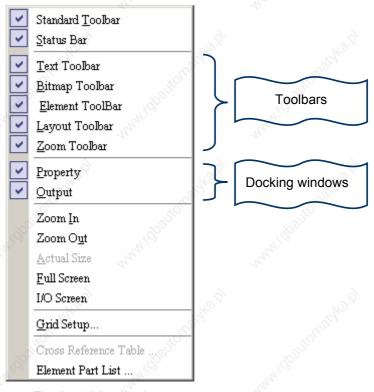


Fig. 2.5.1 View options

In View options, the users can decide how toolbars and docking windows display. Once the users click it, it will have icon in front of it and display on screen. By default, the Property table and Output window should display on the right side of the screen. The users can also arrange these toolbars and docking windows by themselves (Fig. 2.5.2).

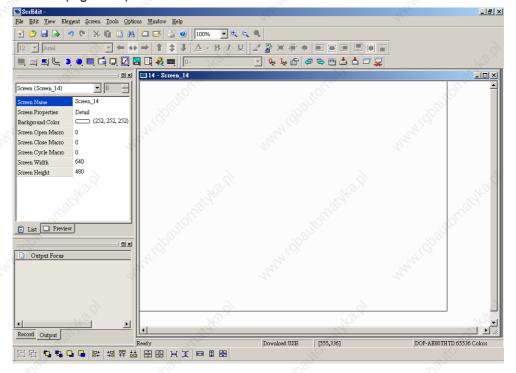


Fig. 2.5.2 Docking Windows

## ■ Standard Toolbar

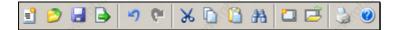


Table. 2.5.1 Standard toolbar

| 50  | Icon     | Function     | Description                                       |        |
|-----|----------|--------------|---|--------|
|     | =        | New          | Create a new application                          |        |
|     | <b>3</b> | Open         | Open an old application                           | 41/0   |
|     |          | Save         | Save current edited application                   | 121,   |
| 3.0 |          | Export       | Export an application to BMP format               |        |
|     | 4)       | Undo         | Undo an action (some can't be undo)               |        |
|     | Ca Mile  | Redo         | Redo an action                                    | "AMIG  |
|     | ×        | Cut          | Cut selected elements                             | 170    |
| 9.8 |          | Сору         | Copy selected elements                            |        |
|     |          | Paste        | Paste the element you copy or cut                 | ×      |
|     | A        | Find Content | Find specific text, write address or read address | "ALM'E |
| 8   |          | New Screen   | Create a new screen                               |        |
| 5   | Ē        | Open Screen  | Open an old screen                                |        |
|     | 3        | Print        | Print current application                         | .8     |
|     | <b>3</b> | Help         | Screen editor version                             | nan,   |

## Status Bar

Display current editing states.

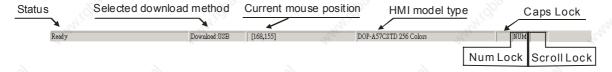


Fig. 2.5.3 Status bar

## ■ Text Format Toolbar



Table. 2.5.2 Text toolbar

| Icon | Function  | Description                  |
|------|-----------|------------------------------|
| 48 🔽 | Font Size | Display and change text size |

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| Icon           | Function         | Description  |
|----------------|------------------|--|
| Arial          | Font             | Font   |
| nun! 🗢         | Aligns Left      | Align text to left   |
| <b>4</b>       | Center Horizonta | The space at the right/left sides of text will be the same |
| <b>₽</b>       | Aligns Right     | Align text to right  |
| Û              | Aligns Top       | Align text to top  |
| <i>1</i> 111 ♦ | Center Vertical  | The space at the top/bottom sides of text will be the same |
| è, î           | Aligns Bottom    | Align text to bottom                                       |
| A              | Text Color       | Change text color  |
| В              | Bold             | Text bold  |
| I              | Italic           | Text Italic  |
| <u>n</u>       | Underline        | Add line under text  |

# ■ Bitmap Toolbar



Table. 2.5.3 Bitmap toolbar

|     | Icon   | Function                                       | Description   |
|-----|--|--|---|
|     | 2  | Select Transparent<br>Color                    | Use sucker tool to suck the color of the picture and determine the transparent color of the picture   |
| 9   |  | Chang Mode for<br>Process All State<br>Picture | If this function is enabled (this icon is pressed), not only the current picture with current state but also all pictures with all states will be stretched, resized or aligned |
|     | [10]   | Picture Stretch All                            | Stretch the selected picture to the whole range of the element.   |
|     | <b>1</b>   | Picture Stretch<br>Ration 1: 1                 | Scale the picture relative to original picture size   |
|     | 100  | Picture Actual                                 | Resize the selected picture to the actual picture size  |
| 5   |  | Picture Align Left                             | Align the selected picture to left  |
|     | <b></b>  | Picture Align<br>Horizontal Center             | The space at the right/left sides of the selected picture will be the same  |
|     | The state of the s | Picture Align Right                            | Align the selected element to right   |
| _   | [1]  | Picture Align Top                              | Align the selected element to top   |
| 9.8 | [•]  | Picture Align Vertical<br>Center               | The space at the top/bottom sides of the selected element will be the same  |
|     | i  | Picture Align Bottom                           | Align the selected element to bottom  |

## Element Toolbar



Table. 2.5.4 Element toolbar

| 0.0 | Icon   | Function  | Ma <sub>ij</sub> , D  | Prop-down Menu  |   |
|-----|--|-----------|---|---|---|
| ġ.  | THE THE STATE OF T | Button    | Reset  Momentary  Maintained  Multistate  | System Date Time Password Table Setup Enter Password Contrast Brightness Low Security System Menu Report List | Han h |
| 3.0 |  | Meter     | ✓ Meter(1)  ✓ Meter(2)  ✓ Meter(3)  | Pricugiko a   | 22  |
|     |  | Bar       | ■ Normal ■ Deviation  | Water Co  | nun!                                      |
|     | <b>L</b>   | Pipe      | <ul> <li>□ Pipe(1)</li> <li>□ Pipe(2)</li> <li>□ Pipe(3)</li> <li>□ Pipe(4)</li> <li>□ Pipe(5)</li> <li>□ Pipe(6)</li> <li>□ Pipe(7)</li> </ul> | arcushkad   | nana, O                                   |
|     | <b>≥</b>   | Pie       | Pie(1) Pie(2) Pie(3) Pie(4)   |   | Way i                                     |
| 2   | •.   | Indicator | <ul> <li>Multistate Indicator</li> <li>Range Indicator</li> <li>Simple Indicator</li> </ul>   | atelugika p   |   |

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| Con   Function   Numeric Display   Character Display   Character Display   Date Display   Prestored Message   Moving Sign  | 2×              | X        |   | X  | X                        |      |
|--|-----------------|----------|---|--|--------------------------|------|
| Character Display Date Display Time Display Day-of-week Display Prestored Message Moving Sign  State Graphic Animated Graphic Dynamic Entry Dynamic Elipse Dynamic Elipse  Input Numeric Entry Character Entry Character Entry  Curve Trend Graph X-Y Chart  History Historical Trend Graph Historical Data Table Historical Event Table Historical Event Table Alarm Frequency Table Alarm Frequency Table Alarm Moving Sign  Graphic  Line Rectangle Circle Polygon Arc Text Scale Table Table  Keypad  Keypad  Keypad(1)  Keypad(2) | Icon            | Function | T. S.   | Drop-down Menu                               | al didin                 |      |
| Animated Graphic  Dynamic Line Dynamic Rectangle Dynamic Ellipse  Input Numeric Entry Character Entry Character Entry  Curve Trend Graph X-Y Chart  Historical Trend Graph Historical Data Table Historical Event Table Historical Event Table  Alarm Alarm Alarm List Alarm List Alarm Alarm List Alarm Alarm Moving Sign  Graphic  Line Rectangle Circle Polygon Arc A Text Scale Table Table  Keypad  Keypad (1) Keypad(2)  |                 | Display  | Character Display Date Display Time Display Day-of-week Display Prestored Message | altonatiko d                                 |                          |      |
| Curve  Trend Graph X-Y Chart  History  Historical Trend Graph Historical Data Table Historical Event Table  Alarm  Alarm History Table Active Alarm List Alarm Frequency Table Alarm Moving Sign  Graphic  Line Rectangle Circle Polygon Arc A Text Scale Table  Keypad  Keypad (1) Keypad(2)  |                 | Movement |   | T WOUSSANS SI                                | "intigh, "follogidhesid, | mani |
| History  Historical Trend Graph Historical Data Table Historical Event Table  Alarm  Alarm History Table Active Alarm List Alarm Frequency Table Alarm Moving Sign  Graphic  Line Rectangle Circle Polygon Are A Text Scale Table  Keypad  Keypad (1) Keypad(2)  |                 | Input    |   | 72 800                                       |                          | non! |
| Historical Data Table Historical Event Table  Alarm History Table Active Alarm List Alarm Frequency Table Alarm Moving Sign  Graphic  Line Rectangle Circle Polygon Arc A Text Scale Table  Keypad  Keypad (1) Keypad(2)   |                 | Curve    | V1/07   | N. H. W. | , 1940.lg1               |      |
| Active Alarm List Alarm Frequency Table Alarm Moving Sign  Circle Polygon Arc A Text Scale Table  Keypad  Keypad (1) Keypad(2)   |                 | History  | Historical Data Table   | ng Briton,                                   | WHI TO BUILD.            | nan' |
| Rectangle Circle Polygon Arc A Text Scale Table  Keypad (1) Keypad(2)  | À !!!           | Alarm    | Active Alarm List Alarm Frequency Table   | California il ka di                          |                          |      |
| Keypad(2)  | Report Services | Graphic  | Rectangle Circle Polygon Arc Scale  | Wilderhousign St.                            | in illiantomateko.b      | man  |
|  |                 | Keypad   | Keypad(2)   | 4. Cattonadka d                              | WildpattoWataka.b        |      |

# ■ Build / Layout Toolbar

# Build Toolbar



Table. 2.5.5 Build toolbar

|  |           | A.V.                              |  |  |
|--|-----------|-----------------------------------|--|--|
| Icon   |           | Function                          | Description  |  |
| 0-   | ▼         | Current Element State             | Text on selected element   |  |
| Q.   |           | View State OFF/1                  | Switch and view current state OFF/1                                |  |
| 1.   | "12/KB.D. | View State ON/1                   | Switch and view current state ON/1                                 |  |
|  | l<br>Pro  | Display All Read/Write<br>Address | Display all read/write addresses of all elements                   |  |
|  |           | Previous windows                  | Select previous windows  |  |
|  | à         | Next windows                      | Select the next windows  |  |
|  | Mach      | Compile                           | Compile current element  |  |
| <b>.</b>   |           | Download Screen Recipe            | Download screen data and recipe                                    |  |
| All de la constant de |           | Download Screen Data              | Download screen data   |  |
| À 🖅  | 10 Mg/2   | On-line Simulation                | Test editing file at PC side and it needs to connect to PLC        |  |
| ₩.   | Man,      | Off-line Simulation               | Test editing file at PC side and it doesn't need to connect to PLC |  |

# **Layout Toolbar**



Table. 2.5.6 Layout toolbar

| Icon   | Function       | Description  |
|--|----------------|--|
| 10 <sup>10</sup> Bi  | Group          | Group the selected elements                                  |
| À 🗗 👌  | Ungroup        | Ungroup the selected elements                                |
|  | Bring to Top   | Move the selected element to the front of all other elements |
| THE PART OF THE PA | Send to Bottom | Move the selected element behind all other elements          |
|  | Bring Forward  | Move the selected element forward one position               |
|  | Send Backward  | Move the selected element behind one position                |
| <del> </del>   +   | Align Left     | Align the selected elements to left                          |
| <b>+□</b>  | Align Right    | Align the selected elements to right                         |
| <u>₹</u>   | Align Top      | Align the selected elements to top                           |
| <u>\$</u>  | Align Bottom   | Align the selected elements to bottom                        |

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|            | Icon            | Function                | Description   |
|------------|-----------------|-------------------------|---|
|            |                 | Center Vertically       | Set the element to be the vertical position of the work place   |
| 47         | <del>-</del> 0+ | Center Horizontally     | Set the element to be the horizontal position of the work place |
| <u>,0</u>  | ]+(             | Space Evenly For Across | Make all the elements align in a consistent width               |
|            | <b>I</b>        | Space Evenly For Down   | Make all the elements align in a consistent height              |
| Art.       | M <del>-</del>  | Make Same Width         | Make the selected elements to be the same width                 |
| , <u>à</u> |                 | Make Same Height        | Make the selected elements to be the same height                |
|            | <b>•</b>        | Make Same Size          | Make the selected elements to be the same size                  |

# ■ Zoom Toolbar



Table. 2.5.7 Zoom toolbar

| Icon   | Function | Description  |
|--|----------|--|
|  |          | Let you set a zoom level, including 25%, 50%, 75%, 100%, 150%, 200% and 300% |
| Zoom in Let you change the magnification 300%. |          | Let you change the magnification level, including 150%, 200% and 300%.       |
| 4  | Zoom out | Let you reduce the magnification level, including 25%, 50% and 75%.          |
| Q Ida  | 1:1      | Let you change element size to actual size (100%).                           |

## Property Table

Element property table. Please refer to Chapter 3 for detailed description.

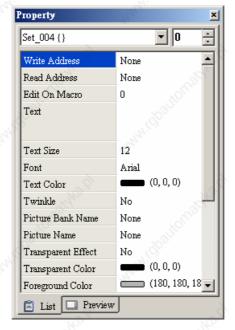


Fig. 2.5.4 Property table

## Output Window

All editing actions and output message when compile function is enable will be shown here for users' reference. It is convenient for tracing error address when creating and editing screen (See Fig. 2.5.5, Fig. 2.5.6, Fig. 2.5.7 and Fig. 2.5.8).



Fig. 2.5.5 Output window

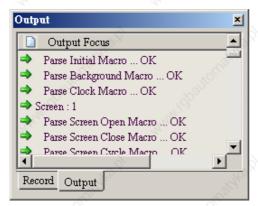


Fig. 2.5.7 Output result



Fig. 2.5.6 Output window during editing

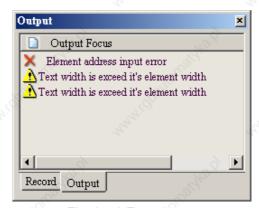


Fig. 2.5.8 Error output

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#### Zoom In

Zoom In Zoom in to get a close look at the elements on ScrEdit work place. (Refer to Fig. 2.5.9, Fig. 2.5.10, Fig. 2.5.11 and Fig. 2.5.12)

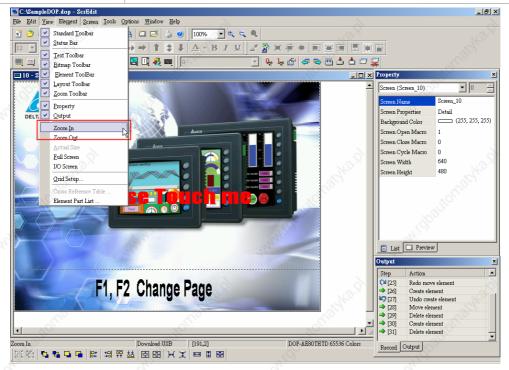


Fig. 2.5.9 Choosing Zoom In command from menu bar

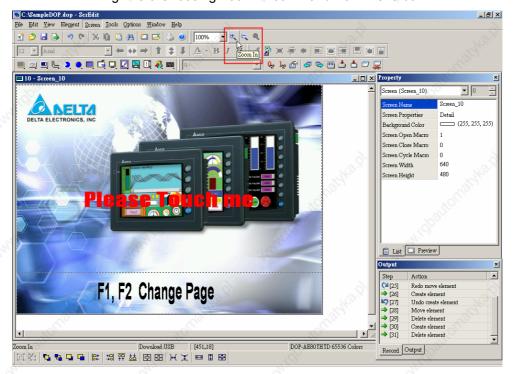


Fig. 2.5.10 Choosing Zoom In icon from toolbar

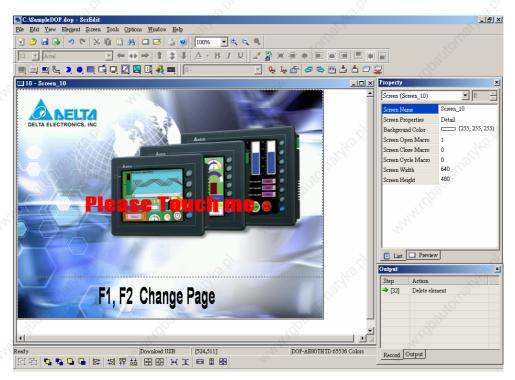


Fig. 2.5.11 Zoom level = 100% (Before Choosing Zoom In command)

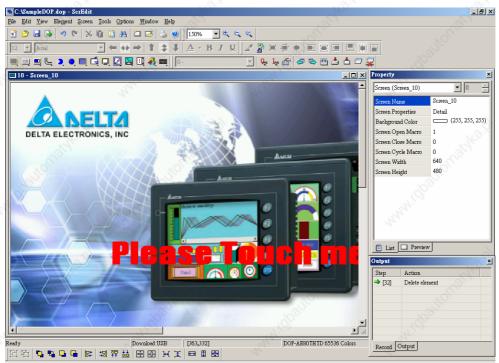


Fig. 2.5.12 Zoom level = 150% (After Choosing Zoom In command)

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## Zoom Out

Zoom Out

Zoom out to see more look of the elements on ScrEdit work place. (Refer to Fig. 2.5.13, Fig. 2.5.14 and Fig. 2.5.15)

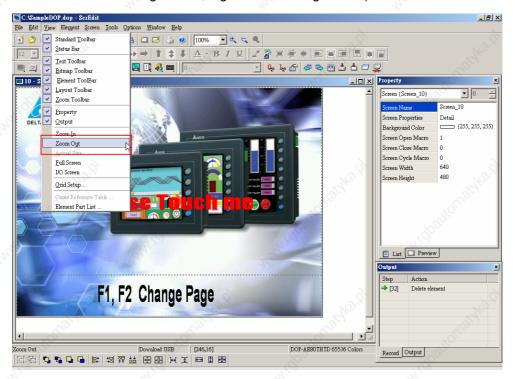


Fig. 2.5.13 Choosing Zoom Out command from menu bar

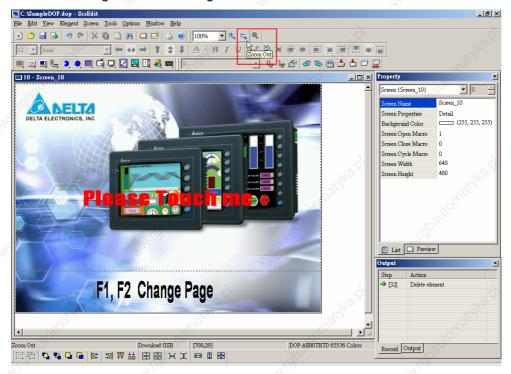


Fig. 2.5.14 Choosing Zoom Out icon from toolbar

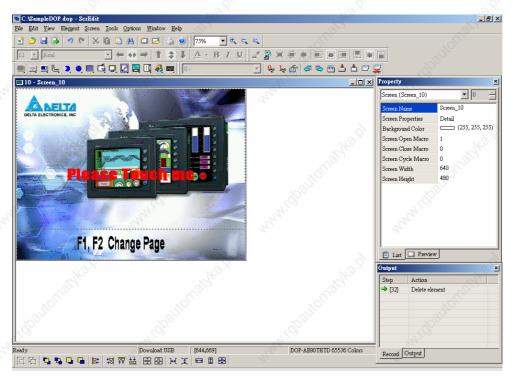


Fig. 2.5.15 Zoom level = 75% (After Choosing Zoom Out command)

#### Actual Size

Actual Size Return to actual size (100%). This size is relative to the screen size of HMI.

No matter zoom in or zoom out command, the zoom level could be 20%, 50%, 75%, 100%, 150%, 200% and 300%. The users can also zoom in or out by clicking icon or selecting the Zoom level directly (Fig. 2.5.16).

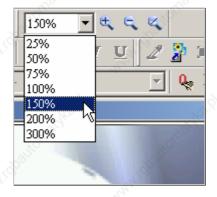


Fig. 2.5.16 Zoom level

#### ■ Full Screen

Full Screen

As Fig. 2.5.17. Full screen provides maximum view to edit in ScrEdit. Full screen view will hide all toolbars and docking windows other than the ScrEdit work place itself. Fig. 2.5.17 full screen also shows the reference macro command.

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Fig. 2.5.17 Full Screen (Pressing Esc key or left-click the mouse can exit Full screen)

#### ■ I/O Screen

I/O Screen

As Fig. 2.5.18. I/O screen also provides maximum view to edit in ScrEdit just like Full screen. But the difference is that I/O Screen will show the read and write addresses of the element and also shows the reference macro command.



Fig. 2.5.18 I/O Screen (Pressing Esc key or left-click the mouse can exit Full screen)

# ■ Grid Setup

Grid Setup..

Grid Setup is a function that can help the users to align and position the element more easily and precisely. The distance (spacing) between the grid dots can be set by the users freely (Fig. 2.5.19 and Fig. 2.5.20).

Show Grid: Show the grid dots on the screen.

Snap to Grid: Make the elements snap to grid so that the elements can jump between grid lines when the users move them.

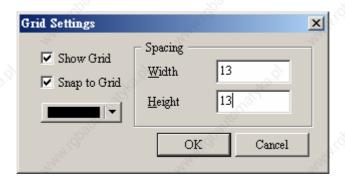


Fig. 2.5.19 Gird Settings dialog box

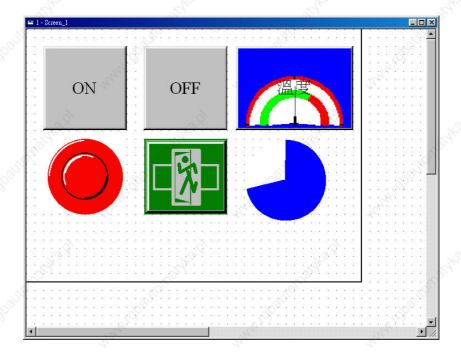


Fig. 2.5.20 Show Gird screen

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# 2.6 Menu Bar and Toolbar (Element)

### ■ Element



Fig. 2.6.1 Element options

Screen editor provides 14 types of elements and there are lots of styles for each type. These 14 types include button, meter, bar, pipe, pie, indicator, data display, graph display, input, curve, sampling, alarm, graphic and, keypad, etc. The users can select desired element from the pull-down menu and drag the size needed on ScrEdit work place (as Fig. 2.6.2 and Fig. 2.6.3).

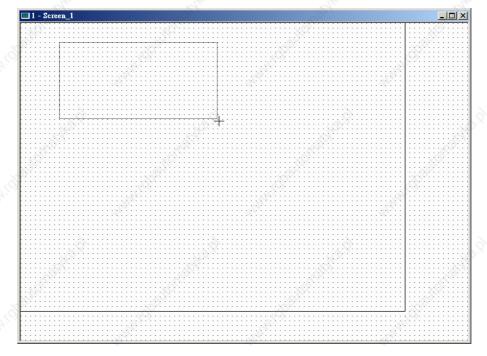


Fig. 2.6.2 Drag mouse to determine the element size

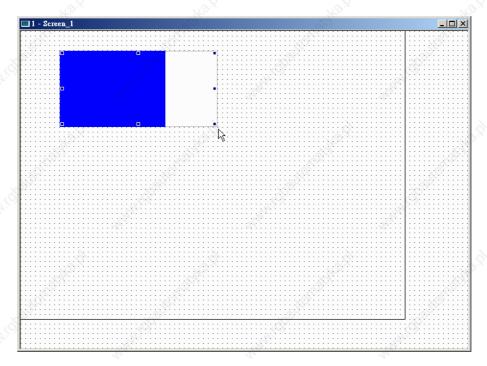


Fig. 2.6.3 Element display (Create an element)

The users can also right-click the mouse to select the desired element. For the property of each element, please refer to Chapter 3 for detailed description.

#### ■ Create an Element

The users can select an element by right-clicking the mouse in work place. Place your mouse pointer in work place and right-click the mouse to get pull-down menu. Then, the users can select the desired element and determine the element size by left-clicking the mouse. Later set the property of the element (Fig. 2.6.4, Fig. 2.6.5, Fig. 2.6.6 and Fig. 2.6.7).

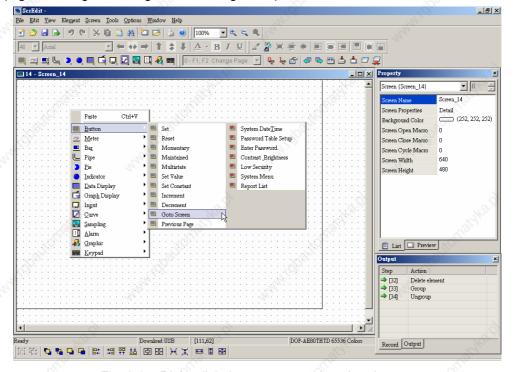


Fig. 2.6.4 Right-click the mouse to select the element

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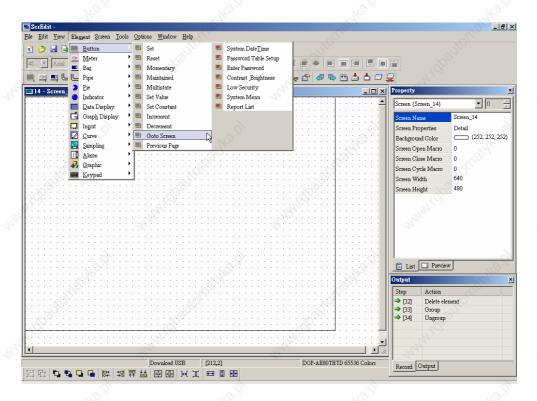


Fig. 2.6.5 Select an element by choosing Element command from menu bar

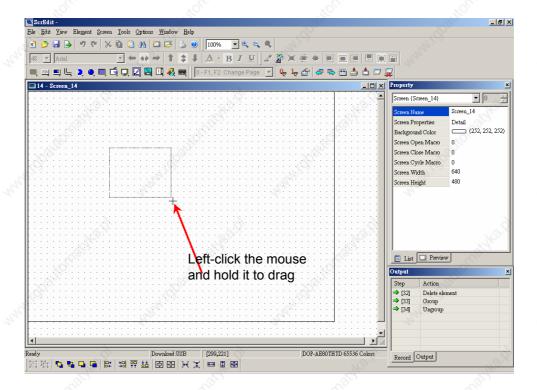


Fig. 2.6.6 Drag with left mouse button

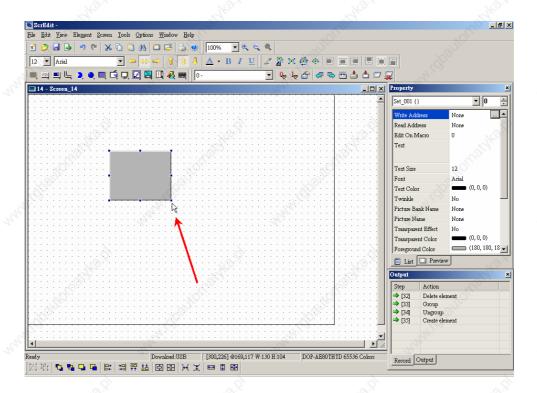


Fig. 2.6.7 Release left mouse button to create an element

#### ■ Move an Element

The users can use the mouse to move an element. Mouse operation is the same as working in **Windows®** operating system. When the mouse cursor becomes a four-arrow icon  $\stackrel{\clubsuit}{\longleftrightarrow}$ , the users can hold down it by left-clicking the mouse and move the element freely (Fig. 2.6.8, Fig. 2.6.9 and Fig. 2.6.10).

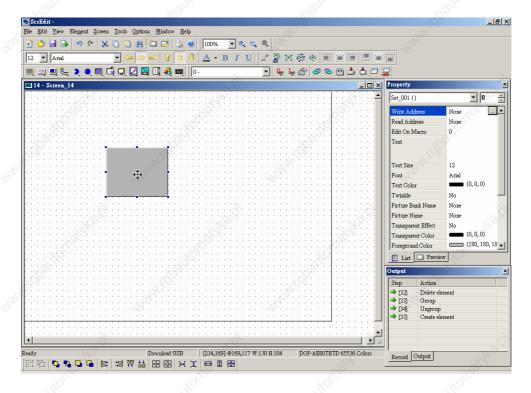


Fig. 2.6.8 Mouse cursor becomes a four-arrow icon

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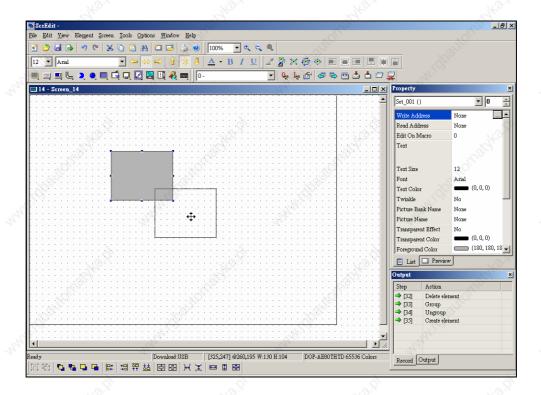


Fig. 2.6.9 Hold down \$\oplus\$ by left-clicking the mouse and move the element freely

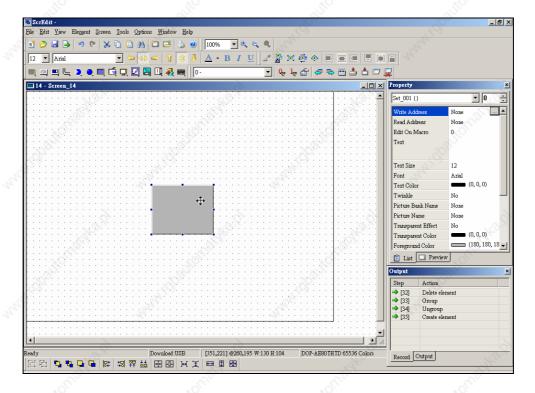


Fig. 2.6.10 Release the mouse left button to finish the movement

### ■ Modify Element Width

The users can also use the mouse to modify the width of an element. When the mouse cursor becomes a two-arrow icon ←→, the users can hold down it by left-clicking the mouse and modify the element width (Fig. 2.6.11, Fig. 2.6.12 and Fig. 2.6.13).

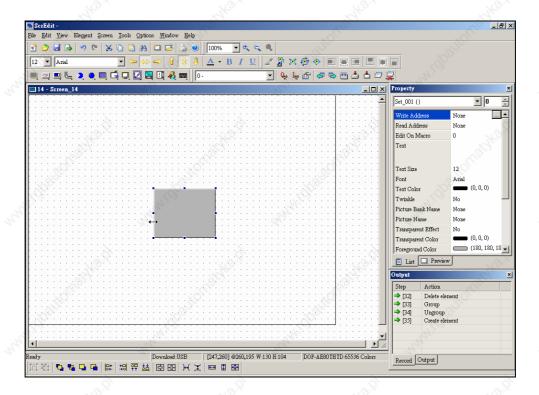


Fig. 2.6.11 Mouse cursor becomes a two-arrow icon ↔

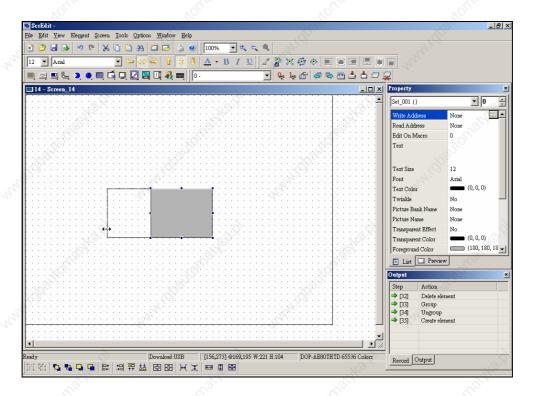


Fig. 2.6.12 Hold down ← by left-clicking the mouse and modify the element width

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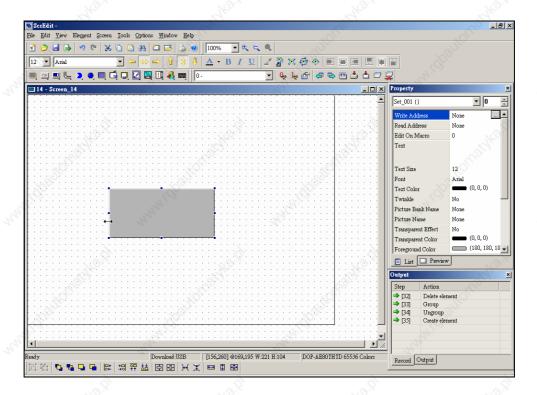


Fig. 2.6.13 Release the mouse left button to finish the modification

#### ■ Modify Element Height

The users can also use the mouse to modify the height of an element. When the mouse cursor becomes a two-arrow icon  $\updownarrow$ , the users can hold down it by left-clicking the mouse and modify the element height (Fig. 2.6.14, Fig. 2.6.15 and Fig. 2.6.16).

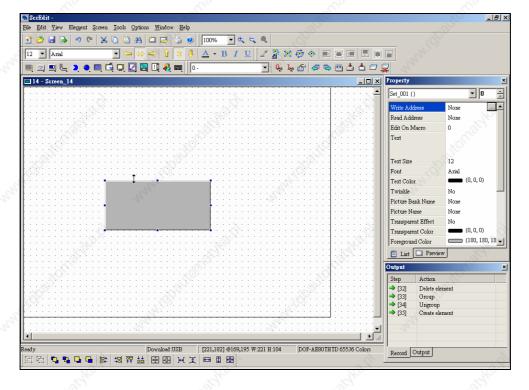


Fig. 2.6.14 Mouse cursor becomes a two-arrow icon ‡

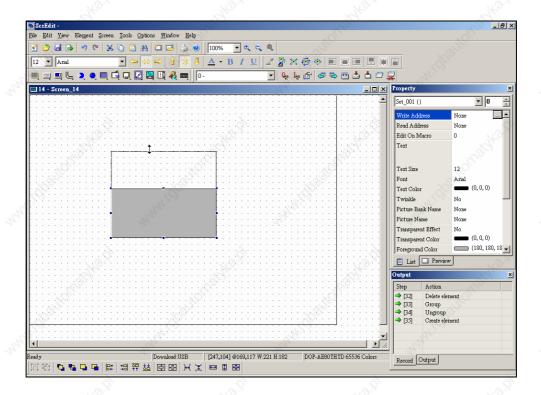


Fig. 2.6.15 Hold down  $\overline{\downarrow}$  by left-clicking the mouse and modify the element height

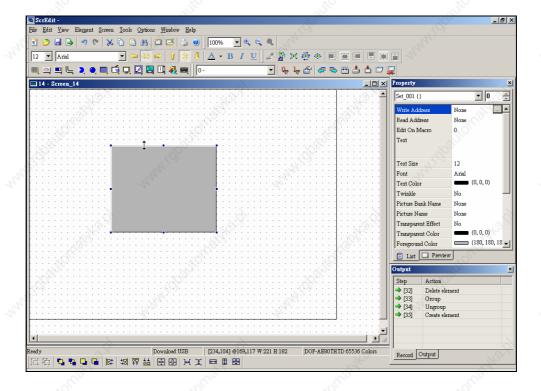


Fig. 2.6.16 Release the mouse left button to finish the modification

### ■ Modify Element Width and Height Simultaneously (Method 1)

The users can also use the mouse to modify the width and height of an element simultaneously. When the mouse cursor becomes a two-arrow icon  $\checkmark$ , the users can hold down it by left-clicking the mouse and modify the element width and height at the same time (Fig. 2.6.17, Fig. 2.6.18 and Fig. 2.6.19).

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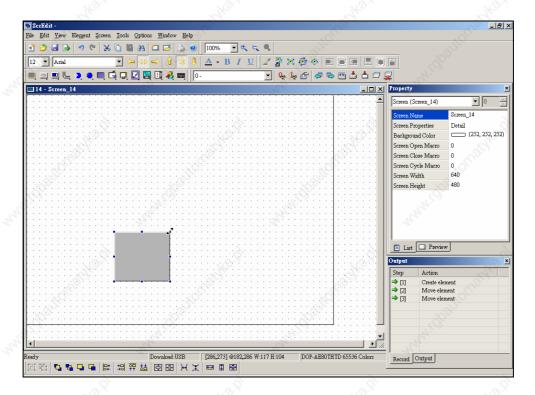


Fig. 2.6.17 Mouse cursor becomes a two-arrow icon ✓

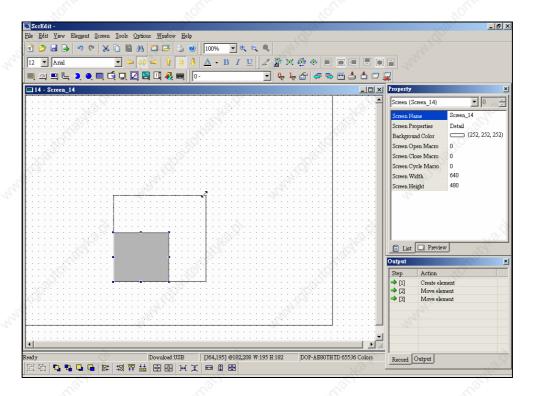


Fig. 2.6.18 Hold down ✓ by left-clicking the mouse and modify the element width and height

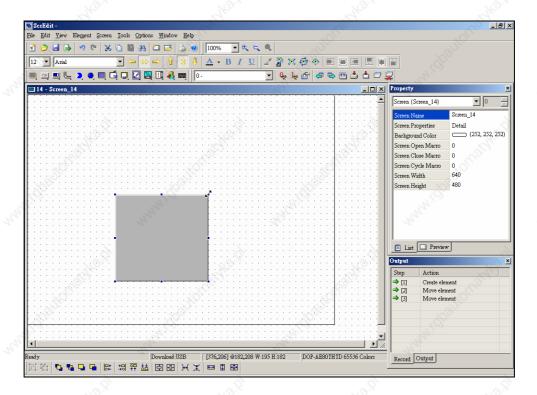


Fig. 2.6.19 Release the mouse left button to finish the modification

#### ■ Modify Element Width and Height Simultaneously (Method 2)

The users can also use the mouse to modify the width and height of an element simultaneously. When the mouse cursor becomes a two-arrow icon , the users can hold down it by left-clicking the mouse and modify the element width and height at the same time (Fig. 2.6.20, Fig. 2.6.21 and Fig. 2.6.22).

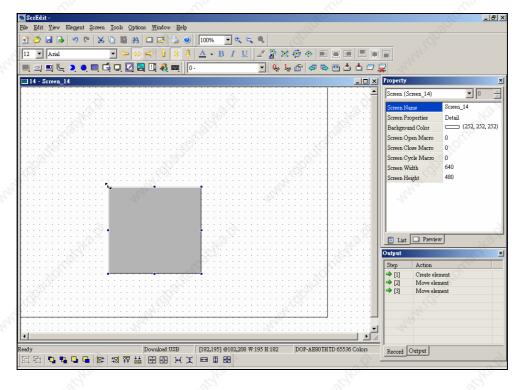


Fig. 2.6.20 Mouse cursor becomes a two-arrow icon \(^{\scrt{}}\)

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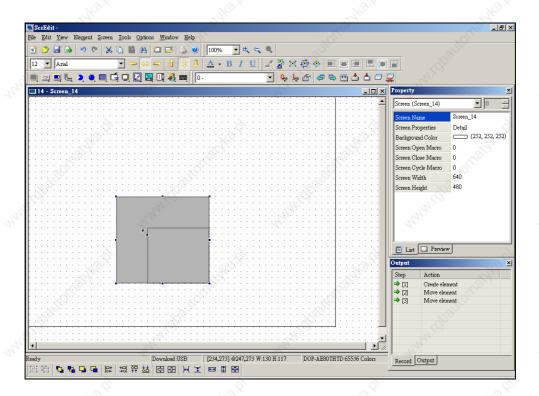


Fig. 2.6.21 Hold down by left-clicking the mouse and modify the element width and height

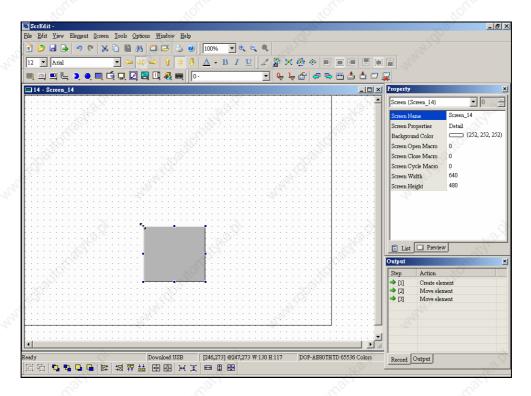


Fig. 2.6.22 Release the mouse left button to finish the modification

### ■ Input characters

The users can input a string of characters that **Windows®** operating system accepts in the property table. When the mouse cursor becomes an icon  $\Box$ , the users can start to input any characters that **Windows®** operating system accepts at where the cursor  $\Box$  blinks (Fig. 2.6.23 and Fig. 2.6.24).

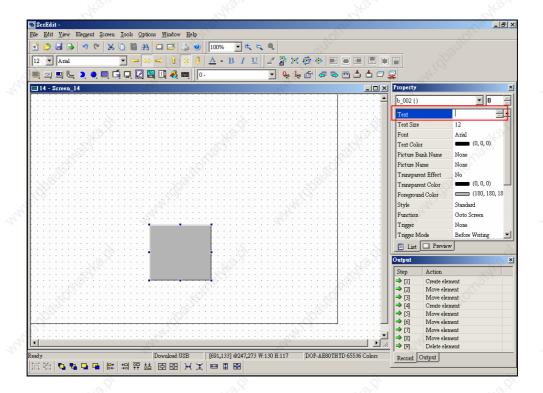


Fig. 2.6.23 Mouse cursor becomes an icon [ (Ready to input characters display)

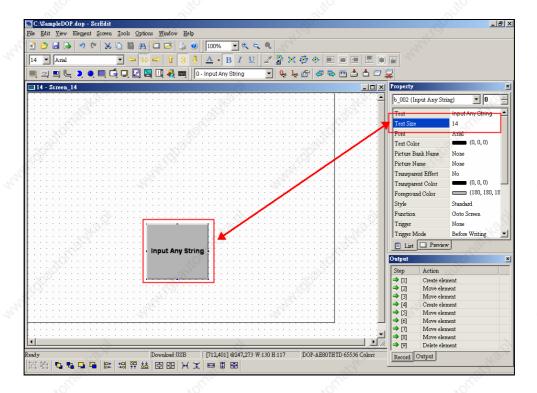


Fig. 2.6.24 Input characters for the element

### ■ Right-click the mouse

The users can find that different menu will pop up when right-clicking the mouse (Fig. 2.6.25, Fig. 2.6.26 and Fig. 2.6.27).

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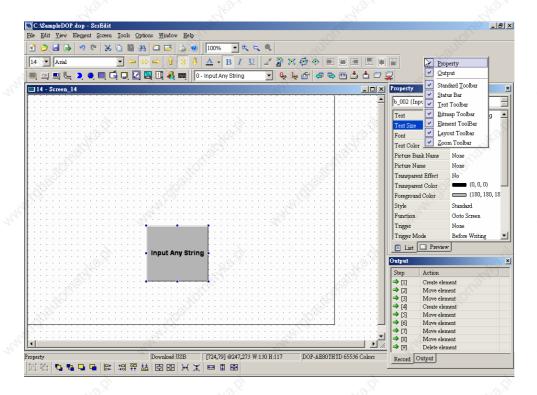


Fig. 2.6.25 Right-click the mouse on Toolbar – Toolbars display setup menu

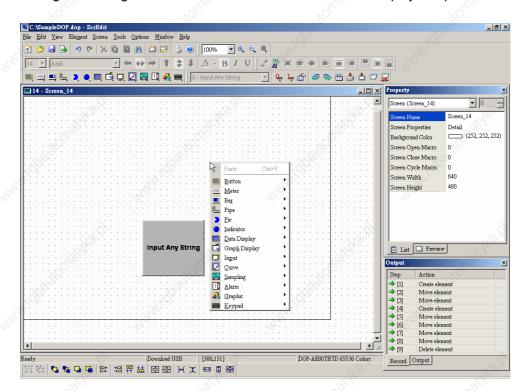


Fig. 2.6.26 Right-click the mouse in Work Place – Element Selection Menu

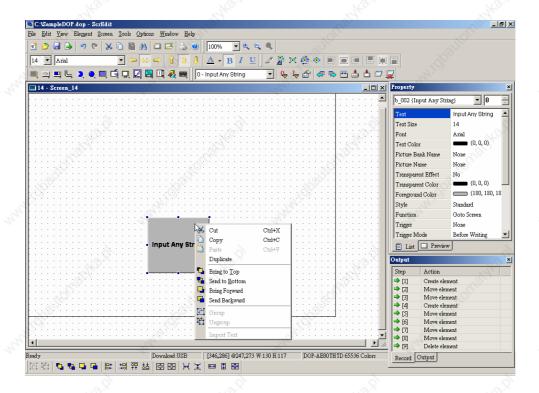


Fig. 2.6.27 Right-click the mouse on the element – Element Editing Menu

#### ■ Cross Reference Table

Cross Reference Table .

When creating and editing various kinds of elements, what usually happens is that the repeat use of the same address. In order to avoid this situation, ScrEdit provides the cross reference table function for the users' convenience and quick reference. The users can view the read and write addresses of the selected element and see their relationship or connection with the addresses of other elements, macro commands or system control area. The users can see how to choose **Cross Reference Table** command from menu bar in Fig. 2.6.28. Fig. 2.6.29 is one simple example to introduce the usage of this function. The first row of the cross reference table displays the referred element the users selected and the other rows below the first row displays the elements which have the same write address. The users can double-click the row and ScrEdit will switch to the corresponding screen of the referred address automatically. In Fig.2.6.29, ScrEdit switches to the corresponding screen of the referred element.

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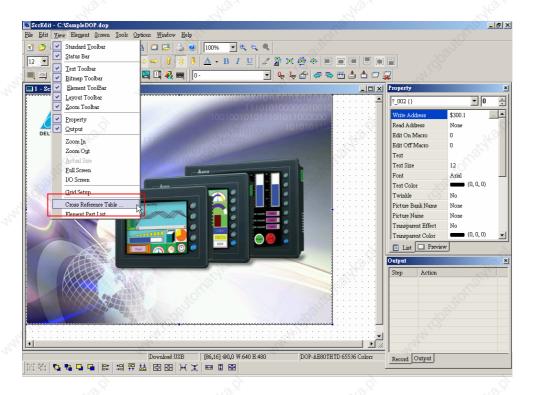


Fig. 2.6.28 Choosing Cross Reference Table command from menu bar

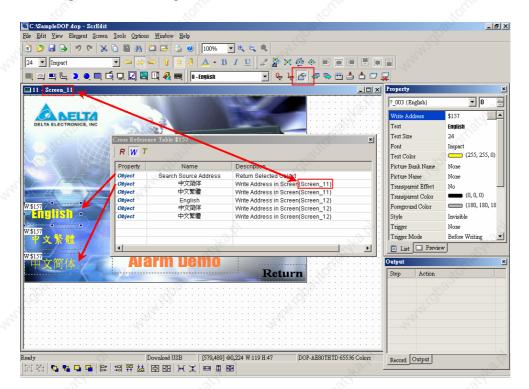


Fig. 2.6.29 Cross Reference Table dialog box

#### ■ Element Part List

Element Part List .

When **Element Part List** function is enabled (Fig. 2.6.30), ScrEdit will sort out and classify all the elements on the current screen. The users can click the tab to switch to the classification that the users want to view. The related addresses and corresponding properties will be listed in each classification (Name, Describe, Write / Read address, Trigger address, Trigger type, Interlock and Level) in each tab (Fig. 2.6.31). The users can double-click the column to let ScrEdit select the element automatically and allow the users to edit the detailed property of the selected element in property table.



Fig. 2.6.30 Choosing Element Part List command from menu bar

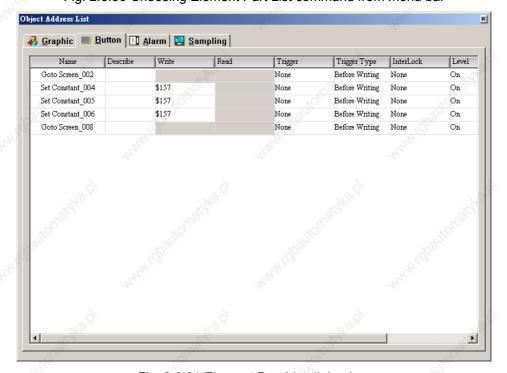


Fig. 2.6.31 Element Part List dialog box

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# 2.7 Menu Bar and Toolbar (Screen)

#### ■ Screen

In Screen options, ScrEdit provides some screen editing functions (Fig. 2.7.1). Please refer to the following sections for more detailed introduction.

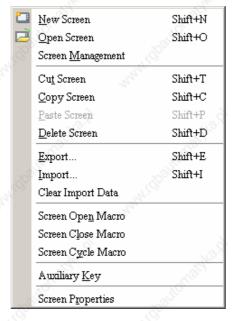


Fig. 2.7.1 Screen options

If the users press close box as in Fig. 2.7.2, it will hide the current screen without exiting. In Windows, it will exit the current screen by clicking close box and remind the users to save before exiting. However, in ScrEdit environment, the current screen will not be deleted and it will not remind the users to save also. The function of clicking close box only hides current screen.



Fig. 2.7.2 Close Screen

#### New Screen



Create a new screen. The users can choose **Screen > New** 

**Screen** (Fig. 2.7.3) or click the New Screen icon (Fig. 2.7.4), or use keyboard shortcuts by pressing **Shift + N** to open a new editing screen. The new screen can be named and numbered by the users. The setting dialog box is shown as Fig. 2.7.5.



Fig. 2.7.3 Choosing New Screen command from menu bar



Fig. 2.7.4 Choosing New Screen icon from toolbar

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Fig. 2.7.5 New Screen dialog box

### Open Screen



Shift+O Open an old screen. The users can choose Screen > Open

**Screen** (Fig. 2.7.6) or click the Open Screen icon (Fig. 2.7.7), or use keyboard shortcuts by pressing **Shift + O**. When choosing open screen, the users can preview each screen in Open Screen dialog box (Fig. 2.7.8).



Fig. 2.7.6 Choosing Open Screen command from menu bar



Fig. 2.7.7 Choosing Open Screen icon from toolbar

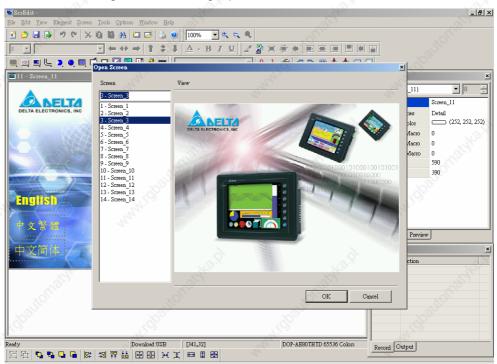


Fig. 2.7.8 Open Screen dialog box

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### Screen Management

Screen <u>M</u>anagement

When **Screen Management** function is enabled (Fig. 2.7.9, Fig. 2.7.10), the users can duplicate, paste and cut the screen by the mouse, just like the function of Windows Explorer in **Windows®** operating system. In Screen Management dialog box, the users can right click the mouse to manage all of the screens (Fig. 2.7.11). Right-clicking the mouse to select the **Edit Save Screen** function, and then the users can drag the mouse to determine the screen saver display (Fig. 2.7.12). For the setting of screen saver, please click **Options > Configuration > Other**.

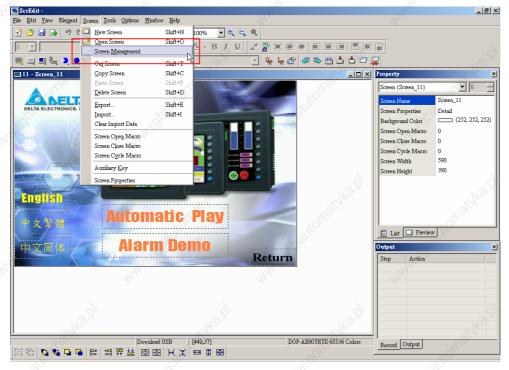


Fig. 2.7.9 Choosing Screen Management command from menu bar

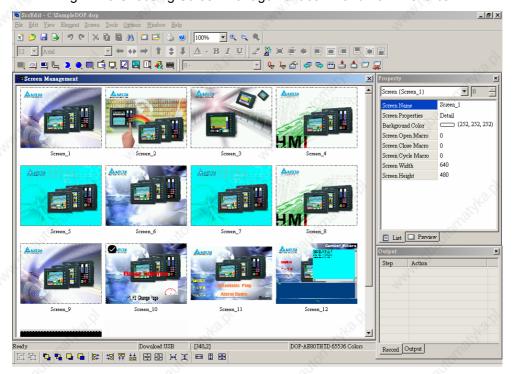


Fig. 2.7.10 Screen Management dialog box

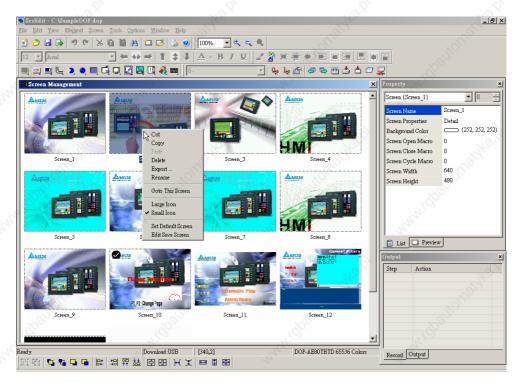


Fig. 2.7.11 Right-click the mouse to select Edit Save Screen function

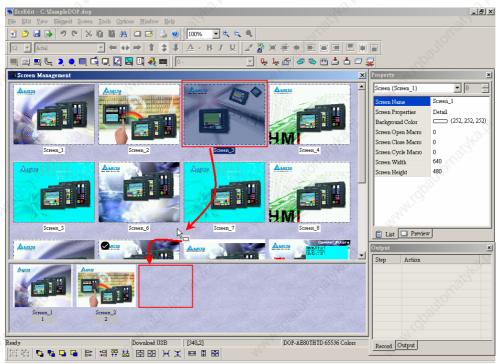


Fig. 2.7.12 Drag the mouse to determine the screen saver display

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#### ■ Cut Screen



Cut whole screen to clipboard, just like the Microsoft Office Clipboard function. The difference is that Microsoft Office Clipboard allows the users to cut text and graphic items and the Cut Screen function only allows the users to cut whole screen. The users can execute this function by choosing **Screen > Cut Screen** (Fig. 2.7.13), or use keyboard shortcuts by pressing **Shift + T** (Fig. 2.7.14).

Note: The users cannot undo the action of cut screen. It is the same as delete screen that screen will be lost but it can be pasted to get the same screen.

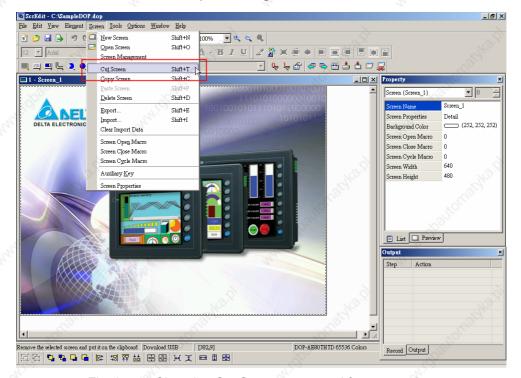


Fig. 2.7.13 Choosing Cut Screen command from menu bar



Fig. 2.7.14 Cut Screen message

# ■ Copy Screen



Copy whole screen. The users can execute this function by clicking **Screen > Copy Screen** (Fig. 2.7.15) or use keyboard shortcuts by pressing **Shift + C**.

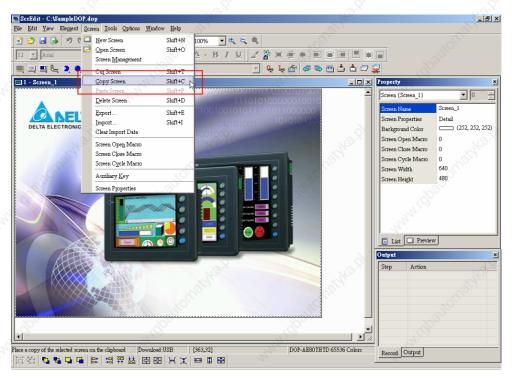


Fig. 2.7.15 Choosing Copy Screen command from menu bar

#### ■ Paste Screen



The users can paste screen by clicking **Screen > Paste Screen** (Fig. 2.7.16) or use keyboard shortcuts by pressing **Shift + P**. All screen setting will be the same as original screen after pasting but screen name will be given automatically.

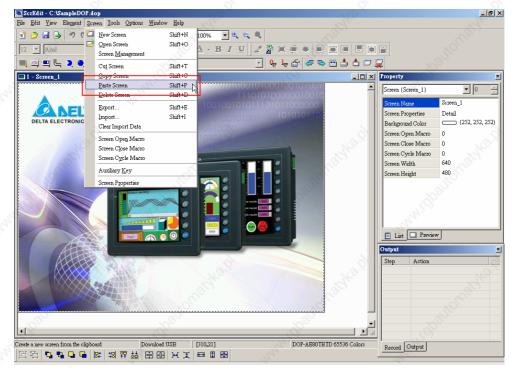


Fig. 2.7.16 Choosing Paste Screen command from menu bar

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#### Delete Screen



Delete the current editing screen or element. The users can delete screen by clicking **Screen > Delete Screen** (Fig. 2.7.13) or use keyboard shortcuts by pressing **Shift + D**.

Note: After executing Delete Screen, the users cannot undo the action of delete screen. Please consider it carefully before taking action.

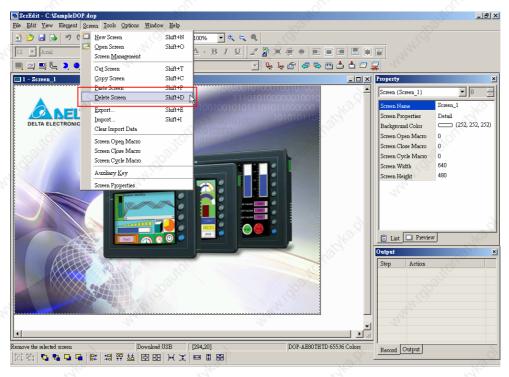


Fig. 2.7.17 Choosing Delete Screen command from menu bar

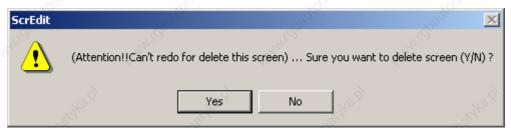


Fig. 2.7.18 Delete Screen Message

### ■ Export



Export an application to BMP format. The users can execute this function by clicking **Screen > Export** (Fig. 2.7.19) or clicking the

Export icon (Fig. 2.7.20), or use keyboard shortcuts by pressing **Shift + E**.

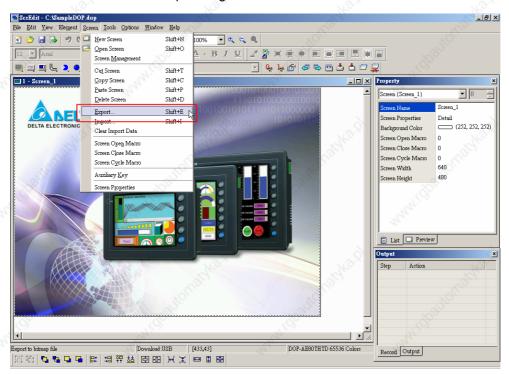


Fig. 2.7.19 Choosing Export command from menu bar

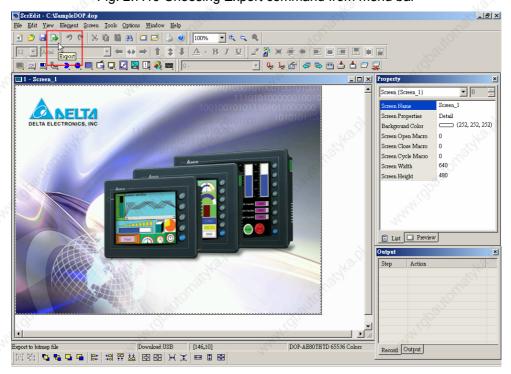


Fig. 2.7.20 Choosing Export icon from toolbar

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### ■ Import

Import... Shift+I

Import a picture to be the ground of the editing screen. Please notice that this ground of the editing screen is different than the base screen. The nature of imported picture differs greatly from that of base screen. The imported picture cannot exist in ScrEdit as an element. However, the base screen can be regarded as an element and then exist in the editing screen after compile operation is completed. The file types of available imported picture can be BMP, JPG and GIF, etc. The users can execute this function by clicking **Screen > Import** (Fig. 2.7.21) or use keyboard shortcuts by pressing **Shift + I**.

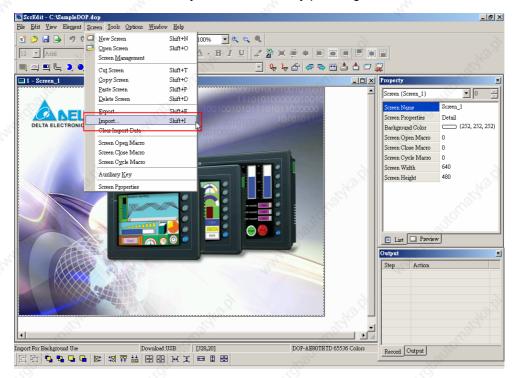


Fig. 2.7.21 Choosing Import command from menu bar

#### Clear Import Data

Clear Import Data

The users can free more disk space by clearing the imported data that the users do not want to use. Execute this function by clicking **Screen > Clear Import Data** (Fig. 2.7.22).

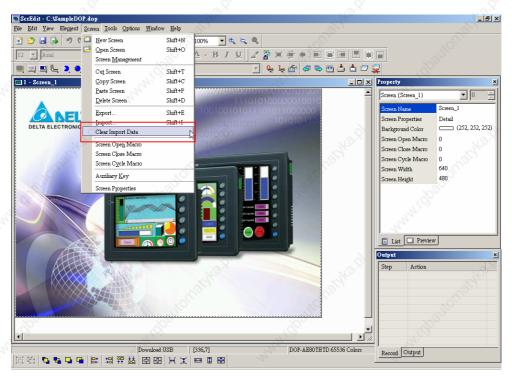


Fig. 2.7.22 Choosing Clear Import Data command from menu bar

#### ■ Screen Open Macro

Screen Open Macro

When **Screen Open Macro** function is selected, the Macro will be executed automatically once opening screen. (Please refer to Chapter 4 for the usage and editing method of Macro.)

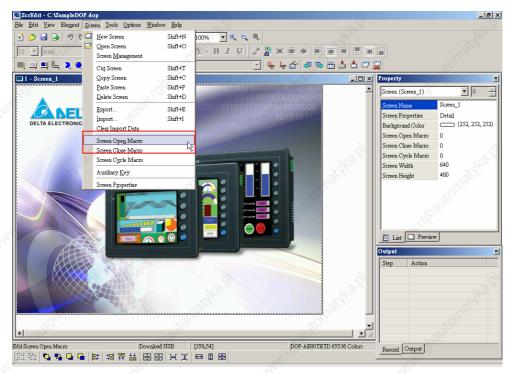


Fig. 2.7.23 Choosing Screen Open Marco command from menu bar

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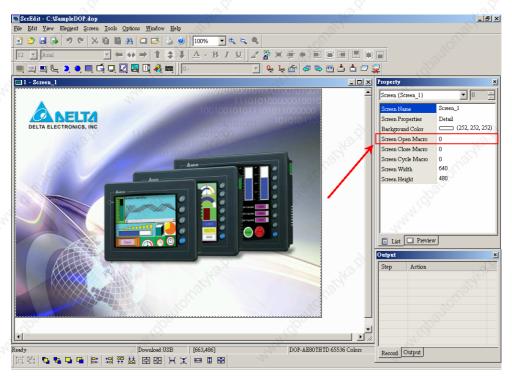


Fig. 2.7.24 Choosing Screen Open Macro from docking windows

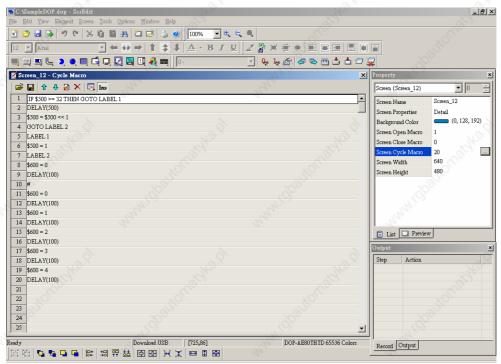


Fig. 2.7.25 Screen Open Marco editing environment

#### Screen Close Macro

Screen C<u>l</u>ose Macro

When **Screen Close Macro** function is selected, the Macro will be executed automatically once screen get closed. (Please refer to Chapter 4 for the usage and editing method of Macro.)

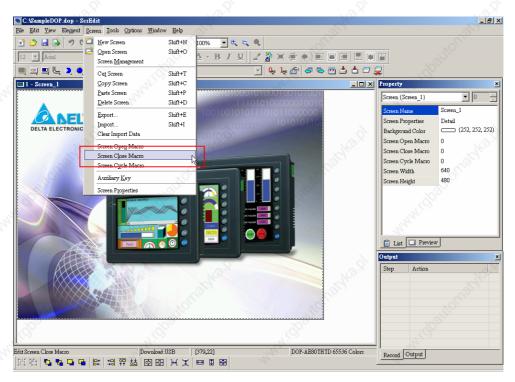


Fig. 2.7.26 Choosing Screen Close Marco command from menu bar

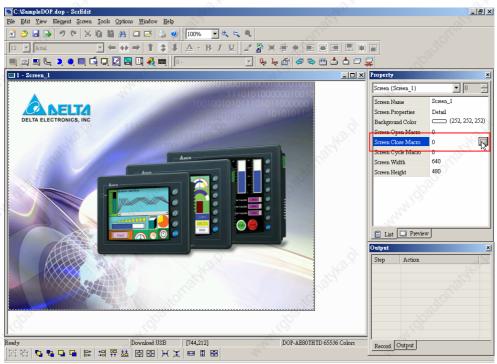


Fig. 2.7.27 Choosing Screen Close Macro from docking windows

### ■ Screen Cycle Macro

Screen Cycle Macro

When **Screen Cycle Macro** function is selected, the Macro will be executed periodically once screen get displayed. (Macro will be executed periodically by cycle time setting) (Please refer to Chapter 4 for the usage and editing method of Macro.)

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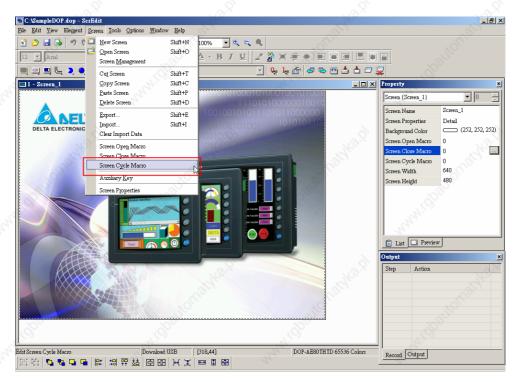


Fig. 2.7.28 Choosing Screen Cycle Marco command from menu bar

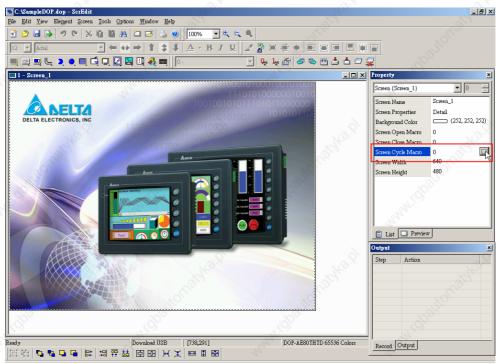


Fig. 2.7.29 Choosing Screen Cycle Macro from docking windows

### Auxiliary Key

Auxiliary <u>K</u>ey

DOP series HMI allows the users can determine the function of auxiliary keys in each screen. The users can execute this function by clicking **Screen > Auxiliary Key** (Fig. 2.7.30). Auxiliary key set up for each screen can be completed by pressing the auxiliary keys on HMI panel (Fig. 2.7.31) or on the screen (Fig. 2.7.32).

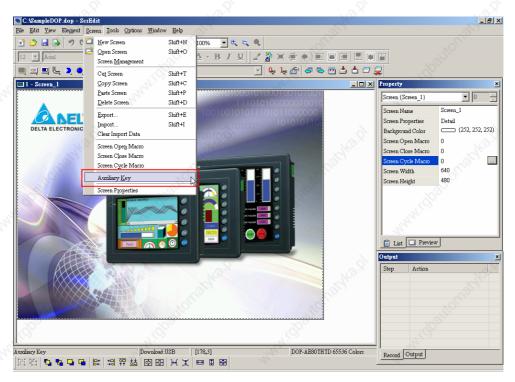


Fig. 2.7.30 Choosing Auxiliary Key command from menu bar



Fig. 2.7.31 Auxiliary Keys on HMI panel

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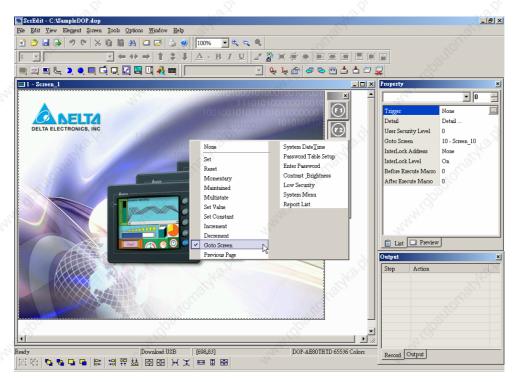


Fig. 2.7.32 Auxiliary Key setting on the screen

In Table 2.7.1, the users can know how many user-defined auxiliary keys are available for each model.

**DOP-A Series Model Name** Available User-defined Auxiliary Keys

Table. 2.7.1 Available user-defined auxiliary keys

| Available Oser-delified Advillary Neys  |
|---|
| 4                                       |
| 10 <sup>2</sup> 4 10 <sup>2</sup>       |
| 4 (A)                                   |
| 6                                       |
| 7 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| Available User-defined Auxiliary Keys   |
| . 4                                     |
| 4                                       |
| 4 10 <sup>170</sup>                     |
| 6 %                                     |
| 7                                       |
|   |

### **Screen Properties**

Screen Properties

The users can decide the properties of the current editing screen by clicking Screen > Screen Properties (Fig. 2.7.33) or choosing Screen Properties from docking windows to set the current screen (Fig. 2.7.34). For the setting of Screen Properties, please refer to Table 2.7.2.

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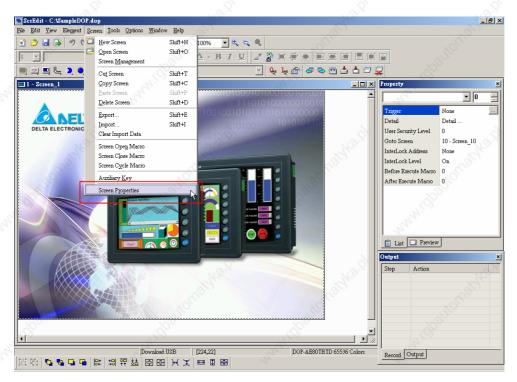


Fig. 2.7.33 Choosing Screen Properties command from menu bar

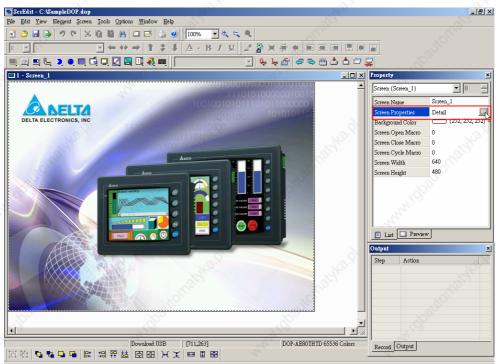


Fig. 2.7.34 Choosing Screen Properties from docking windows

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Table. 2.7.2 Screen Properties setting

| F  | unction                | Description   |
|--|------------------------|---|
| Screen Number                                    |                        | The screen number range is within 1~65535 and the number cannot be repeated.  |
| Screen<br>Application                            | General View<br>Screen | Regarded as general view screen. The element created by the users can be downloaded to HMI after compile operation and display on HMI LCD display. The input type element, such as Button, Input and Keypad can be pressed on HMI display and used to execute print function.   |
| 1. 18 Mar 19 19 19 19 19 19 19 19 19 19 19 19 19 | Apply Print<br>Screen  | <ol> <li>Regarded as print screen. The printer can print the element created by the users after compile operation. This option is only available in DOP-AE series HMI and only can be enabled after the printer is set. For the setting of the printer, please click Option &gt; Configuration &gt; Print (Fig. 2.7.35).</li> <li>When Apply Print Screen function is selected, the editing range will be scaled to the actual paper size of the printer. The users can only print the elements within the range of the paper size. When the users select this option, all history data or sampling records of the editing elements can be printed out. This option is usually used for print typesetting.</li> </ol> |
|  | Mar.                   | The users can find printer setting by clicking Option > Configuration > Print shown as Fig. 2.7.35 below.   |
| Kaghadi.   | unidhaitanatha h       | Standard Communication Print Default Other  Standard Printer  Printer  EPSON STYLUS PHOTO  Paper  A4  Quality  72 DPI  Default Other  Interface  C Parallel Port  C USB  Direction  C Vertical C Horizontal   |
| 18 <sup>18</sup> 21                              | Widgelfellighterig     | Margin Top: 0   |
|  |                        | Then, then, then,   |
| LOB/LOS)   | Laitha gi              | OK Cancel   |
|  | (d)balto,              | Fig. 2.7.35 Print tab in Configuration option   |

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| Setting I      | Check the check<br>box next to "This<br>screen is a sub-<br>screen" | The check box next to "This screen is a sub-screen" can be checked only when General View Screen option is selected. Therefore, before setting sub-screen function, please ensure General View Screen option is selected.    This screen is a sub-screen   |
|----------------|---|--|
| ratific d      |   | This screen is a sub-screen  |
|                |   | <u>Width</u> <u>Height</u> 390   |
| ughka d        |   | C Shown on the display center  Showr  X  0  Y  Use Title Bar   |
|                |   | Fig. 2.7.36 Sub-screen setting   |
| 4              | Screen Width  | It is used to set the width of sub-screen and the unit is Pixel.   |
|                | Screen Height   | It is used to set the height of sub-screen and the unit is Pixel.  |
|                | Sub-screen<br>Position  | The users can decide the sub-screen is shown on the center position of HMI display or specify the display position freely. Only input the coordinate value directly (X and Y axis) or press the mouse button to drag the sub-screen to the position the users decided (Fig. 2.7.37).   |
| regalie ig     |   | DELTA ELECTRONICS, INC   |
| STORING ST     |   | A A STATE OF THE S |
| 20 Hay         | THE D. 100 1  | Fig. 2.7.37 Sub-screen position  |
| o Co           | Title Bar   | When the check box next to "Use Title Bar" is checked, the title bar will be shown when opening sub-screen.  |
| Cycle Macro [  | Delay Time  | It is used to set Cycle Macro Delay Time when this screen is executed every time. The range of the cycle macro delay time is within 100ms ~ 5s.  |
| Fast Refresh I | Rate  | There are three levels of the Fast Refresh Rate and they are High, Medium and Low. The purpose of this function is used to make some elements can be displayed immediately when switching screen. Please notice that it only allows four elements can be renewed immediately in each screen.   |

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| Function            |              | Description   |  |  |  |  |  |
|---------------------|--------------|---|--|--|--|--|--|
| Hard Copy<br>Region | Setting      | The users can find this function in DOP-AE series HMI only. If the users want to enable this function, setting the printer in advance is necessary. Please go to Option > Configuration > Print (Fig. 2.7.35) and select the printer first. When this function is enabled, if one report list button is created and its assigned output device is a printer, HMI will check for the screen that print typesetting has been executed and check if it is necessary to output the screen to the printer for printing out. If the screen without print typesetting needs to be output to HMI, HMI will refer to the setting in Hard Copy Region option and execute the screen-printing. |  |  |  |  |  |
|                     | Top-Left     | It is used to set the region of HMI printing area (also called Hard Copy  |  |  |  |  |  |
| zí.                 | Right-Bottom | Region) and the unit is Pixel.  |  |  |  |  |  |
| Base Screen         | box next to  | Every screen can specify any one of editing screen as base screen. When the check box next to "Need a base screen" is checked, the base screen will be moved to the back (behind all other elements) as a ground picture. After compile operation is completed and the screen data is downloaded to HMI, HMI will execute all of the elements on the base screen correctly.   |  |  |  |  |  |

## 2.8 Menu Bar and Toolbar (Tools)

#### ■ Tools

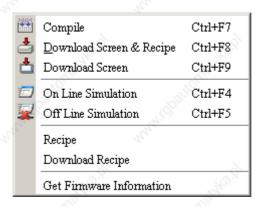


Fig. 2.8.1 Tools options

#### ■ Compile



It is used to compile editing screen to the format for HMI. If this application is a new application, it will remind the users of saving before compiling. If this application has been saved or it is an old application, it will compile directly. During compiling, all of the compiling messages, including any errors, will be written to output field. An object file would be produced if there were no error during compiling process. The users can execute this function by clicking **Tools > Compile** (Fig. 2.8.2) or clicking icon

directly (Fig. 2.8.3) or using keyboard shortcuts by pressing **Ctrl + F7**.

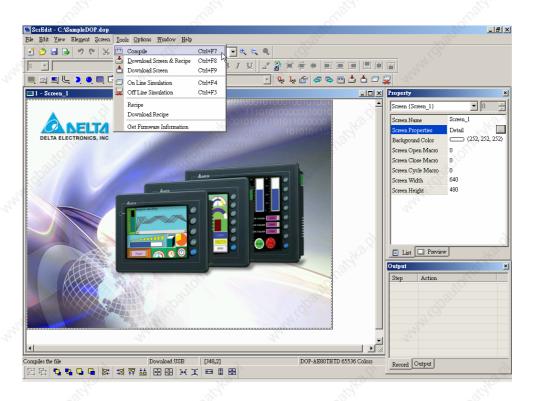


Fig. 2.8.2 Choosing Compile command from menu bar

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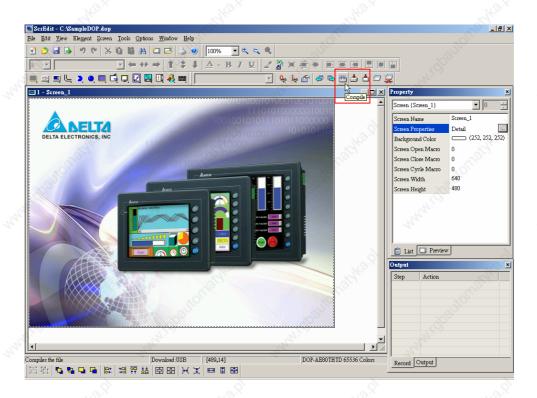
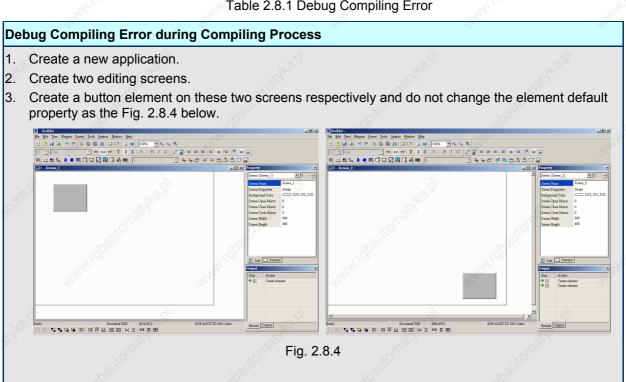


Fig. 2.8.3 Choosing Compile icon from toolbar

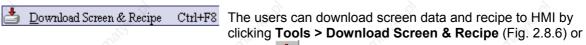
Table 2.8.1 Debug Compiling Error



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## Debug Compiling Error during Compiling Process When pressing icon to execute compile operation, error message dialog box will pop up to warn the users of compiling error and show how many errors there are. In Fig. 2.8.5, we can see that there are two errors occurred and they are all displayed in the output window. 💌 🖭 💥 🗋 👸 🔠 🖾 😅 🔰 🐠 🛮 100% 🕝 🔩 🔍 🧠 📖 🗷 🖳 📞 🧶 📖 🛱 🖫 🔯 🖺 🗓 🦺 📺 🔽 📞 🍇 🚰 ᄸ 🕾 🎬 📥 🗖 💆 (252, 252, 252 creen Open Macro Screen Cycle Macro 🖺 List 🔲 Preview Output Focus 🗶 Element address input error Parse Screen Open Macro ... OK Parse Screen Close Macro ... OK Parse Screen Cycle Macro ... OK Set (482, 361) Element address input er ord Output 照 疫 😘 😘 🕒 🕒 🔛 🖽 秤 盐 📵 🖭 🛏 🗷 🖼 🖽 Download:USB [541,25] @21,16 W:127 H:104 DOP-A10TCTD 256 Colors NUM Fig. 2.8.5 Compiling errors during compiling process Once error occurs, the correspondent message will display in output window. The users can click the error message and ScrEdit will switch to error element window automatically.

#### ■ Download Screen & Recipe



clicking icon directly (Fig. 2.8.7) or using keyboard shortcuts by pressing **Ctrl + F8**. If PC cannot connect to HMI, the error messages will display and warn the users (Fig. 2.8.9 and Fig. 2.8.10). The users can set download interface by clicking Options > Configuration or by clicking Options > Environment. The download interface can be USB or RS-232.

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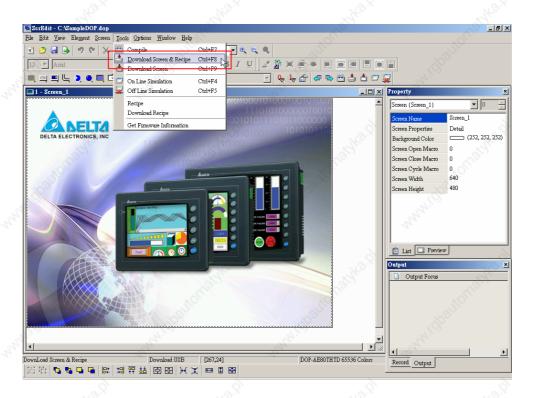


Fig. 2.8.6 Choosing Download Screen & Recipe command from menu bar

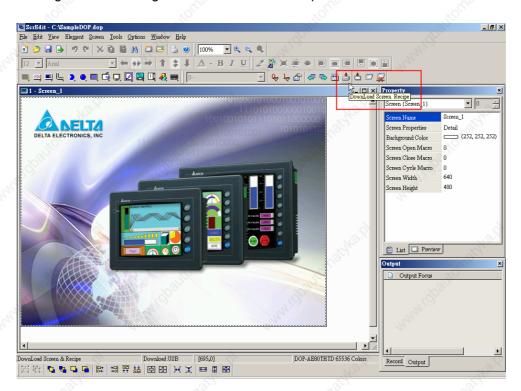


Fig. 2.8.7 Choosing Download Screen & Recipe icon from toolbar

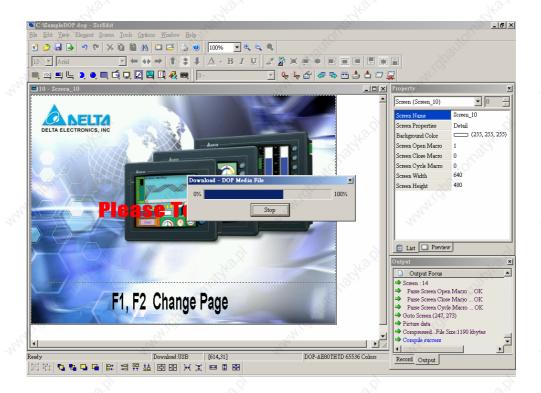


Fig. 2.8.8 Start to download (the progress will be from 0 to 100%)



Fig. 2.8.9 USB open error message



Fig. 2.8.10 USB disconnect error message

#### Download Screen



It is only used to download screen data to HMI. The users can execute it by clicking **Tools > Download Screen** (Fig. 2.8.11) or

clicking icon directly (Fig. 2.8.12) or using keyboard shortcuts by pressing **Ctrl + F9**. For the download screen, please refer to Fig. 2.8.8 above.

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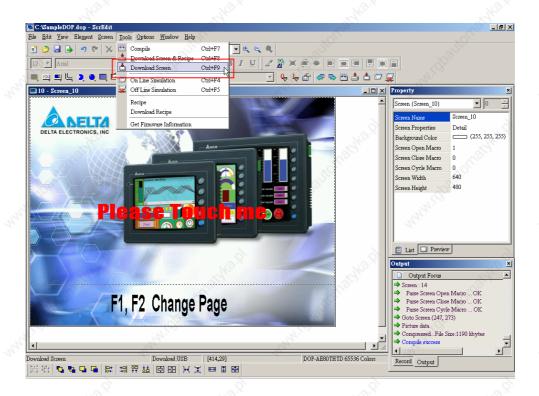


Fig. 2.8.11 Choosing Download Screen command from menu bar

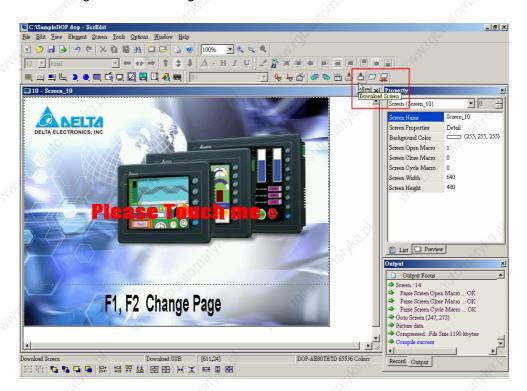
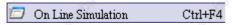


Fig. 2.8.12 Choosing Download Screen icon from toolbar

#### On Line Simulation



It is used to simulate DOP series HMI by computer but HMI should also connect to PLC first to drive PLC by PC simulation through PC communication port (COM1 and 2). Therefore, the users cannot execute online simulation without connecting PLC. But the users can execute offline simulation without connecting PLC. On Line Simulation function can execute by clicking **Tools** 

> On Line Simulation (Fig. 2.8.13) or clicking icon directly (Fig. 2.8.14) or using keyboard shortcuts by pressing **Ctrl + F4**. For On Line Simulation Screen, the users can refer to Fig. 2.8.15 below.

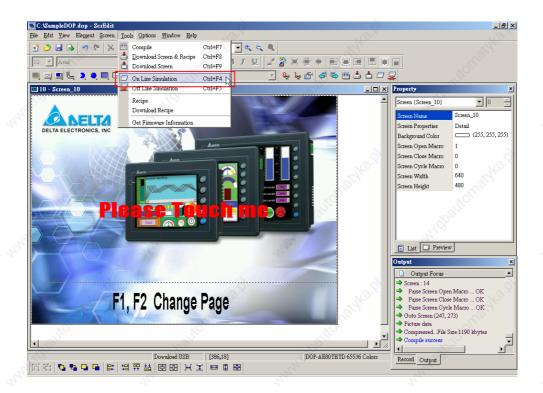


Fig. 2.8.13 Choosing On Line Simulation command from menu bar

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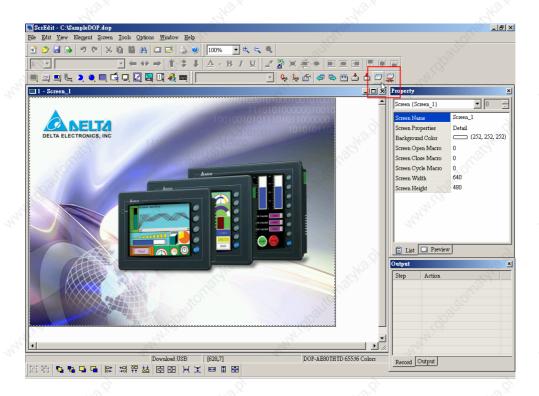
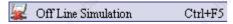


Fig. 2.8.14 Choosing On Line Simulation icon from toolbar



Fig. 2.8.15 On Line Simulation Screen

#### Off Line Simulation



It is used to test if the editing screen, read/write addresses and Macro on is correct on developed program without connecting to PLC. The users can execute this function by clicking **Tools > Off** 

**Line Simulation** (Fig. 2.8.16) or clicking icon (Fig. 2.8.17) or using keyboard shortcuts by pressing **Ctrl + F5**.

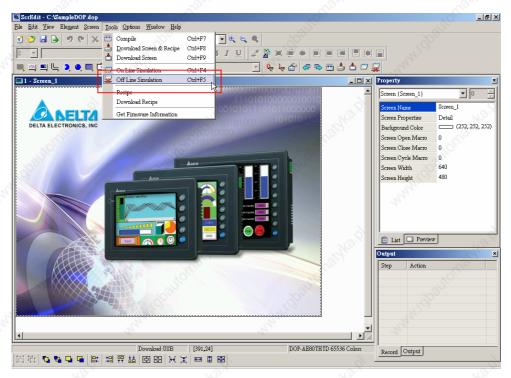


Fig. 2.8.16 Choosing Off Line Simulation command from menu bar

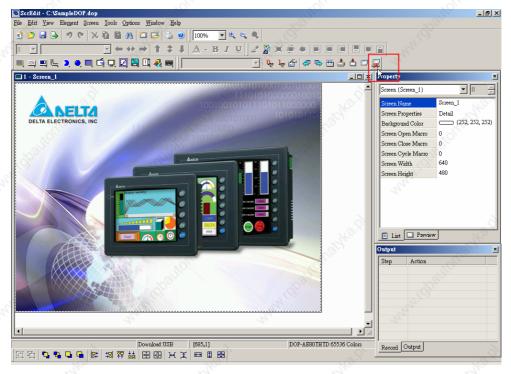


Fig. 2.8.17 Choosing Off Line Simulation icon from toolbar

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#### ■ Recipe

Recipe

Recipe function provides the controller a convenient parameter input method. The users can transmit the designated parameter to the controller by using HMI recipe after finishing editing recipe. Recipe can be set and modified by recipe dialog box and can be saved and used independently without application. Therefore, recipes can be used for all brands of models. Before using recipe, the users should enable recipe function first by clicking Tools > Recipe (Refer to Fig. 2.8.18). After the recipe function is enabled, the Recipe Setup dialog box will pop up (Fig. 2.8.19) and then the users can start to edit the recipe. For the setting of Recipe Setup dialog box, please refer to Table 2.8.2 below.

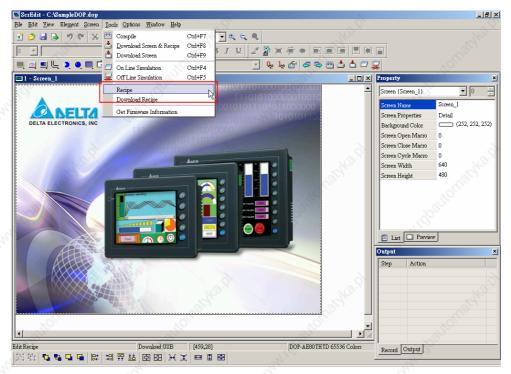


Fig. 2.8.18 Choosing Recipe command from menu bar

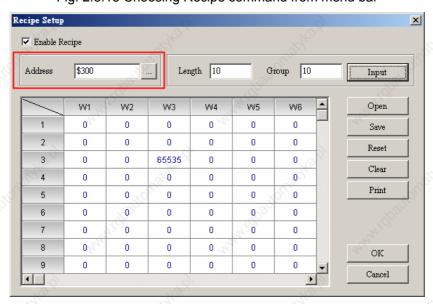
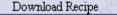


Fig. 2.8.19 Recipe Setup dialog box

In Fig. 2.8.19, there are 10 groups of parameter inputs and the length for each group is 10 WORDs. The users can determine which group is transmitted to PLC designated address (circled in red color in Fig. 2.8.19) by HMI recipe parameter.

#### Download Recipe



Downloads recipe to HMI. It can save time when the users want to download recipe date only. What the users need to do is to click **Tools > Download Recipe** and then the recipe data can be downloaded to HMI. The general extension name of recipe file is rcp (Fig. 2.8.20).

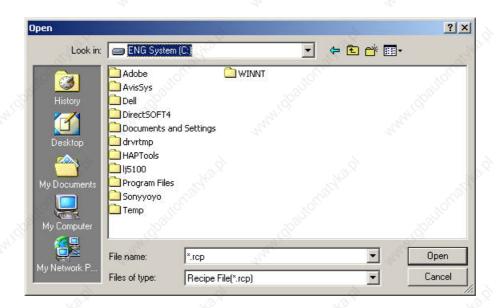


Fig. 2.8.20 Download Recipe

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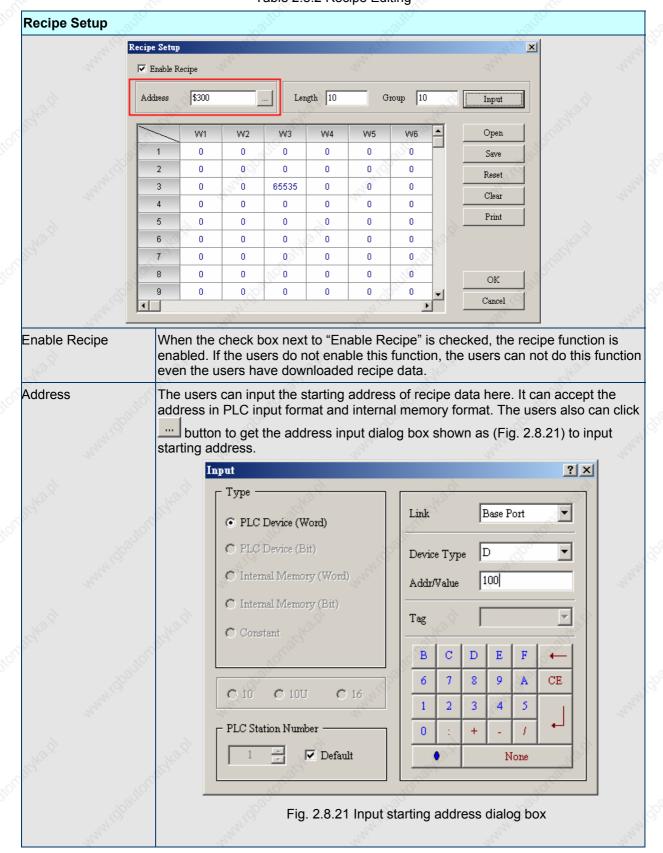
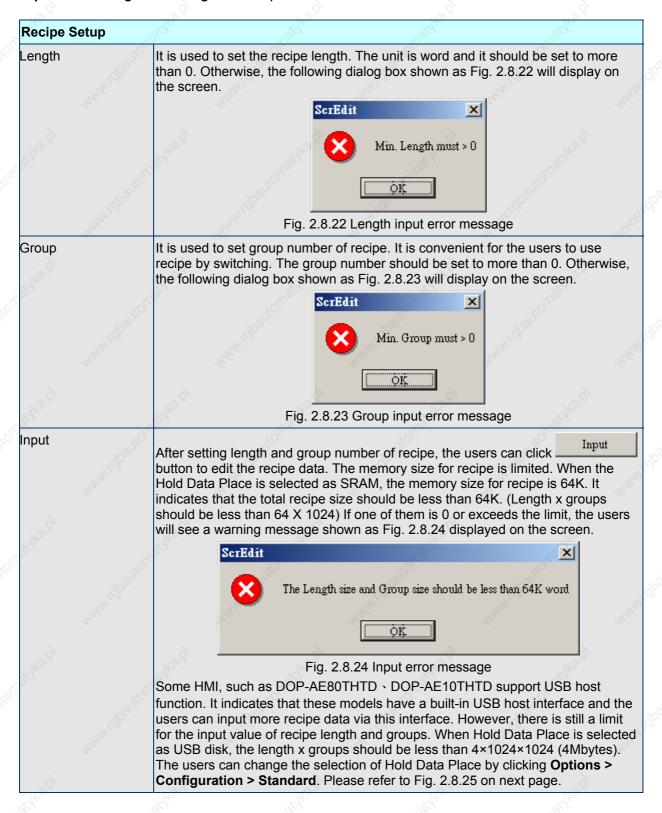
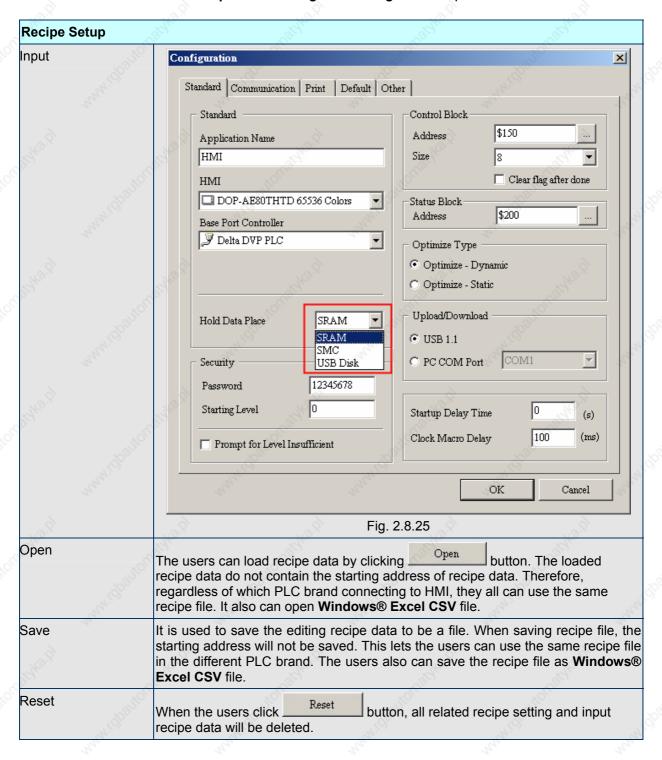


Table 2.8.2 Recipe Editing

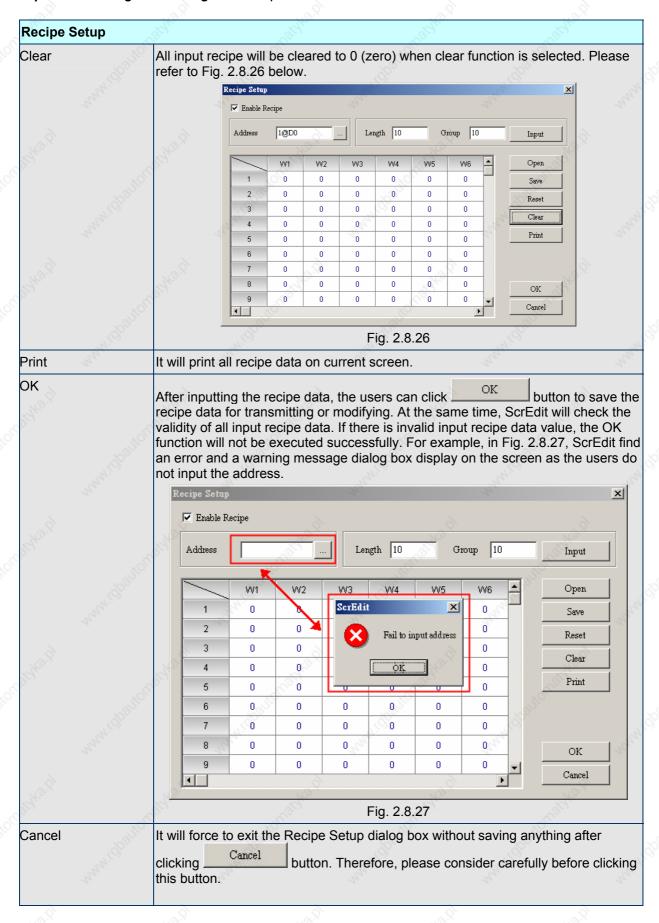
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## 2.9 Menu Bar and Toolbar (Options)

#### ■ Options



Fig. 2.9.1 Options options

## ■ Configuration

Configuration ..

The users can execute this function by clicking **Options** > **Configuration** (Fig. 2.9.2). This dialog box is divided into five tabs: Standard, Communication, Print, Default and Other. These tabs are covered in detail in the following sections.

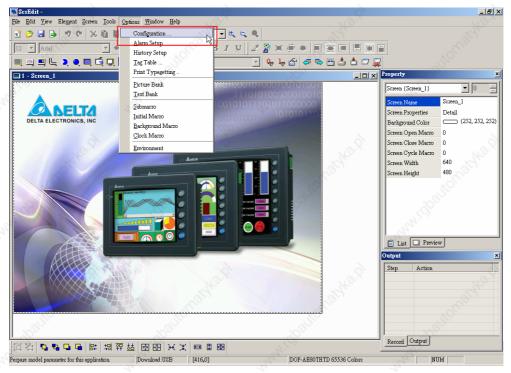


Fig. 2.9.2 Choosing Configuration command from menu bar

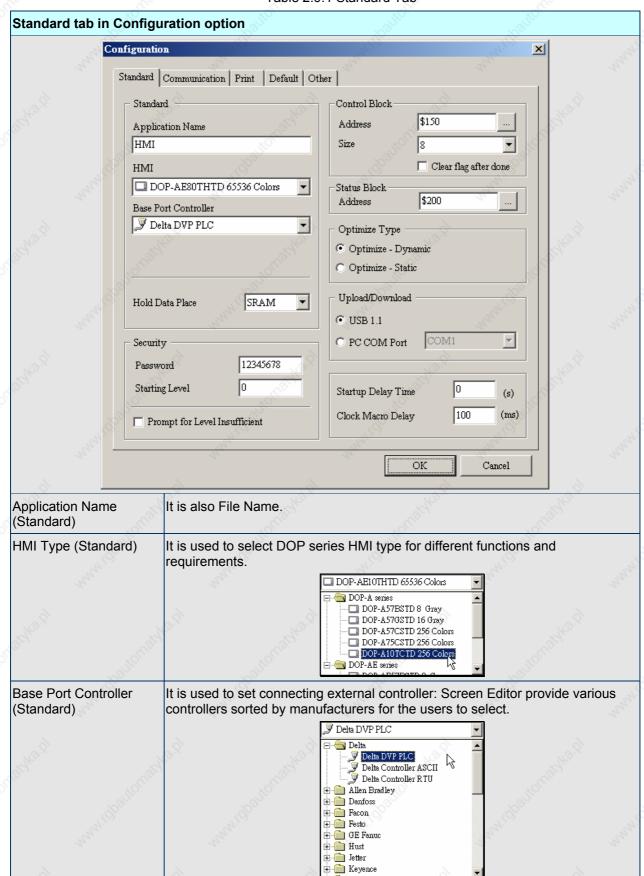


Table 2.9.1 Standard Tab

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| - 142 - 1                     | 40   | 140  | 140  | 145  |              |  |
|-------------------------------|--|--|--|--|--------------|--|
| Standard tab in Configu       | uration option   | May .  | The state of the s |  |              |  |
| Hold Data Place<br>(Standard) | The backup memory data can be saved in SRAM, SMC and USB Disk these three places. The users can select one of them from the Hold Data Place dropdown list. However, USB Disk selection is available in some HMI types only. If DOP-A57BSTD is chosen, the backup memory data only can be saved in SRAM and SMC.                      |  |  |  |              |  |
| Password (Security)           |  |  |  | nere are 8 levels for the protection password for the  | file         |  |
| Starting Level (Security)     | It is used to set s  | tart-up priorit  | y. The highest lev   | el is 7 and the lowest level is  | s 0.         |  |
| Address (Control Block)       | It is used to set th   | ne starting ac   | ddress of system o   | ontrol block.  | The Park     |  |
| Size (Control Block)          | The length of control block will be different depending on different function. (For example, the length should be at least 8 Words when using multi-language function). For more detailed information of system control block, please refer to Chapter 5.  Note: Please notice that the when the control block size is set to 0, the |  |  |  |              |  |
| '92 <sub>02</sub> ,           | control block fu   |  |  | 'R <sub>22</sub>   |              |  |
| Clear flag after done         |  | If this check box is checked, the register in the control block will be cleared to 0 when any operation has been finished in the control block.  |  |  |              |  |
| Address (Status Block)        | constant 6 words<br>Refer to chapter   | It is used to set the starting address of system status block. The length is constant 6 words. Each word indicates the different status value of HMI system. Refer to chapter 4 for important parameters of system status area. For more detailed information of system status block, please refer to Chapter 5. |  |  |              |  |
| Optimize Type                 | Optimize -<br>Dynamic  | addresses of Please notion that read action in a short tire.   | on the screen.<br>ce that when this followers  | otimize all elements that rea<br>unction is selected, all eleme<br>reen will display incorrect va<br>lue will become normal afte | ents<br>llue |  |
| io.                           | Optimize - Static  |  | elements that rea  | d addresses on the screen  |              |  |
| Upload / Download             | The users can select USB or PC communication port (i.e. RS-232) to upload and download.  |  |  |  |              |  |
| Startup Delay Time            | It is used to set delay time for waiting the startup of external controller (i.e. PLC). PLC. The range is 0 ~ 255 seconds.   |  |  |  |              |  |
| Clock Macro Delay             | It is used to set interval time when executing clock macro every time. The range is 100 ~ 65535ms.   |  |  |  |              |  |

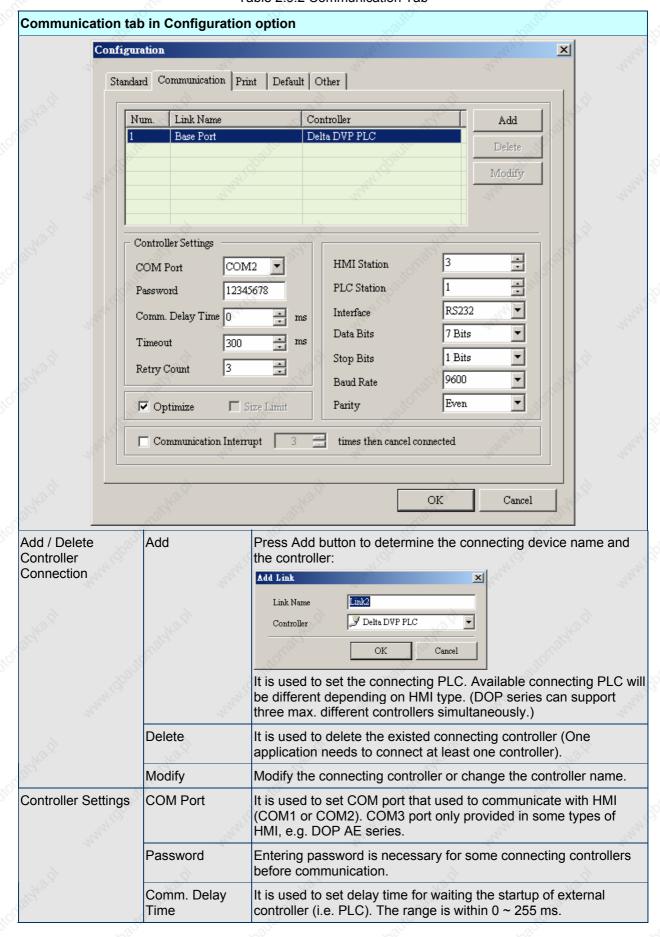
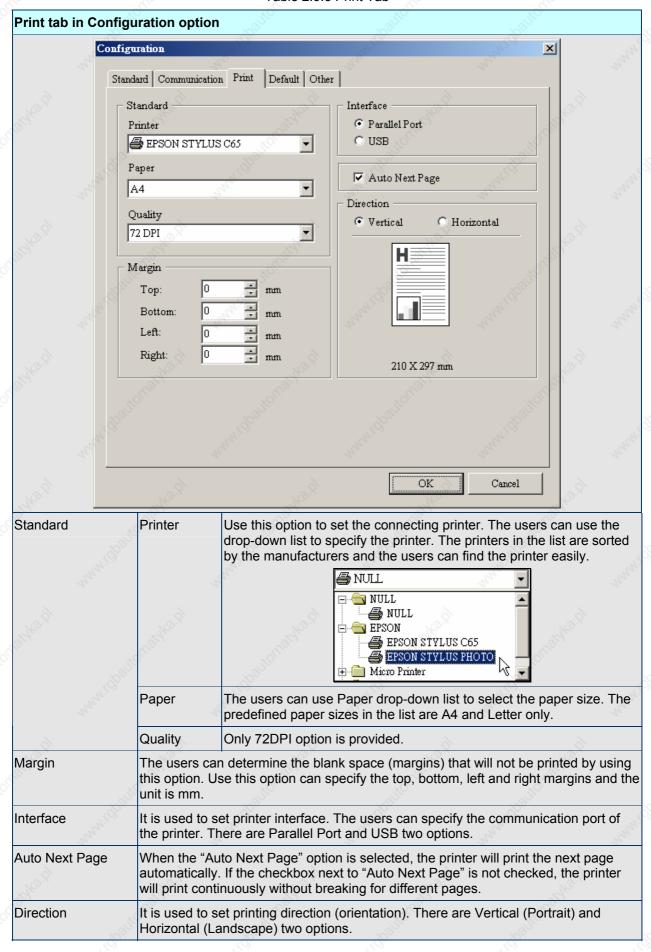


Table 2.9.2 Communication Tab

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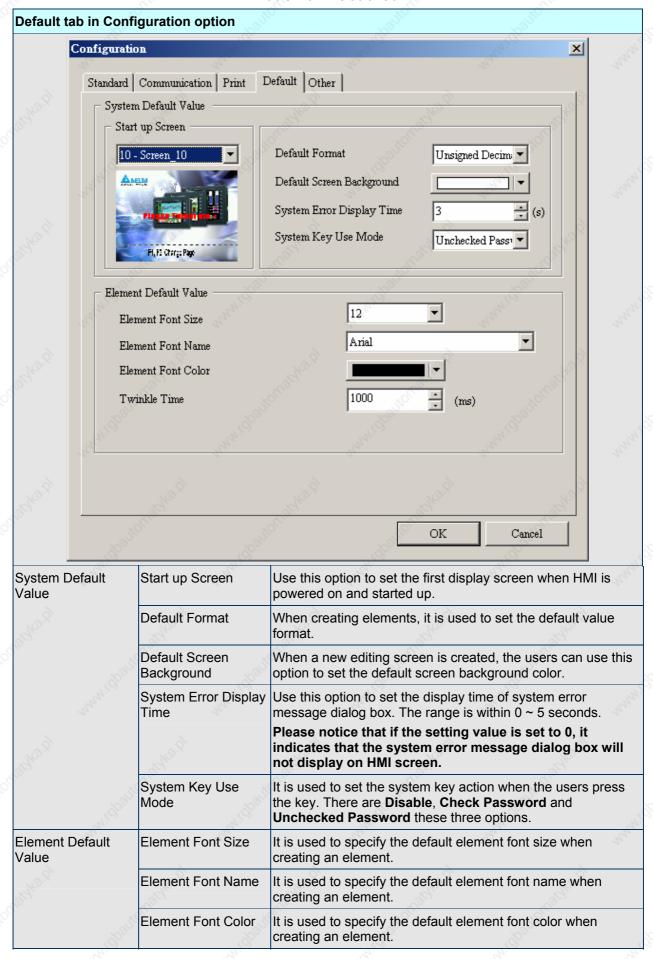
| Commu | nication ta | b in Configuratio                                  | n option  | Tatell .  | Laide.   |
|-------|-------------|--|---|---|--|
|       | Jaban       | Timeout  | It is used to set communication with the external control   |   |  |
|       |             | Retry Count  | HMI will try to send components of controller repeatedly if the during communication. The retry count times. A contappear unless the number range is within 0 ~ 255 | the external controll<br>This option is used<br>nmunication error doer of retry count tin | er does not respond<br>to set the number of<br>ialog box will not    |
|       |             | Optimize   | Use this option to enabl function is enabled, all r be optimized.   |   |  |
|       |             | Size Limit   | This function is availabl<br>Standard tab is selected<br>updating speed may slo<br>address.   | d. It is used to avoid  | I that the screen  |
|       |             | is checked, HMI communication in the communication | box next to "Communicat<br>will stop communicating v<br>nterrupt times is reached.<br>on error dialog box will alv<br>rror occurs after HMI has                     | with the external cou<br>The purpose of this<br>ways show on the H                        | ntrollers after the<br>s function is to avoid<br>HMI screen when the |
|       |             | HMI Station  | It is used to set HMI sta   | ation number. The ra  | ange is within 0 ~ 255.  |
|       |             | PLC Station  | It is used to set PLC stanumber, it will use this   |   |  |
|       |             | Interface  | It is used to set commu<br>RS232. There are RS23  |   |  |
|       |             | Data Bits  | There are 7 Bits and 8 I  | Bits two options.   | 2  |
|       |             | Stop Bits  | There are 1 Bits and 2 I  | Bits two options.   | . 143.5°   |
|       |             | Baud Rate  | Communication baud ra 57600 and 115200 thes value directly also but the 187500.   | se options. The use   | rs can enter the setting   |
|       |             | Parity   | There are None, Odd a   | nd Even three option  | ns.  |

Table 2.9.3 Print Tab



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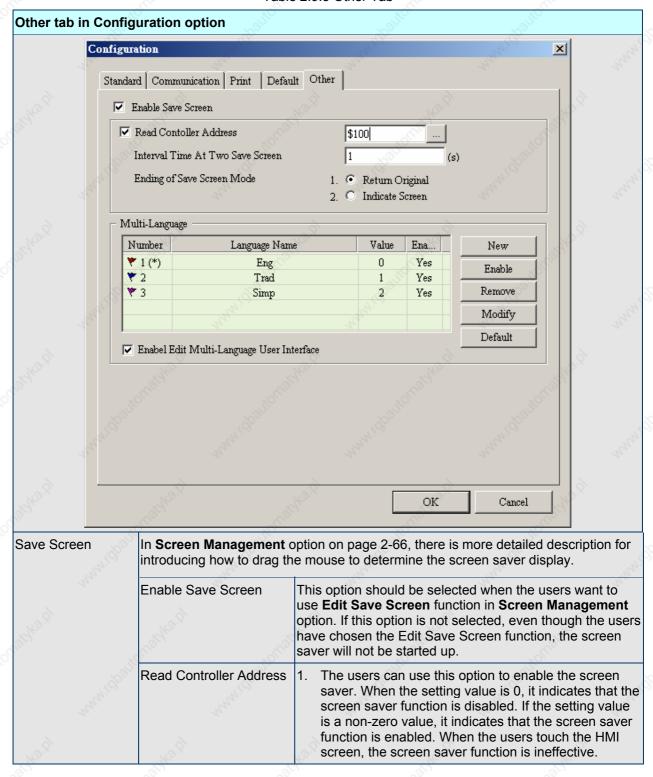
Table 2.9.4 Default Tab



| Default tab in Configuration option | Naget Property of the Control of the | Cardy. | Think.                |
|-------------------------------------|--|--------|-----------------------|
| Twinkle Time                        | It is used to sp<br>creating an ele  | - CAC  | ent twinkle time when |

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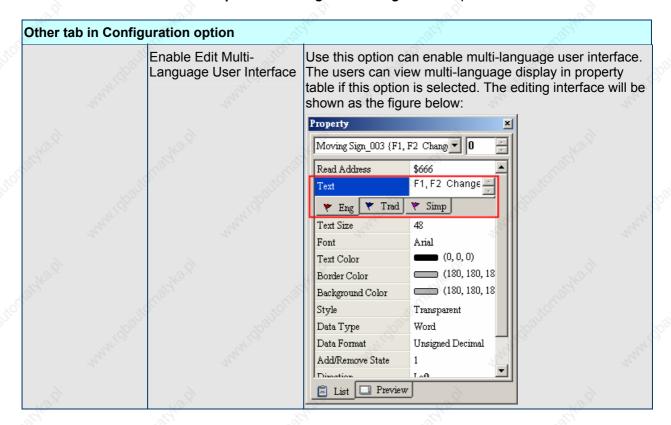
Table 2.9.5 Other Tab



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| Other tab in Conf | iguration option   | a, "Viga, Viga,   |
|-------------------|--|---|
| Mary Hall         | Read Controller Address  | 2. If this option is not selected, the screen saver will be enabled automatically when the <b>Screen Saver Time</b> set in HMI is reached. If the screen saver function is enabled, the users can touch the HMI screen to disable it.   |
|                   | unnidaliona  | Configure  Setting  ScreenSaver Time(Min.):  Boot Delay Times (Sec.): U Default Language (ID): 1  COM1  F3  |
|                   | urishalitofta  | Quit Save   |
|                   | Interval Time At Two<br>Save Screen  | User this option can set the interval time between two screen savers. The range is within 1 ~ 255 second.   |
|                   | Ending of Save Screen<br>Mode  | <ol> <li>Return Original: Return to the original screen at that time when the screen saver is enabled.</li> <li>Indicate Screen: Specify the screen that will show after the screen saver program ends.</li> </ol>  |
| lulti-Language    | New  | Pressing New button can add a language option.  |
|                   | New State of | Append  Language Name  Default  Walue   |
|                   | , 1444.1Gc   | OK Cancel   |
|                   | inglights to   | As shown as the figure above, the users have to enter th language name and setting value. The setting value will be referred by the system when setting multi-language. The range of the setting value is within 0 ~ 255. Setting language name is easy for text editing. The users can |
|                   |  | press button to change the flag color on the languag name tab.  |
|                   | Enable/Disable   | Delta HMI allows the users to edit multi-language screen however the users can use this option to determine whic languages are supported (enabled) or not supported (disabled) as the users wish when downloading data to HMI.  |
|                   | Remove   | Remove the existing language. Ensure to keep at least   |
|                   | Remove   | one language for an application.  |

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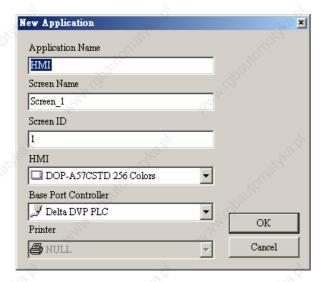
#### **How to Use Multi Language Function**

#### Example:

Create a Screen that has "English", "Traditional Chinese" and "Simplified Chinese" three languages selection for the users to switch. Also, teach the users how to set an "Increment" button to switch the language selection within the screen.

1. Create a new application.

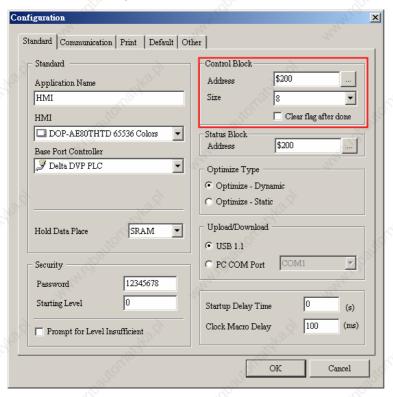
Select HMI model "DOP-A57CSTD 256 Colors".



2. Create two button elements on the screen. "Set" and "Increment" these two button elements.

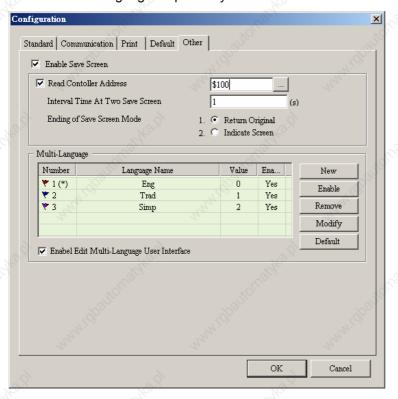
3. Control Block (Options > Configuration) Settings

Set the address as \$200 and set the size is 8.



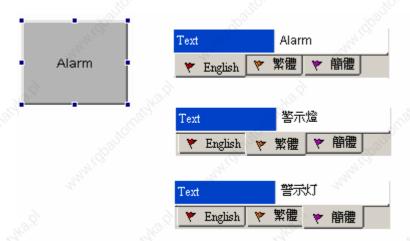
#### 4. Multi-Language Settings

Add "English", "Traditional Chinese" and "Simplified Chinese" three languages. The setting value are 0,1 and 2 for each language respectively.

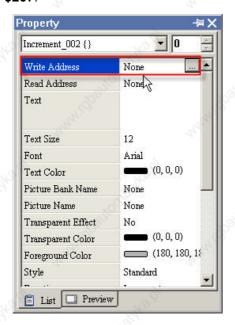


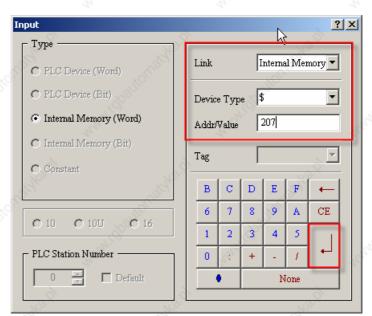
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5. Set the display text of "Set" button element in different languages.

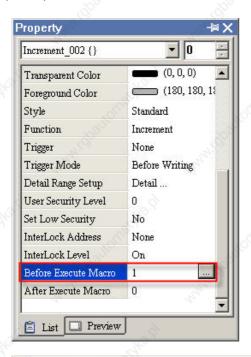


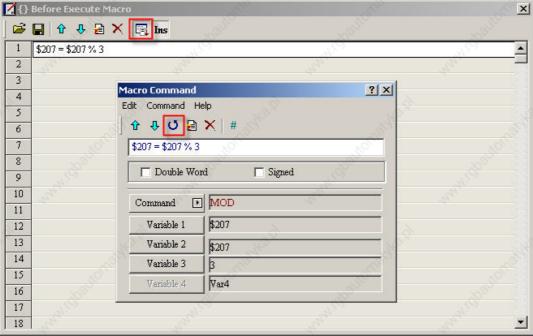
- Double click the English tab and enter "Alarm" in English.
- Double click the Traditional Chinese tab and enter "警示燈" in Traditional Chinese.
- Double click the "Simplified Chinese" and enter "警示灯" in Simplified Chinese"
- 6. In property setting of "Increment" button element, please set the write address as the **internal memory** \$207.





7. Then, set the setting value of "Before Execute Macro". The users can enter the Macro command as \$207=\$207%3.





8. Select **Compile** command and execute **Off Line Simulation**. Then, the users can see the text of the "Set" button is changed in different language by pressing the "Increment" button element.

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#### Alarm Setup

Alarm Setup

The users can set alarm by clicking **Options** > **Alarm Setup** (Fig. 2.9.3). The alarm setup should set with the alarm function in element settings. HMI will execute alarm function automatically if both settings are all set. When the specified conditions are matched (If condition occurs in specific address, ON enabled or OFF enabled) after setting, HMI will display a Alarm Setup warning dialog box automatically. In this dialog box (Fig. 2.9.4), there are Delete, Modify, Import, Export and Close for the users to use. For more information for the settings of Alarm Setup, please refer to the Table 2.9.6 on the following page and Chapter 3 for more description.

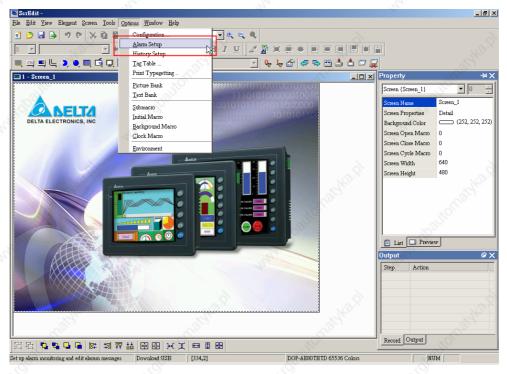


Fig. 2.9.3 Choosing Alarm Setup command from menu bar

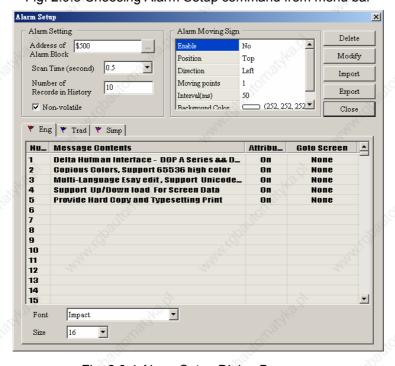


Fig. 2.9.4 Alarm Setup Dialog Box

Table 2.9.6 Alarm Setup Settings

| Alarm Block Scan Time (second) Number of Records in History  Use this option to save data in order. When the number of records exceeds this setting value, it will delete the first record and insert the new record into the last address. For example, if the setting value is so to 100 and the number of records in history exceeds 100, the first record, the third record will become to second record will become to the forth record. and the 100th record will become to 100th record.  Non-volatile  Using this option can enable to save data in SRAM when the power is turned off. The capacity for saving alarm data of DOP-A series is 3MBytes and DOP-AE series is 16MBytes. (The power of SRAM is battery when the power is turned off, (in some HMI models, the users can save data in USB Disk or SMC card.).  Alarm Property Setup  Alarm Property Setup  Alarm Property (Please notice that there are three languages tabs in Alarm Setup dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents according to the users' requirement.)  Peorly Trady Setup of the User's requirement.  Peorly Trady Setup of Tr | •             | Dialog Box       |   |
|--|---------------|------------------|---|
| Second   | Alarm Setting |                  | Use this option to set the alarm starting address. It provides 512 alarm 32 Words.  |
| Records in History  Record into the last address. For example, if the setting value is s to 100 and the number of records in history exceeds 100, the first record will be deleted and the second record will become to the third record will become to the forth record. and the 100th record will become to 100th record will become to 99th record. Therefore, the new record (101st record) become to 100th record.  Non-volatile  Using this option can enable to save data in SRAM when the power is turned off. The capacity for saving alarm data of DOP-A series is 8MBytes and DOP-AE series is 16MBytes. (The power of SRAM is battery when the power is turned off.) (In some HMI models, the users can save data in USB Disk or SMC card when the power is turned off and the capacity for saving alarm data depends on the capacity of US Disk or SMC card.)  Alarm Property Setup  Alarm Property  Chease notice that there are three languages tabs in Alarm Setup dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents according to the users' requirement.)  Alarm Property  The users can disconding the users' requirement.)  Alarm Property  The users can disconding the users' requirement.)  Alarm Property  The users can disconding the users' requirement.)  Alarm Property  The property and the users' requirement.)  Alarm Property  The following Alarm Property Setup dialog box will display after double clicking the row.  Alarm Property Setup dialog box will display after double clicking the row.  |               |                  | It is used to set the how long the HMI scan one time. The unit is secon   |
| turned off. The capacity for saving alarm data of DOP-A series is 3MBytes and DOP-AE series is 16MBytes. (The power of SRAM is battery when the power is turned off.) (In some HMI models, the users can save data in USB Disk or SMC card when the power is turned off and the capacity for saving alarm data depends on the capacity of US Disk or SMC card.)  Alarm Property Setup  The users can double click a row of the alarm message contents table edit the alarm property.  (Please notice that there are three languages tabs in Alarm Setup dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents according to the users' requirement.)  The gray Trad Table Sump  We gray Trad Sump  The following Alarm Property Setup dialog box will display after double clicking the row.  Alarm Property Setup  We gray Trade Trad |               | Records in       | exceeds this setting value, it will delete the first record and insert the new record into the last address. For example, if the setting value is se to 100 and the number of records in history exceeds 100, the first recowill be deleted and the second record will become to the third record, the third record will become to the forth recordand the 100th record will become to 99th record. Therefore, the new record (101st record) we   |
| edit the alarm property.  (Please notice that there are three languages tabs in Alarm Setup dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents according to the users' requirement.)  **Eng ** Trad ** Simp **  **Hu. Message Contents**  1 Delta Hulman Interface - DOP A Series && D. On None 2 Copious Colors, Support 05536 high color On None 3 Multi-language Esay edit, Support Unicode. On None 4 Support Uniform load for screen Data On None 6 S. Provide Hard Conv. and Tymesetting Print On None 10 None 10 None 11 None 11 None 12 None 12 None 13 None 14 None 14 None 15 None 16 None |               | Non-volatile     | <b>8MBytes</b> and DOP-AE series is <b>16MBytes</b> . (The power of SRAM is battery when the power is turned off.) (In some HMI models, the users can save data in USB Disk or SMC card when the power is turned off and the capacity for saving alarm data depends on the capacity of USE  |
| dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents according to the users' requirement.)    Find   Tride   Simp  |               |                  | The users can double click a row of the alarm message contents table edit the alarm property.   |
| The following Alarm Property Setup dialog box will display after double clicking the row.    The following Alarm Property Setup dialog box will display after double clicking the row.   |               | , Eggs           | dialog box as multi-language function is also supported here. The users can click the tab to edit the alarm message contents  |
| The following Alarm Property Setup dialog box will display after double clicking the row.    Alarm Property Setup  |               | 6                | ♥ Eng   ♥ Trad   ♥ Simp   |
| The following Alarm Property Setup dialog box will display after double clicking the row.  Alarm Property Setup  Context  Message Color  Trigger Mode © On © Off  Screen None  Cancel  |               | Tepsilousikes    | Nu_ Message Contents  1 Delta Hufman Interface - DOP A Series & D_ On None 2 Copious Colors, Support 65536 high color On None 3 Multi-Language Esay edit, Support Unicode_ On None 4 Support Up/Down load For Screen Data On None 5 Provide Hard Cony and Typesetting Print On None 6 7   |
| Clicking the row.  Alarm Property Setup  Context  Message Color  Trigger Mode © On © Off  Screen None  Cancel  |               | I dhallomatykadi | Nu_ Message Contents  1   |
| Screen None Cancel   |               | repareurathrad   | Nu_ Message Contents  1 Delta Hufman Interface - DOP A Series & D_ On None 2 Copious Colors, Support 65536 high color On None 3 Multi-language Esay edit, Support Unicode_ On None 4 Support Up/Down load For Screen Data On None 5 Provide Hard Cony and Typesetting Print On None 6 7 8 9 10 11 12 13 Double Click 14 15  |
| A) Maria AID' I I A'   |               | repartous the by | Nu_ Message Contents  1 Delta Hufman Interface - DOP A Series & D_ On None 2 Copious Colors, Support 65536 high color On None 3 Multi-Language Esay edit, Support Unicode_ On None 4 Support Up/Down load For Screen Data On None 5 Provide Hard Cony and Typesetting Print On None 6 7 8 9 9 10 11 12 13 Double Click 14 15 Font Impact Size 16  The following Alarm Property Setup dialog box will display after double clicking the row.  Alarm Property Setup  Context Message                                    |
| Message Display message when an alarm occurs.  Color Display message color when an alarm occurs.   |               | A Sparional Madi | Nu_ Message Contents  1 Delta Hufman Interface - DOP A Series & D. On None 2 Copious Colors, Support 65536 high color On None 3 Multi-Language Esay edit, Support Unicode. On None 4 Support Un/Down load For Screen Data On None 5 Primitle Hard Convand Typesetting Print On Name 6 7 8 9 10 11 12 13 14 15 Font Impact Size 16  The following Alarm Property Setup dialog box will display after double clicking the row.  Alarm Property Setup  Context Message Color  Trigger Mode On Off OK Screen None  Cancel |

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| Alarm Setup [ | Dialog Box          |   | NIGHT.                      |                 | Variation of the Contract of t | _65°           |                |
|---------------|---------------------|---|-----------------------------|-----------------|--|----------------|----------------|
|               | digation.           | Trigger<br>Mode   | Use this alarm oc           | 1,000           | termine the B  | it is On or Of | f when an      |
|               |                     | Screen  | Display s                   | screen when     | an alarm occ   | curs.          | 2774           |
|               | Delete              | Delete the alarm message contents.  |                             |                 |  |                |                |
|               | Modify              | Modify the alarm message contents. The users also can double click the mouse to perform this function.                              |                             |                 |  |                |                |
|               | Import              | Import  | he Alarm Des                | scribe File int | to the alarm r   | message conf   | ents table.    |
|               | Export              |   | the alarm mes<br>Describe . | ssage conten    | nts from HMI   | and convert t  | hem to be      |
|               | Close               | Exit the  | Alarm Setup                 | dialog box.     |  |                |                |
| Alarm Moving  | Enable              | It is use   | ed to enable th             | ne alarm mov    | /ing sign.   | 3              | 63.S           |
| Sign          | Position            | It is used to determine the display position of alarm moving sign. It ca be Top or Bottom.  |                             |                 |  |                | g sign. It can |
|               | Direction           | Left Alarm message will move from right to left (Move to left).   |                             |                 |  |                |                |
|               |                     | Right Alarm message will move from left to right (Move to right).   |                             |                 |  |                |                |
|               | 6                   | Up  | Alarm messa                 | age will move   | e from bottom  | n to top (Move | e to Up).      |
|               | " Alfor             | Down Alarm message will move from top to bottom (Move to Down).   |                             |                 |  |                |                |
|               | Moving points       | It is used to set the moving points every time for the alarm moving sig<br>The unit is Pixel and the range is within 1 ~ 50 points. |                             |                 |  |                | noving sign.   |
|               | Interval (ms)       | It is used to set the interval time every time for the alarm moving sign. The unit is ms and the range is within 50 ~ 3000 ms.      |                             |                 |  |                | oving sign.    |
|               | Background<br>Color | It is used to set the background color of the alarm moving sign.  |                             |                 |  | ign.           |                |

## ■ History Setup

History Setup

History Setup should be used with sampling elements. Please refer to Chapter 3 for more detailed information.



Fig. 2.9.5 Choosing History Setup command from menu bar

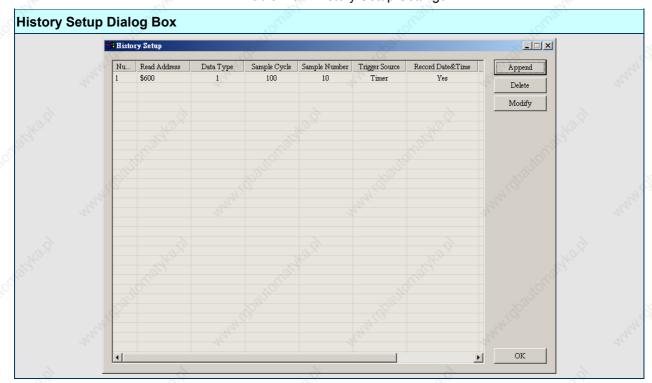


Table 2.9.7 History Setup Settings

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#### **History Setup Dialog Box Append** Pressing Append button can add a history data. Max. 12 history data can be added. After the Append button is pressed, the following Buffer Properties dialog box will display. Buffer Properties Trigger None Timer Read Address C PLC Data Length (Word) 1 100 Cycle (ms) 10 Sample Number Stamp Time and Date Auto Stop OK Non-Volatile Cancel Read Address It is used to set the starting address for sampling the history data. Data Length It is used to set how much Word the users want to sample? The range is (Word) within 1 ~ 13 continuous Words. It indicates that max. 13 continuous words can be sampled. Cycle (ms) It is used to set the sampling cycle time for reading address (how long is it to read address one time). If the Trigger option is PLC, this option will be ineffective. The range of the sampling cycle time is within 0 ~ 86400000 ms. Sample Number This option is used with the Auto Stop option. If the Auto Stop option is selected, HMI will stop recording the data after the numbers of records have reached the setting value of Sample Number option. If the Auto Stop option is not selected, when record number of data exceeds the setting value of Sample Number option, it will delete the first record and insert the new record into the last address. For example, if the setting value is set to 100 and the number of records in history exceeds 100, the first record will be deleted and the second record will become to the third record, the third record will become to the forth record...and the 100th record will become to 99th record. Therefore, the new record (101st record) will become to 100th record. Stamp Time and Use this option to determine if the time and date are also recorded during Date sampling operation. Auto Stop Use this option to determine if HMI stop recording when the max. number of record data is reached. Non-Volatile Using this option can enable to save sampling data in SRAM when the power is turned off. The capacity for saving history data of DOP-A series is 240MBytes and DOP-AE series is 360MBytes. (The power of SRAM is battery when the power is turned off.) (In some HMI models, the users can save data in USB Disk or SMC card when the power is turned off and the capacity for saving history data depends on the capacity of USB Disk or SMC card.) Trigger There are Timer and PLC two options. OK / Cancel Press OK button to save the data and exit. Press Cancel to exit without saving data. Delete Pressing Delete button can delete a history data. Modify Pressing Modify button can modify a history data.

#### ■ Tag Table

Tag Table ...

It is used to replace the specific address with the user-defined words or characters. For example, if the users want to replace PLC address 1@Y0 with the word "OS", just define it in Tag Table option in advance.

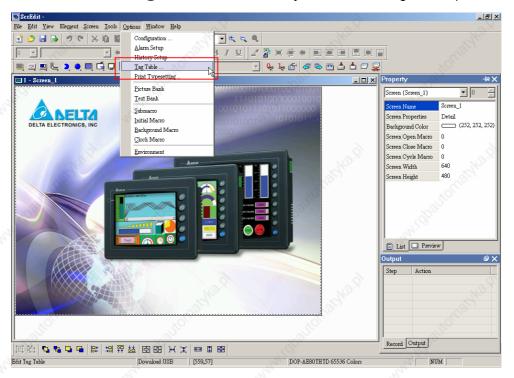


Fig. 2.9.6 Choosing Tag Table command from menu bar

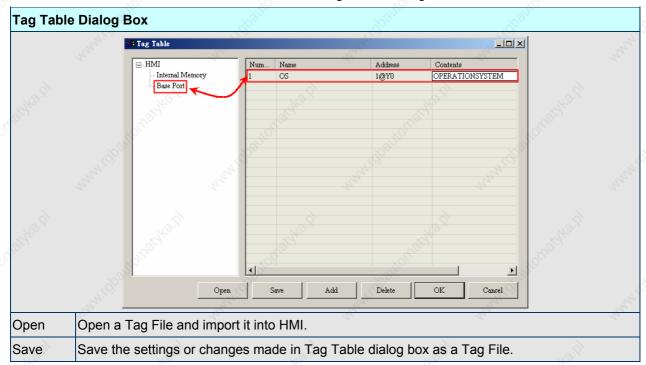
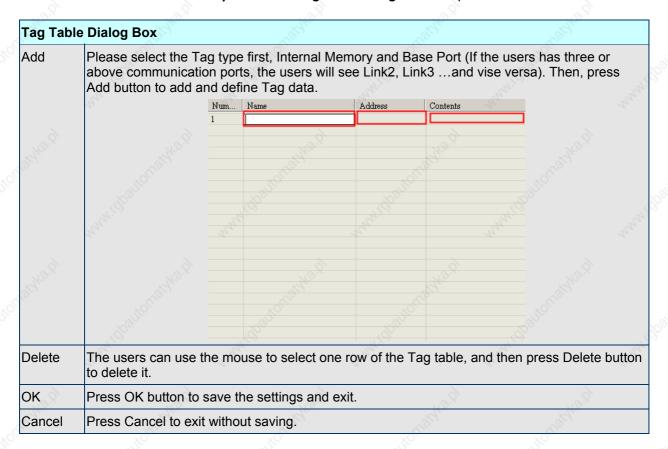


Table 2.9.8 Tag Table Settings

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#### ■ Print Typesetting

Print Typesetting.. Provide more efficient print layout management function. Please refer to the example below on next page.

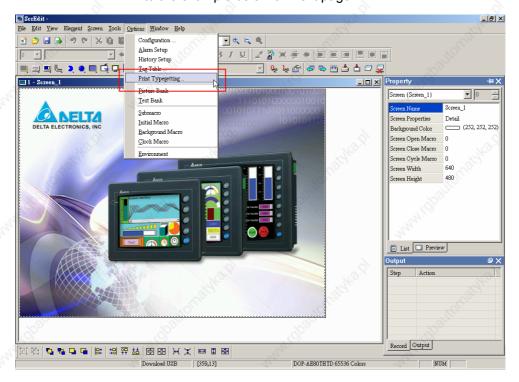


Fig. 2.9.7 Choosing Print Typesetting command from menu bar

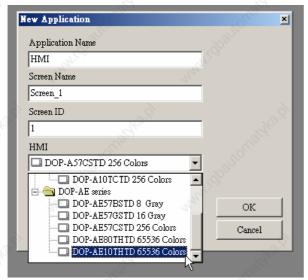
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### **How to Use Print Typesetting Function**

Example:

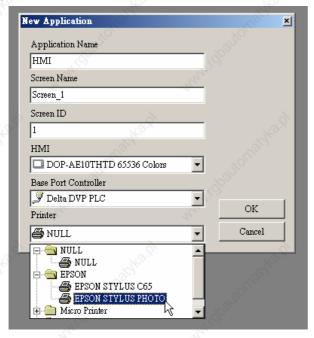
#### Printer and Page Setup

1. Print Typesetting function only provided in DOP-AE series.



#### Select Printer

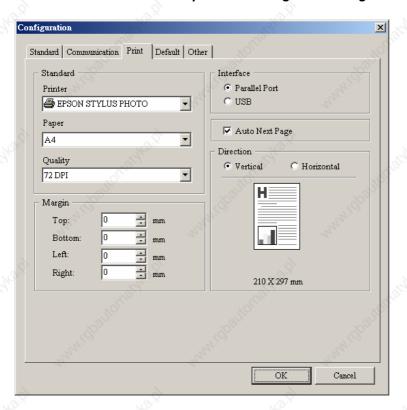
The users can click **File** > **New** to get into the New Application tab and select the printer using the "Printer" drop-down list in New Application tab. Or click **Options** > **Configuration** > **Print** to select a printer.



#### 3. Configuring Print Setup

The users can click **Options** > **Configuration** > **Print** to enter into "Print" tab. Then, use the Print tab to configure the settings of printer, paper, quality and margin, etc. options.

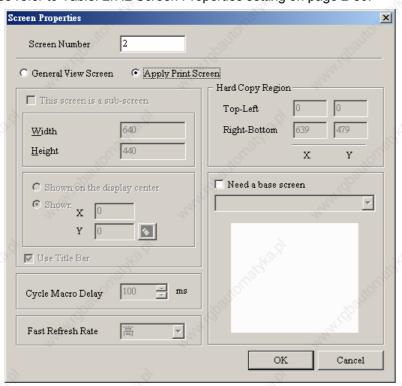
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#### Create Printing Report

#### Step 1:

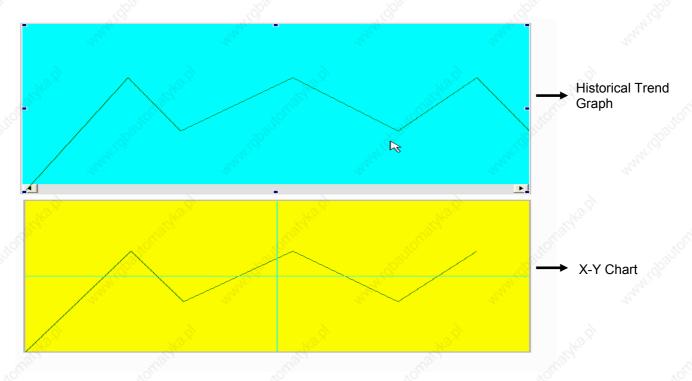
Creating a new screen first (Click **Screen > New Screen**) and set it as **Apply Print Screen** in Screen Properties tab (Click **Screen > Screen Properties**). For the description of Apply Print Screen function, please refer to Table. 2.7.2 Screen Properties setting on page 2-80.



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#### Step 2:

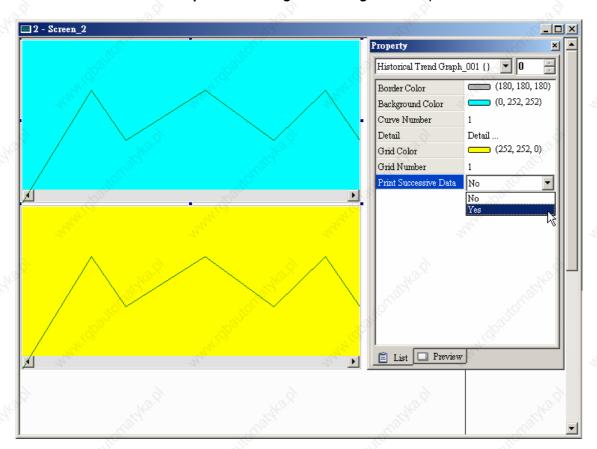
Create the element that the users want to print out. For example, if the users want to print a Historical Trend Graph and a X-Y Chart, the users can create a Historical Trend Graph (Click **Element > Sampling > Historical Trend Graph**) and a X-Y Chart (Click **Element > Curve > X-Y Chart**) first and then set their properties in the Property table. The Property table provides element property setting for each element. For the information for element property settings for each element, please refer to Chapter 3 for more detailed description.



Step 3:

The users can choose "Yes" or "No" using the "Print Successive Data" drop-down list to determine whether Print Successive Data function is selected or not. When "Yes" is selected, it indicates that Print Successive Data function is enabled, and all the sampling records and data for the element will be printed out completely.

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## Print Screen Layout and Output

#### Step 1:

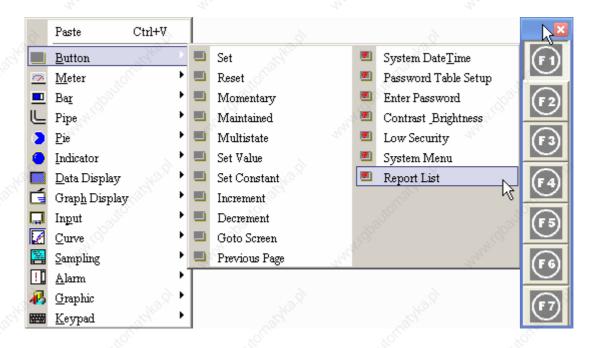
Click **Options** > **Print Typesetting**. Then drag the mouse to decide which screen needed to be typeset and printed out. The screens on the left side are all created screens and the screens on the right side are the selected screens. If a "General View Screen" is dragged to the right side, it will become "Apply Print Screen" (Screen Properties) automatically.



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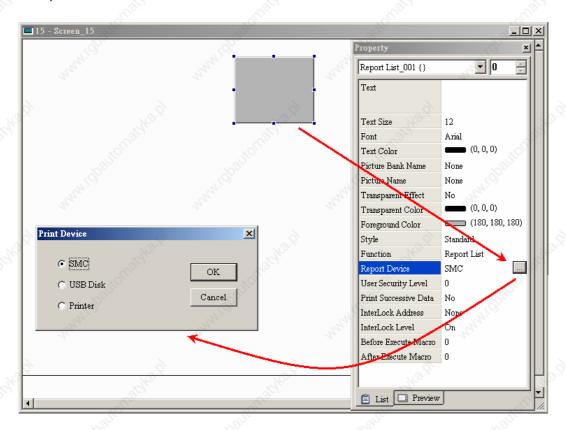
#### Step2:

Right clicking the mouse or use function key to create a "Report List" button on a "General View Screen". Then, use this "Report List" button to enable the print function.



Step 3:

Set the properties of the "Report List" option. The Report Device can be SMC, USB Disk, and Printer. Please notice that if the users select SMC or USB Disk, the data will be outputted to SMC or USB Disk only and it will not be printed out.

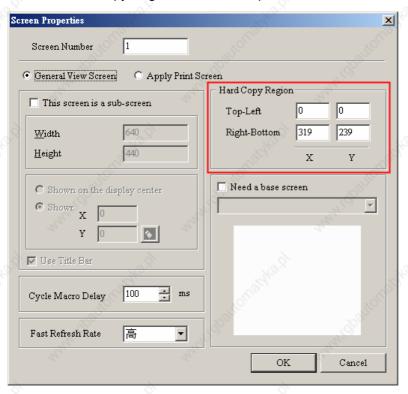


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## **How to Use Hard Copy Function**

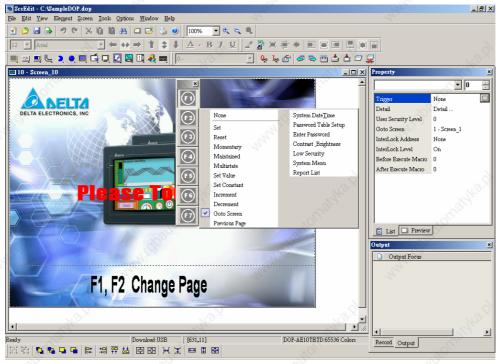
The Hard Copy function is available only when the screen is a "General View Screen". If HMI detects the "Print Typesetting" function is already set for the editing screen, the "Hard Copy" function will be ineffective.

Step1: Set the Hard Copy Region in Screen Properties tab.



Step2: Enable the Print function.

Right clicking the mouse or use function key to create a "Report List" button on a "General View Screen" Then, use this "Report List" button to enable the print function, just like "Print Typesetting" function.



#### ■ Picture Bank

Picture Bank

The users can use this option to import various pictures to rich the screens selection and make the Picture Bank to be more plentiful. Please Click **Options** > **Picture Bank** to execute this function.

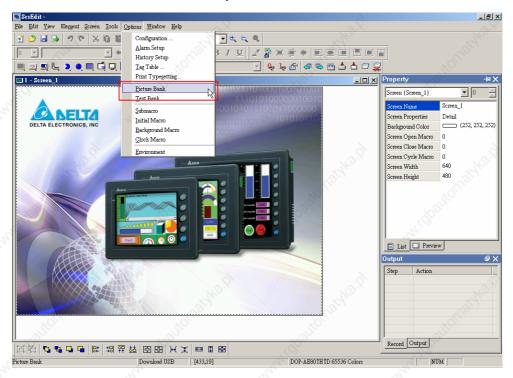


Fig. 2.9.8 Choosing Picture Bank command from menu bar



Fig. 2.9.9 Picture Bank

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Table 2.9.9 Picture Bank Settings

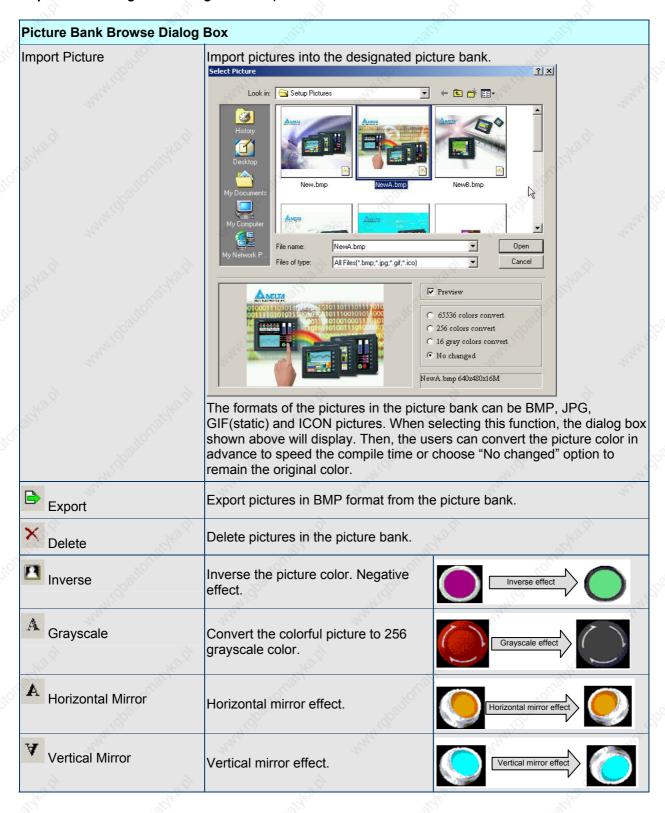


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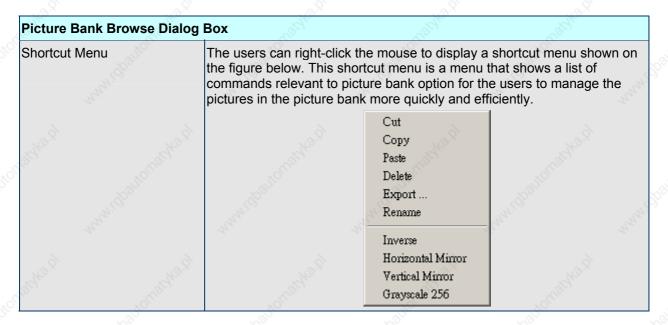
Save the modified picture into the picture bank.

Save

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#### ■ Text Bank

Text Bank

Input common or frequently used text and terms into Text Bank. The users can select the text from the Text Bank and enter them on the element more easily and quickly if necessary.

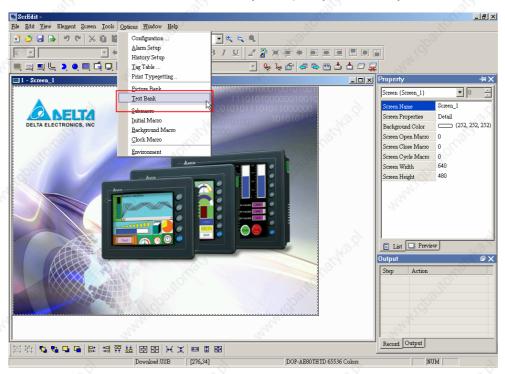


Fig. 2.9.10 Choosing Text Bank command from menu bar

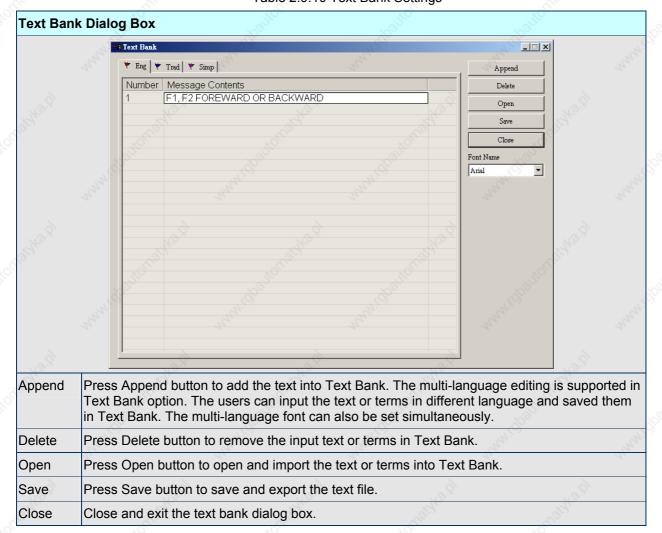


Table 2.9.10 Text Bank Settings

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#### ■ Submarro

<u>S</u>ubmacro

Use this option to edit sub-macro and be called by other Macro. For the Macro function, please refer to Chapter 4 for more details.

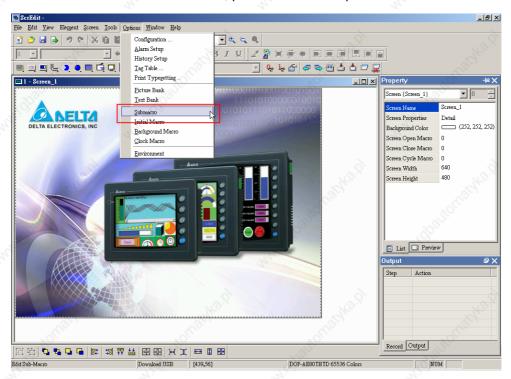


Fig. 2.9.11 Choosing Submacro command from menu bar

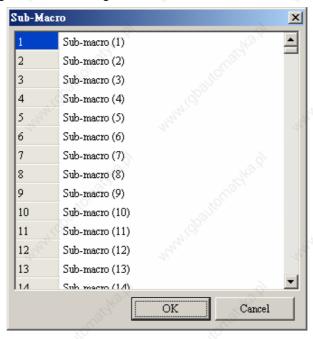


Fig. 2.9.12 Submarco dialog box

#### Initial Macro

Initial Macro

Use this option to edit initial macro. The initial macro will be executed automatically after the power is applied to HMI (power on). For the Macro function, please refer to Chapter 4 for more details.

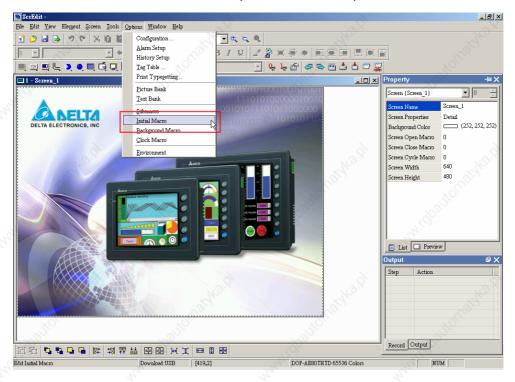


Fig. 2.9.13 Choosing Initial Macro command from menu bar

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## ■ Background Macro

Background Macro

Use this option to edit background macro. For the Macro function, please refer to Chapter 4 for more details.

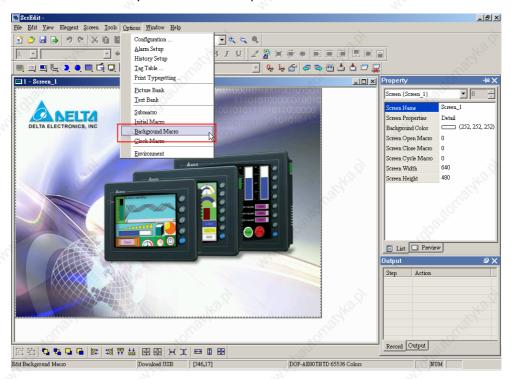


Fig. 2.9.14 Choosing Background Macro command from menu bar

#### Clock Macro

Clock Macro

Use this option to edit clock macro. After HMI is turned power on and starting initial setup, the clock macro will be executed automatically by clock setting time. For the Macro function, please refer to Chapter 4 for more details.

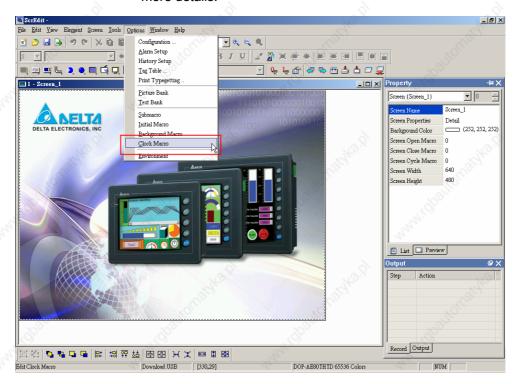


Fig. 2.9.15 Choosing Clock Macro command from menu bar

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## Environment

Environment Use this option to complete the environment settings of Screen Editor.

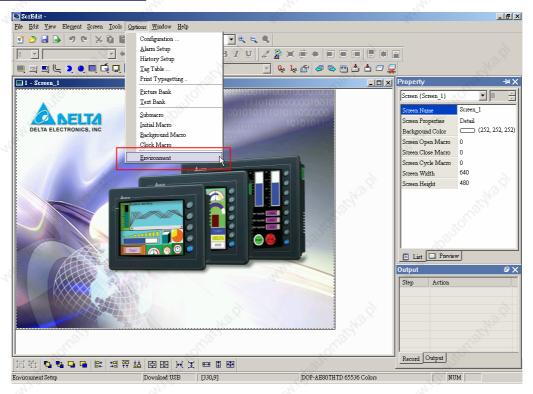


Fig. 2.9.16 Choosing Environment command from menu bar

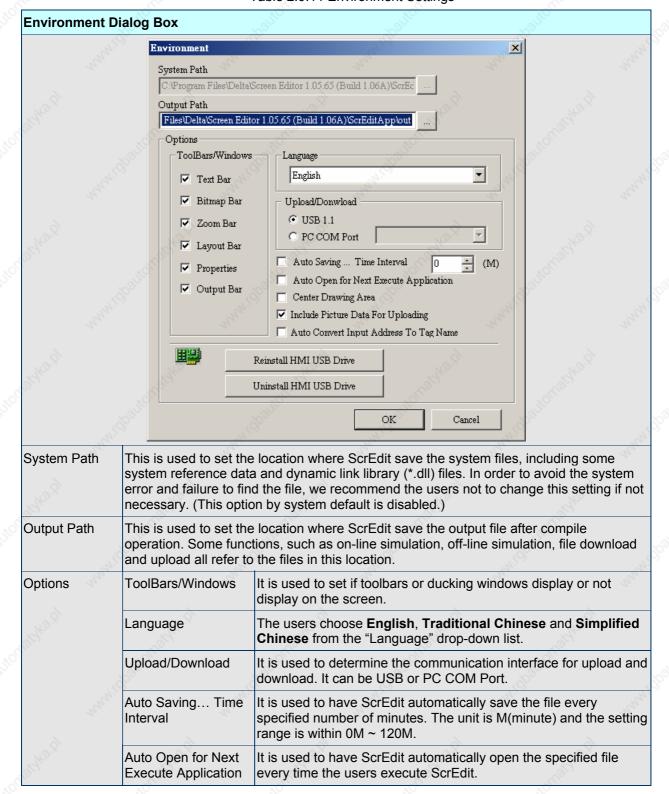


Table 2.9.11 Environment Settings

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| Environment D | ialog Box   | 2,14  | VIII.  | Vig <sub>le</sub>   |  |  |  |
|---------------|---|---|--|---|--|--|--|
| Bilka di wani | Center Drawing Area   | the center position  10 - Screen_10  DELTA ELECTRONICS, INC   | s selected, the editing s  | creen will be placed in   |  |  |  |
|               | Include Picture Data<br>For Uploading   | If this option is seld ScrEdit upload fun saved in a file nam Name" and the "Pi of the editing elem ScrEdit ends the eas "_LocalTemp0 when execute uplo | ected, all pictures will be  | ploaded pictures will be .PIB". The "Picture Bank operty ducking window) is to this file too. If ite name will be named", and vise versa ast two numbers at the |  |  |  |
| Mr. g         | Auto Convert Input<br>Address To Tag<br>Name  | For example, if the the word "OS", jus  | e users want to replace<br>t define it in Tag Table<br>eted, ScrEdit will automa | PLC address 1@Y0 with option in advance. When   |  |  |  |
| Driver        | Reinstall HMI USB Drive: Press it to reinstall the HMI USB driver Uninstall HMI USB Drive: Press it to uninstall the HMI USB driver |   |  |   |  |  |  |
| OK            | Press OK button to save the modified settings and exit the Environment dialog box.  |   |  |   |  |  |  |
|               | Press Cancel button exit the Environment dialog box without saving.   |   |  |   |  |  |  |

#### 2.10 Menu Bar and Toolbar (Window)

#### Window

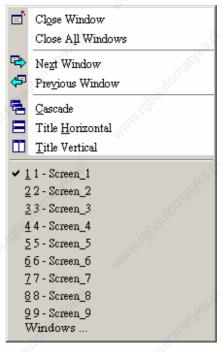


Fig. 2.10.1 Window options

#### ■ Close Window



It is used to hide the current window, NOT exit the current window. The users can execute this function by clicking **Window** > **Close Window** (Fig. 2.10.2). If the users want to display the hidden window, please click **Screen** > **Open Screen** (Fig. 2.7.6) to open an old screen.

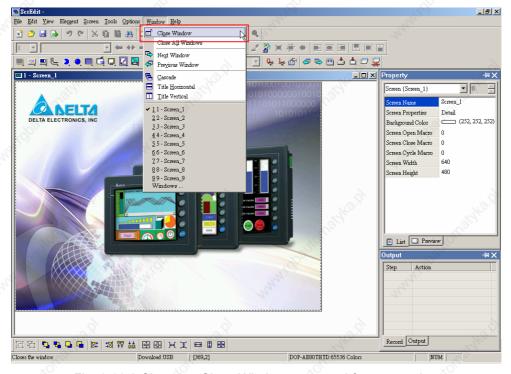


Fig. 2.10.2 Choosing Close Window command from menu bar

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#### ■ Close All Windows

🗂 Close Window

It is used to hide all windows, NOT exit all windows. The users can execute this function by clicking **Window** > **Close All Windows** (Fig. 2.10.3). If the users want to display the hidden window, please click **Screen** > **Open Screen** (Fig. 2.7.6) to open old screens.

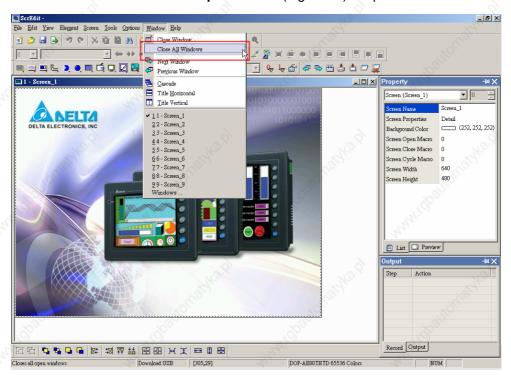


Fig. 2.10.3 Choosing Close All Windows command from menu bar

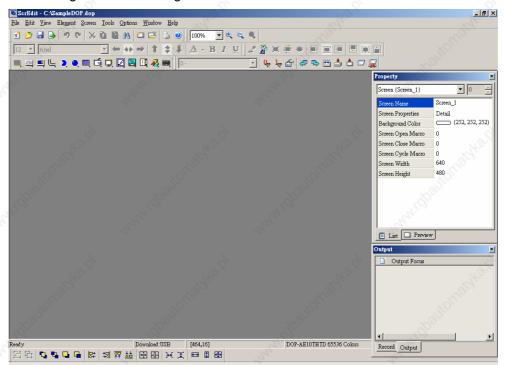
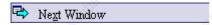


Fig. 2.10.4 Screen status after all windows are closed

#### Next Window



It is used to switch the current window to the next window. If the current window is the last window, the current window will not be changed even if this function is executed.

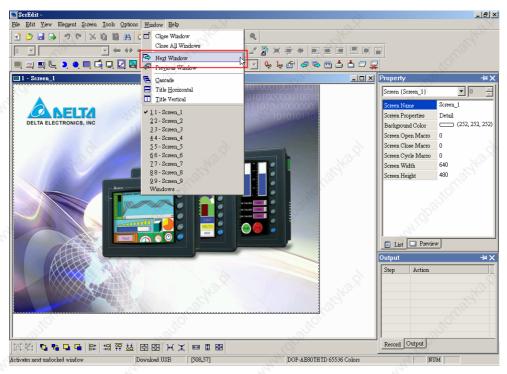


Fig. 2.10.5 Choosing Next Window command from menu bar

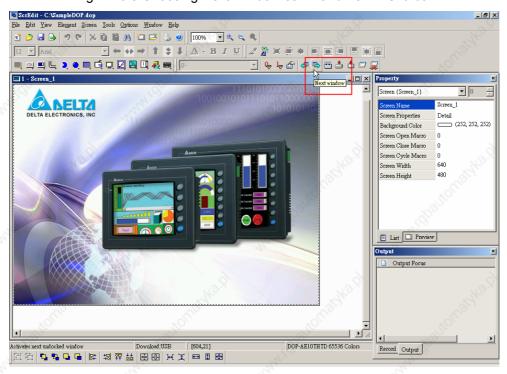


Fig. 2.10.6 Choosing Next Window icon from toolbar

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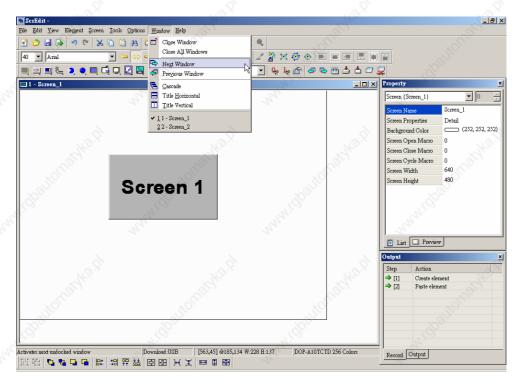


Fig. 2.10.7 Example screen1 for choosing next window (Before switching to next window)

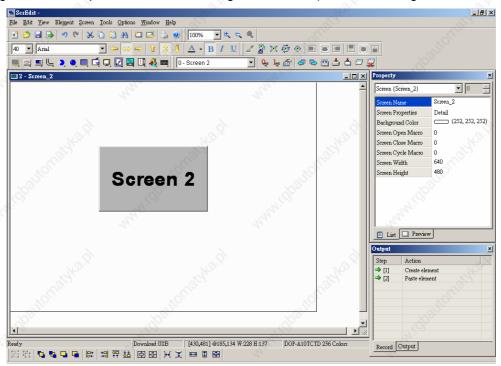


Fig. 2.10.8 Example screen 2 for choosing next window (After clicking "Next Window")

#### Previous Window

Previous Window

It is used to switch the current window to the previous window. If the current window is the first window, the current window will not be changed even if this function is executed.

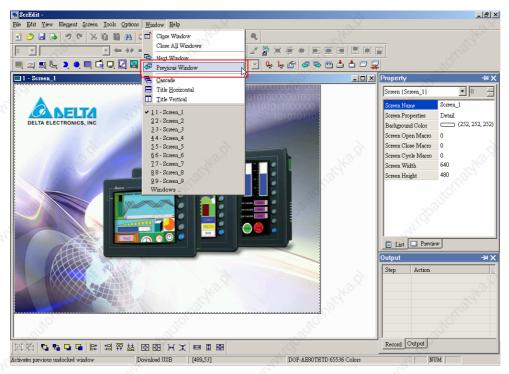


Fig. 2.10.9 Choosing Previous Window command from menu bar

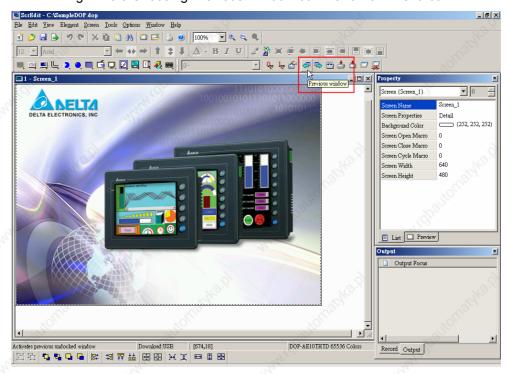


Fig. 2.10.10 Choosing Previous Window icon from toolbar

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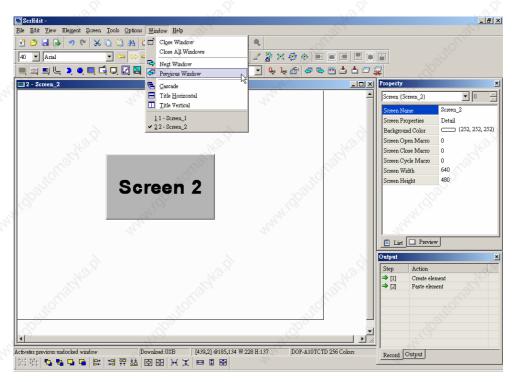


Fig. 2.10.11 Example screen1 for choosing previous window (Before switching to previous window)

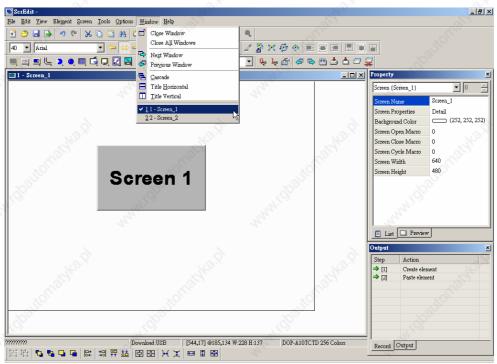


Fig. 2.10.12 Example screen 2 for choosing previous window (After clicking "Previous Window")

#### Cascade



Cascade display. Display all editing windows so that they overlap. The title bar of each window is visible but only the top window is fully visible. The users can execute this function by clicking **Window** > **Cascade** (Fig. 2.10.13). The opened windows are displayed in an overlapped pattern as shown as Fig. 2.10.14.

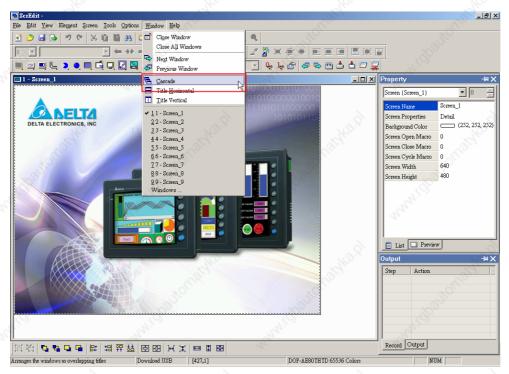


Fig. 2.10.13 Choosing Cascade command from menu bar

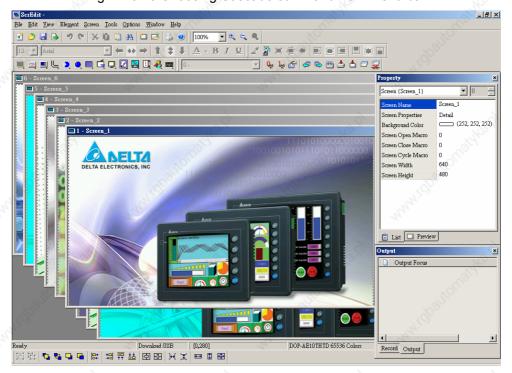


Fig. 2.10.14 Screen display after choosing Cascade command

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#### ■ Title Horizontal

Title <u>H</u>orizontal

Display all editing windows from top to bottom. The users can execute this function by clicking **Window** > **Title Horizontal** (Fig. 2.10.15). The opened windows are displayed horizontally as shown as Fig. 2.10.16.

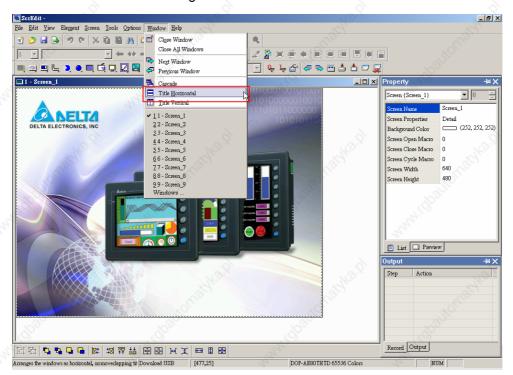


Fig. 2.10.15 Choosing Title Horizontal command from menu bar

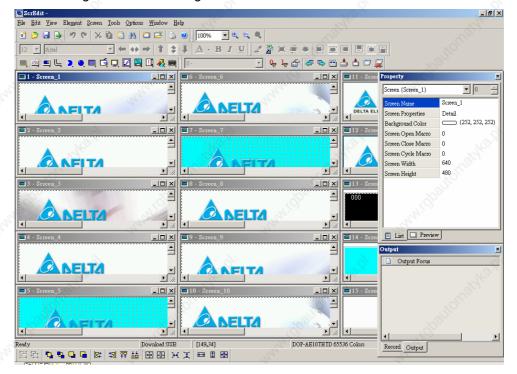


Fig. 2.10.16 Screen display after choosing Title Horizontal command

#### ■ Title Vertical



Display all editing windows from left to right. The users can execute this function by clicking **Window** > **Title Vertical** (Fig. 2.10.17). The opened windows are displayed vertically as shown as Fig. 2.10.18.

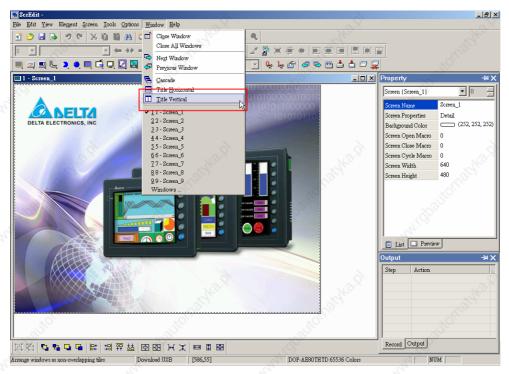


Fig. 2.10.17 Choosing Title Vertical command from menu bar

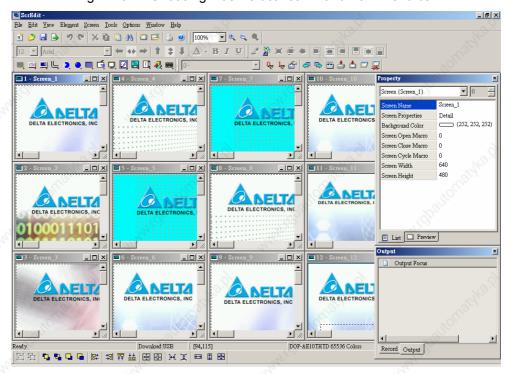


Fig. 2.10.18 Screen display after choosing Title Vertical command

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#### **■** Window Summary

ScrEdit shows a list of all opened screens at the bottom of "Window" pull-down menu for quick access. Just click the file name to open the file and view the screen directly.

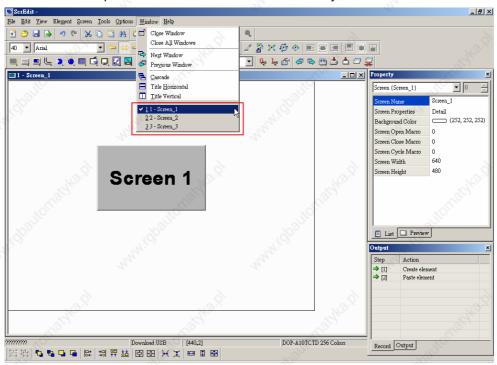


Fig. 2.10.19 Window Summary

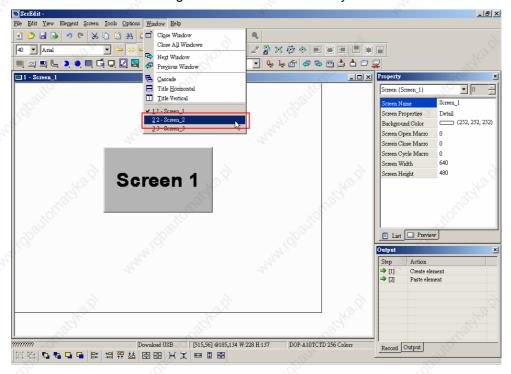


Fig. 2.10.20 Choosing Screen 2 from Window menu bar

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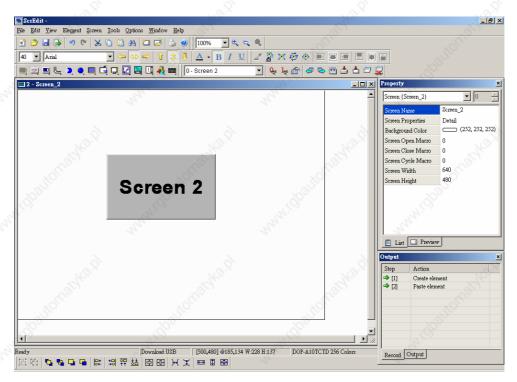


Fig. 2.10.21 Switching to Screen 2

## 2.11 Menu Bar and Toolbar (Help)

■ Help



Fig. 2.11.1 Help option

#### ■ About ScrEdit

<u>About ScrEdit...</u> Display the version information of Screen Editor.



Fig. 2.11.2 Screen Editor Version

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# Chapter 3 Element Function

In order to meet different applications and requirements, ScrEdit provides various elements for the users to use and design. Before using and designing these elements, please read this chapter first to understand how to choose an element and the special function of each element in ScrEdit.

## 3.1 How to Choose Element

There are three methods for choosing elements when editing the screens:

- 1. Right-click the mouse in the work place and a shortcut menu will display as Fig. 3.1.1. The users can choose the desired elements by the mouse.
- 2. Choose Element command from menu bar as Fig. 3.1.2.
- 3. Choose Element icon from toolbar as Fig. 3.1.3.

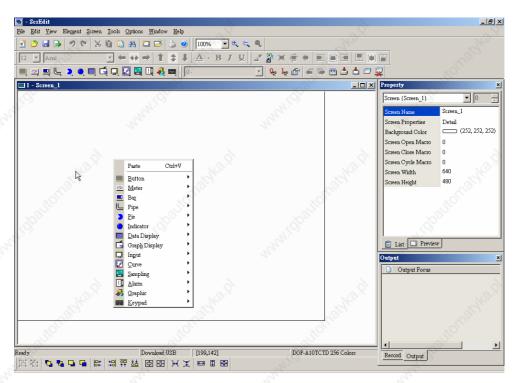


Fig. 3.1.1 Shortcut menu display

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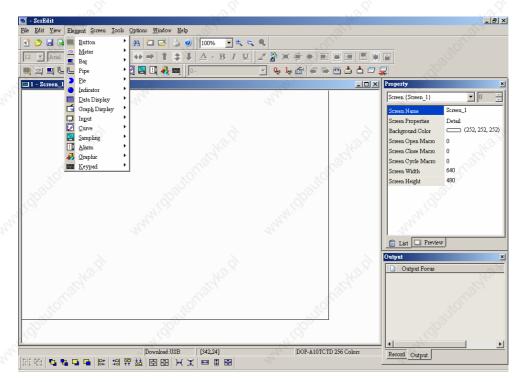


Fig. 3.1.2 Choosing Element command from menu bar

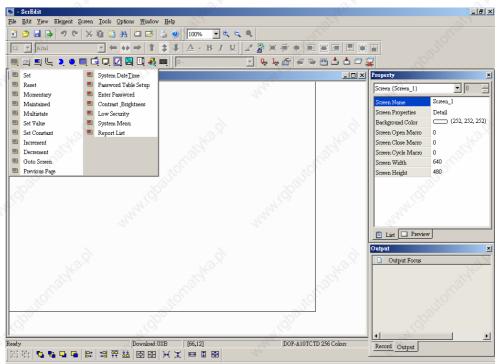


Fig. 3.1.3 Choosing Element icon from toolbar

After selecting an element, left-click and drag the mouse on work place to create an new element as shown in the following Fig. 3.1.4.

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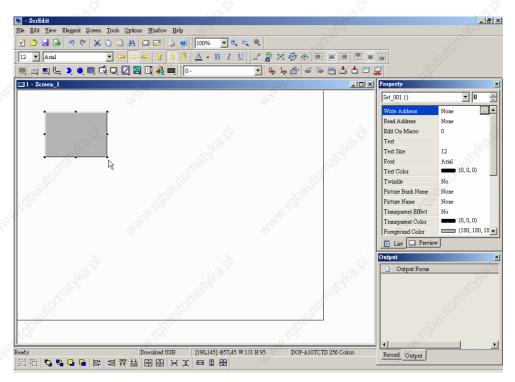


Fig. 3.1.4 Creating an element by the mouse

## 3.2 Button Element

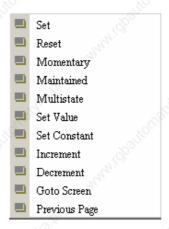


Fig. 3.2.1 Button element options

Table 3.2.1 Button elements

| Button Type  | Macro     | Read | Write | Function  |  |
|--------------|-----------|------|-------|---|--|
| Set          | ON        | Yes  | Yes   | After pressing this button, the state of the setting address (Bit) will be set to ON. The state of the setting address will be always ON even if the users release the button or press it again. If there is an ON Macro, it will be executed simultaneously.   |  |
| Reset        | OFF       | Yes  | Yes   | After pressing this button, the state of the setting address (Bit) will be set to OFF. The state of the setting address will be always OFF even if the users release the button or press it again. If there is an OFF Macro, it will be executed simultaneously.  |  |
| Momentary    | ON<br>OFF | Yes  | Yes   | After pressing this button, the state of the setting address (Bit) will be set to ON and execute ON Macro at the same time. The state of the setting address will be ON when releasing the button and be OFF when pressing it again. If the users execute OFF Macro simultaneously, it will still be OFF when releasing the button. |  |
| Maintained   | ON<br>OFF | Yes  | Yes   | After pressing this button, the state of the setting address (Bit) will be set to ON. The state of the setting address will OFF when releasing the button. If there is ON / OFF Macro will be executed simultaneously.  |  |
| Multistate   | No        | Yes  | Yes   | There are 1~256 user-defined multi-states for setting. The users can set the execution sequence to the next state or the previous state. If the users set to the next state, the state will become state 2. If the users set to the previous state, the state 2 will become state 1.  |  |
| Set Value    | No        | No   | Yes   | After pressing this button, the "Numeric keypad" dialog box will pop up on HMI screen for the users to input the setting value directly. After inputting the setting value and pressing ENTER key, HMI will transmit the input value to the setting address.  |  |
| Set Constant | No        | No   | Yes   | After pressing this button, HMI will write the specific value into the setting address.   |  |

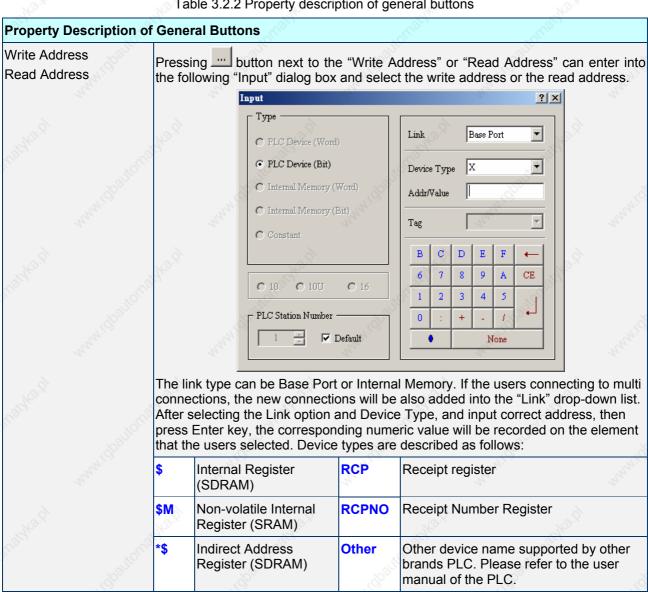
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| Button Type   | Macro | Read | Write | Function  |  |
|---------------|-------|------|-------|---|--|
| Increment     | No    | Yes  | Yes   | After pressing this button, HMI will add up the value contained within the setting address and the setting constant value, and store the addition result back into the setting address.     |  |
| Decrement     | No    | Yes  | Yes   | After pressing this button, HMI will subtract the setting constant value from the value contained within the setting address, and store the subtraction result back to the setting address. |  |
| Goto Screen   | No    | No   | No    | After pressing this button, it will switch to the screen that the users designated.   |  |
| Previous Page | No    | No   | No    | After pressing this button, it will go back to the previous main screen.  |  |

#### **General Buttons**

After pressing these buttons, HMI will transmit ON/OFF signal to PLC. There are four types of these buttons: Set button, Reset button, Momentary and Maintained buttons. Please refer to the following Table 3.2.2 for the property description of general buttons.

Table 3.2.2 Property description of general buttons



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| Property Description of | of General Buttons   | Wage.  | 280  |
|-------------------------|--|--|--|
| Edit On/Off Macro       | Edit On and Off Macro. For the Madetails.  | cro function, please re  | efer to Chapter 4 for more   |
| Гехt<br>Гехt Size       | The users can set the text, text size Windows® to determine the text d   |  |  |
| ont &                   | button next to "Font", the follow  | ving "Font Detail Setting  | ng" dialog box will display  |
| ext Color               | Font Detail Setting  |  | ×  |
|                         | ♥ Eng   ♥ T:   |  | I white  |
|                         | Font Name Font Size  | Impact  32   | Na <sub>110</sub>  |
|                         | Ratio  | 100%   | 41.C.  |
|                         | Preview  |  | The state of the s |
|                         |  | Automati   |  |
|                         | 70 Z   | Close  | , 792,   |
|                         | In "Font Detail Setting" dialog box,   | the users can coloct [   | <br>Font Nama Font Size on   |
| Huhi idpanto.           | Ratio of the text and view the text f<br>the multi-language function is used<br>edit different language font setting<br>to the example figure above.   | format from the Previe<br>I, the users can see di  | w window in advance. If fferent language tabs an   |
| winkle                  | When Yes is selected, it indicates   | that the element will to   | vinkle to remind the user  |
| Picture Bank Name       | The users can determine the pictur   | re of the element by c   | icking "Picture Bank   |
| Picture Name            | Name". (If "Picture Bank Name" ha<br>Name" to determine the picture of<br>display when the users select the  | the element). The follo  | owing dialog box will  |
|                         | list.  | 14.C   |  |
|                         | Select Picture   | ×  |  |
|                         | Avera Avera  | Annual Control of the |  |
|                         |  | M  |  |
|                         | HMI001 HMI002 HMI003<br>640x480x65536 640x480x65536 640x480x65536  | HMI004 HMI005<br>640x480x65536 640x480x65536   |  |
|                         | Aven Aren  | 109/11   |  |
|                         |  | 4.0  |  |
|                         | HMI006 HMI007<br>640x480x65536 590x390x65536   | 25   |  |
|                         |  |  |  |
|                         | 16'S.  | 16 S.  |  |
|                         | (S)  | Wag.   |  |
|                         | All C.   | "III"  |  |
|                         |  |  |  |
|                         | The state of the s | 7.   |  |
|                         | Import From File   | OK Cancel  |  |
|                         | Import From File   | OK Camer   |  |
|                         |  |  |  |
|                         | In this dialog box, the users can do   |  |  |
|                         | users can also press Shift and left  | key of the mouse to in   | nport several pictures int   |
|                         | users can also press Shift and left<br>the designated element at the sam<br>stored in each state of the element  | key of the mouse to in<br>the time. The selected s<br>in order. If the number  | nport several pictures int<br>several pictures will be<br>er of the selected pictures  |
|                         | users can also press Shift and left<br>the designated element at the sam<br>stored in each state of the element<br>is more than the number of the ele  | key of the mouse to in<br>the time. The selected so<br>in order. If the number<br>ment state, only the p   | nport several pictures int<br>several pictures will be<br>er of the selected pictures<br>ictures to the number of  |
|                         | users can also press Shift and left<br>the designated element at the sam<br>stored in each state of the element<br>is more than the number of the ele<br>the element state will be imported  | key of the mouse to in<br>the time. The selected so<br>in order. If the number<br>ment state, only the p   | nport several pictures int<br>several pictures will be<br>er of the selected pictures<br>ictures to the number of  |
|                         | users can also press Shift and left<br>the designated element at the sam<br>stored in each state of the element<br>is more than the number of the ele<br>the element state will be imported<br>imported into the element.  | key of the mouse to in<br>le time. The selected so<br>in order. If the number<br>ment state, only the pland the remainder will   | nport several pictures into<br>several pictures will be<br>er of the selected pictures<br>ictures to the number of<br>be ignored and not be  |
|                         | users can also press Shift and left the designated element at the sam stored in each state of the element is more than the number of the ele the element state will be imported imported into the element.  Import From File Press this butter.  | key of the mouse to in<br>le time. The selected so<br>in order. If the number<br>ment state, only the pland the remainder will<br>on to import the pictur  | nport several pictures into<br>several pictures will be<br>er of the selected pictures<br>ictures to the number of   |

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| X  | X  | X  |   |  |  |  |
|--|--|--|---|--|--|--|
| f General Buttons  | (sid)  | To state of the st | ajdi <sup>k</sup>   |  |  |  |
| color of the picture.  | The effect on the ele  |  |   |  |  |  |
| Please check whether the color of the selected element is 16M bits (65536) colors or not. This function is invalid and a warning message dialog box may display if the users apply this function on the 16M bits (65536) colors element (created on the screen of DOP-AE series HMI) in 256 colors editing environment (on the screen of DOP-A series HMI). If the element is converted in 256 colors after import action, we recommend the users to choose the transparent color by clicking the mouse, not using drop-down list. There are only 144 colors available in the drop-down list. The users can select the colors from the drop-down list to specify the transparent |  |  |   |  |  |  |
|  |  |  |   |  |  |  |
| The effect before the  | nis action happens   | The effect after   | er this action happens  |  |  |  |
|  |  | ,  |   |  |  |  |
| Standard   | Raised   | Round  | Invisible   |  |  |  |
| Standard   | Raised   | Round  | Invisible   |  |  |  |
| The users can specify the button style and foreground color as the figures above by using this option.   |  |  |   |  |  |  |
| element. The elementhis option are: <b>Set</b> b   | nts that their charact<br>outton, <b>Reset</b> button  | teristics can be mo  | odified directly by using   |  |  |  |
| button will be active  | after pressing the bu  | utton longer than t  | he setting time. Using  |  |  |  |
|  |  |  |   |  |  |  |
|  |  |  |   |  |  |  |
| (or from High to Low   | , this is determined   |  |   |  |  |  |
| When this option is s button is pressed.   | set, the input macro   | will be enabled ar   | nd executed before this   |  |  |  |
| When this option is s<br>button is pressed.  | set, the input macro   | will be enabled an   | nd executed after this  |  |  |  |
|  | color of the picture. is shown as the figure Please check whether or not. This function users apply this function of DOP-AE is DOP-A series HMI), we recommend the unot using drop-down The users can select color but there may be for example, RGB(C). However, the element The effect before the foreign of the users can modified element. The element his option are: Set be button these four king Use this option to see button will be active this option can avoid use this option to set that is higher than the Use this option to foressed. This can provide the users can be enabled the unit of the Later (or from High to Low button can be enabled the unit option is set that is pressed.  When this option is set that the unit option is pressed.  When this option is set that the unit option is pressed. | Use sucker tool to suck the color of color of the picture. The effect on the ele is shown as the figures below.  Please check whether the color of the se or not. This function is invalid and a warn users apply this function on the 16M bits screen of DOP-AE series HMI) in 256 cc DOP-A series HMI). If the element is conwe recommend the users to choose the not using drop-down list. There are only The users can select the colors from the color but there may be chromatic aberra. For example, RGB(0,0,0) is black color, However, the element color is RGB(0,1,1). The effect before this action happens  Standard Raised  Standard Raised  The users can modify the element charaelement. The elements that their characthis option are: Set button, Reset button button these four kinds of buttons.  Use this option to set the active time of the button will be active after pressing the button will be active | Use sucker tool to suck the color of the picture and de color of the picture. The effect on the element before and is shown as the figures below.  Please check whether the color of the selected element is or not. This function is invalid and a warning message dial users apply this function on the 16M bits (65536) colors el screen of DOP-AE series HMI) in 256 colors editing environce to DOP-AE series HMI). If the element is converted in 256 color we recommend the users to choose the transparent color not using drop-down list. There are only 144 colors availated The users can select the colors from the drop-down list to color but there may be chromatic aberration from our visus. For example, RGB(0,0,0) is black color, but RGB(1,1,1) is However, the element color is RGB(0,1,0) and it is also black. The effect before this action happens are selected after the effect before this action happens.  The users can specify the button style and foreground color by using this option.  The users can modify the element characteristic directly we element. The elements that their characteristics can be more than the color in the property of the button will be active after pressing the button, Momentary button these four kinds of buttons.  Use this option to set the active time of the button. When the button will be active after pressing the button longer than the topic or an avoid malfunction. The range is within 0 ~ Use this option to set the user priority for pressing this element this option to force the current priority to be the lowes pressed. This can prevent the misoperation made by the Lust his option is set, the input macro will be enabled arbutton is pressed.  When this option is set, the input macro will be enabled arbutton is pressed. |  |  |  |

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### Example of Button Elements:



Fig. 3.2.2 Example of Button elements

#### Multistate Buttons

Table 3.2.3 Property description of Multistate buttons

| Property | Description | of Multista | te Buttons |
|----------|-------------|-------------|------------|
|          |             |             |            |

The state number will be different by the unit. There are 1-256 states if its unit is WORD, 16 states if its unit is LSB and 2 states if its unit is Bit. The unit of read/write address will be different by the value unit. If the value unit is WORD or LSB, the unit of read/write address will be WORD. If the value unit is Bit, the unit of read/write address will be Bit. After obtaining the data from the read address, it will increase or decrease gradually according to the next state or previous state and write the new value to the write address. The state change of this button depends on the read address. If it is needed to add or delete the total state numbers, only add or delete the state numbers in element property table.

| Write Address<br>Read Address         | Interna | It is used to set the read and write address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |  |  |  |  |  |
|---------------------------------------|---------|---|--|--|--|--|--|--|
| Text / Text Size<br>Font / Text Color | Windo   | ers can set the text, text size, font and text color that provided by ws® to determine the text display on the element. (Please refer to Table roperty Description of General Buttons.)                                 |  |  |  |  |  |  |
| Twinkle                               | When \  | es is selected, it indicates that the element will twinkle to remind the users.   |  |  |  |  |  |  |
| Picture Bank Name Picture Name        | (Please | e refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |  |
| Transparent Effect Transparent Color  | (Please | e refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |  |
| Foreground Color<br>Style             | (Please | e refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |  |
| Push Time (second)                    | button  | s option to set the active time of the button. When this option is set, the will be active after pressing the button longer than the setting time. Using ion can avoid malfunction. The range is within 0 ~ 10 seconds. |  |  |  |  |  |  |
| Data Length                           | Bit     | Multistate button can have two states.  |  |  |  |  |  |  |
| à                                     | Word    | Multistate button can have 256 states.  |  |  |  |  |  |  |
| The S.                                | LSB     | Multistate button can have 16 states.   |  |  |  |  |  |  |
| Data Format                           |         | des BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data to define the read memory content.   |  |  |  |  |  |  |

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| Property Description of              | of Multistate Buttons  | Egith.              |
|--------------------------------------|--|---------------------|
| Add/Remove State                     | It is used to set the state number of multistate button. There are be set if its unit is WORD, 16 states can be set if its unit is LSB set if its unit is Bit. |                     |
| Sequence                             | It is used to switch the sequence of multistate state (previous s  | state/next state).  |
| User Security Level                  | Use this option to set the user priority for pressing this element that is higher than the current setting can use this element.                               | . Only the priority |
| Set Low Security                     | Use this option to force the current priority to be the lowest after pressed. This can prevent the misoperation made by the users                              |                     |
| InterLock Address<br>InterLock Level | It is similar to the Latch function. When read address is change (or from High to Low, this is determined by the property of "Intebutton can be enabled.       |                     |
| Before Execute Macro                 | When this option is set, the input macro will be enabled and ex button is pressed.   | ecuted before this  |
| After Execute Macro                  | When this option is set, the input macro will be enabled and ex button is pressed.   | ecuted after this   |

#### **Example of Multistate Buttons:**

When the data length is LSB (D100.0-D100.1~D100.3-D100.4):

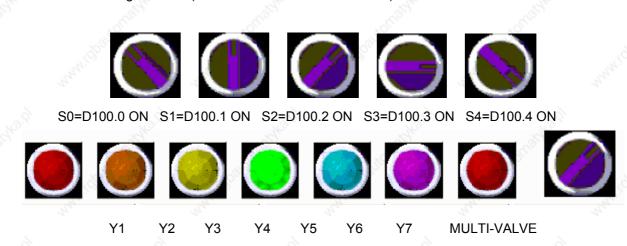


Fig. 3.2.3 Multistate buttons display

#### Set Value Button

Table 3.2.4 Property description of Set Value buttons

| Property Description                              | of Set Value Buttons   |
|---|--|
| users can use it to inp<br>setting value to PLC c | ton on the screen, a system built-in numeric keypad (TEN-KEY) will show up and the ut the setting value directly. When pressing ENTER key, HMI will send the input orresponding register. The maximum and minimum input setting values are all usernalso specify the trigger mode to trigger the designated PLC address before or after ite. |
| Write Address                                     | It is used to set the write address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)   |
| Text / Text Size<br>Font / Text Color             | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)  |

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| Picture Bank Name                       | (Please refer to   | n Table 3.2.3  | 2 Property Description   | n ∩f  | General  | Ruttone )   |  |
|---|--|--|--|---|--|---|--|
| Picture Name                            | (Flease Telei ti   | o Table 3.2.2  | z Froperty Description   | JII ()I   | General  | i Bullons.)   |  |
| Transparent Effect<br>Transparent Color | (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |  |   |  |   |  |
| Foreground Color<br>Style               | (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |  |   |  |   | 5. <sup>3</sup>  |
| Trigger<br>Trigger Mode                 | The users can use this setting to trigger the designated PLC address to be before or after writing the setting value. Note: this function can only trigger address to be ON. If the PLC address needs to be triggered again, the use should set the address to be OFF by themselves. |  |  |   |  |   | ger PLC  |
| Detail Range Setup                      | - S  | ~3   | Input Value  | 0   | ×  |   | Ò,   |
| " Show                                  | The.   |  | Data Length Word   | 1011  |  |   |  |
|   | io.  |  | Data Format Unsigned De  | cimal   | <del>-</del>   |   |  |
|   | ,  |  | X 200  |   | ==   |   |  |
|   | 24/  |  | Minimum 9999   |   |  |   |  |
|   | 274  |  | 3  |   | - 15   |   |  |
|   | <u> </u>   |  | Integral Digits 4 ▼ Min  Fractional 0 ▼ Ma   |   | 100  |   |  |
|   | 160 is.  |  | ractional o 1  | LX 99   | 799  |   |  |
| <sup>Ugg</sup>                          | (g)  |  |  | ~   |  |   |  |
|   |  | OK Cancel  |  |   |  |   |  |
|   |  | -2/2,  |  |   |  |   |  |
|   | Data Length  | There are 1  | 16bits Word and 32b  | its D   |  | ord two opt   | tions.   |
|   | 7670   |  | 7/1/2  |   | ouble W  | -   | 757  |
|   | Data Length  Data Format   |  | different kinds of dat   |   | ouble W  | different da  | ta length:   |
|   | 7670   | It provides  | 7/1/2  | ta foi  | ouble Wrmat for c  | -   | ta length:   |
|   | 7670   | It provides  1. BCD  | different kinds of dat   | ta foi  | oouble Wrmat for G   | different da  | ta length:   |
|   | 7670   | It provides  1. BCD 2. Signed  | different kinds of dat Word BCD  | 1.<br>2.  | Pouble Wrmat for C   | different da  Double Wo   | ta length:   |
|   | 7670   | 1. BCD<br>2. Signed<br>3. Signed   | different kinds of dat  Word  BCD  Decimal   | 1.<br>2.<br>3.  | Double W<br>rmat for of<br>BCD<br>Signed<br>Signed   | different da  Double Wo  BCD  Decimal   | ta length:   |
|   | 7670   | 1. BCD 2. Signed 3. Signed 4. Unsign   | different kinds of dat Word BCD  | 1.<br>2.<br>3.<br>4.  | Pouble Wormat for Control of Cont | different da  Double Wo   | ta length:   |
|   | 7670   | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex  | different kinds of dat  Word  BCD  Decimal   | 1.<br>2.<br>3.<br>4.<br>5.  | BCD<br>Signed<br>Signed<br>Unsign<br>Hex   | different da  Double Wo  BCD  Decimal   | ta length:   |
|   | 7670   | 1. BCD 2. Signed 3. Signed 4. Unsign   | different kinds of dat  Word  BCD  Decimal   | 1.<br>2.<br>3.<br>4.<br>5.<br>6.  | BCD<br>Signed<br>Signed<br>Unsign<br>Hex<br>Binary   | different da  Double Wo  BCD  Decimal  ed Decimal   | ta length:   |
|   | Data Format  | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  | different kinds of dat  Word  BCD  Decimal  ed Decimal   | 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7.  | BCD<br>Signed<br>Signed<br>Unsign<br>Hex<br>Binary   | BCD Decimal ed Decimal  | ta length:   |
|   | Data Format  Minimum   | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  | different kinds of dat  Word  BCD  Decimal  ed Decimal   | 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7.  | BCD<br>Signed<br>Signed<br>Unsign<br>Hex<br>Binary<br>Floating   | BCD Decimal ed Decimal  | ta length:   |
|   | Data Format  | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  | different kinds of dat  Word  BCD  Decimal  ed Decimal   | 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7.  | BCD<br>Signed<br>Signed<br>Unsign<br>Hex<br>Binary<br>Floating   | BCD Decimal ed Decimal  | ta length:   |
|   | Data Format  Minimum   | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary The users of to determin   | Word  BCD Decimal ed Decimal  can set the minimum te the range of input etion to determine the de digit number is no   | 1. 2. 3. 4. 5. 6. 7. The another setting the diggs of the area of the diggs.  | BCD Signed Signed Unsign Hex Binary Floating d maximung value it number  | BCD Decimal ed Decimal g um of input er of integer  | setting value  |
|   | Data Format  Minimum  Maximum  | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  The users of to determin  Use this op fraction. The the display   | Word  BCD Decimal ed Decimal  can set the minimum te the range of input  | 1. 2. 3. 4. 5. 6. 7. or setti   | BCD Signed Signed Unsign Hex Binary Floating Ing value Lit number Leal digit r   | BCD Decimal ed Decimal  g um of input er of integer number valua real decimal   | setting value  |
|   | Minimum  Maximum  Integral Digits  Fractional  When the user   | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  The users of to determine Use this opfraction. The display only when the service of th | Word  BCD Decimal ed Decimal  can set the minimum the the range of input dition to determine the de digit number is no format. The digit nu the data format is set the minimum and me the value by referring                   | 1. 2. 3. 4. 5. 6. 7. an and setti   | BCD Signed Signed Unsign Hex Binary Floating Ing value it numbered digit rumbered as "Floating value"  | BCD Decimal ed Decimal gum of input er of integer number valu a real decim bating".   | setting value and decima ue. It is only nal number                                 |
| User Security Level                     | Minimum Maximum Integral Digits Fractional When the user button, HMI wi format, integra Use this option  | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  The users of to determin  Use this op fraction. The display only when the dis | Word  BCD Decimal ed Decimal  can set the minimum the the range of input dition to determine the de digit number is no format. The digit nu the data format is set the minimum and me the value by referring                   | 1. 2. 3. 4. 5. 6. 7. n and setti  | BCD Signed Signed Unsign Hex Binary Floating Ing value it numbered digit rer will be a selected.   | BCD Decimal ed Decimal gum of input a real decinoating". ue, after preed data len   | setting value and decima ue. It is only nal number essing OK gth, data             |
| User Security Level Set Low Security    | Minimum Maximum Integral Digits Fractional When the user button, HMI wi format, integra Use this option that is higher the Use this option   | 1. BCD 2. Signed 3. Signed 4. Unsign 5. Hex 6. Binary  The users of to determine Use this oppraction. The display only when the current of th | Word  BCD Decimal ed Decimal ed Decimal et the range of input etion to determine the e digit number is no format. The digit nu the data format is se the minimum and n e value by referring hal digits. ser priority for press | 1. 2. 3. 4. 5. 6. 7. or and setting t a remaking t this ee thee the this ee this each of this ee this ee the this ee this | BCD Signed Signed Unsign Hex Binary Floating In maximum and value In will be a ed as "Floating to the selection of the select | BCD Decimal ed Decimal gum of input er of integer number valu a real decin bating". ue, after pre ed data len ent. Only the | setting value and decima ue. It is only nal number essing OK gth, data ne priority |

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| Property Description o | f Set Value Buttons  |
|------------------------|--|
| Before Execute Macro   | When this option is set, the input macro will be enabled and executed before this button is pressed. |
| After Execute Macro    | When this option is set, the input macro will be enabled and executed after this button is pressed.  |

## Example of Set Value Button:

Press Set Value button and the Numeric keypad (TEN-KEY) dialog box will display on the screen. The users can input a value and write it into the PLC corresponding register M100.



Fig. 3.2.4 Numeric keypad (TEN-KEY) dialog box

## ■ Set Constant Button

Table 3.2.5 Property description of Set Constant buttons

| Property Description o                | of Set Constant Buttons   |
|---------------------------------------|---|
| register. It has the same             | n on the screen, HMI will send the specified constant value to PLC corresponding function as Set Value button. The users can also specify the trigger mode to trigge lress before or after writing the setting value. |
| Write Address                         | It is used to set the write address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)  |
| Text / Text Size<br>Font / Text Color | The users can set the text, text size, font and text color that provided by <b>Windows®</b> to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)      |
| Picture Bank Name Picture Name        | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |
| Transparent Effect Transparent Color  | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |
| Foreground Color<br>Style             | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |

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| Property Description                 | of Set Constant   | Buttons  | Zigh,                                     | 011                            | 2994  |  |  |
|--------------------------------------|---|--|---|--------------------------------|---|--|--|
| Trigger<br>Trigger Mode              | before or after address to be   | writing the setti<br>ON. If the PLC                              |   | is function ca<br>be triggered | address to be ON<br>in only trigger PLC<br>again, the users |  |  |
| Detail Range Setup                   | e ska til   |  | Length Word Format Unsigned Dec           | rimal Cancel                   | pattornatyka.pl   |  |  |
| The is                               | Data Length   | There are 16b  | its Word and 32bi                         | ts Double Wo                   | ord two options.  |  |  |
|                                      | Data Format There are following data format provided:   |  |   |                                | Talligh,  |  |  |
| Ng Mag                               | e ground  | Word/Double  1. BCD 2. Signed BC 3. Signed De 4. Unsigned 5. Hex | CD<br>ecimal                              | <sup>Numic</sup> e             | Waldwald What   |  |  |
| , while parties                      | Value   | After pressing   |   | ill examine th                 | users want to write.<br>ne value by referring to            |  |  |
| User Security Level                  |   |  | priority for pressi<br>setting can use th |                                | nt. Only the priority                                       |  |  |
| Set Low Security                     |   |  | rrent priority to be misoperation ma      |                                |   |  |  |
| InterLock Address<br>InterLock Level | pressed. This can prevent the misoperation made by the users (operators).  It is similar to the Latch function. When read address is changed from Low to High (or from High to Low, this is determined by the property of "InterLock Level"), this button can be enabled. |  |   |                                |   |  |  |
| Before Execute Macro                 | When this opti  |  | out macro will be                         | enabled and                    | executed before this  |  |  |
| After Execute Macro                  | A   | on is set, the in  | out macro will be                         | enabled and                    | executed after this   |  |  |

# Example of Set Constant buttons:

After pressing the Set Constant button, HMI will transmit the constant value to PLC corresponding register D1000.

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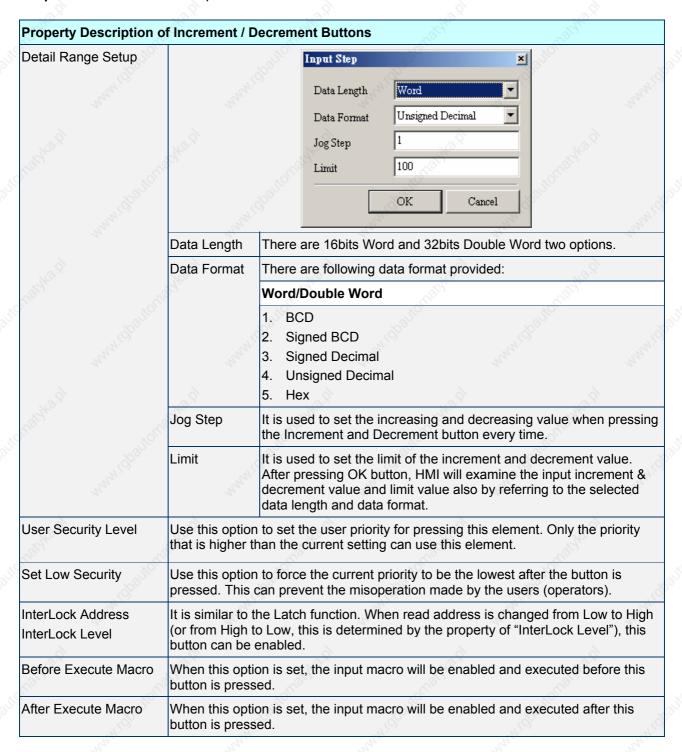


Fig. 3.2.5 Example of Set Constant buttons

#### ■ Increment / Decrement

Table 3.2.6 Property description of Increment / Decrement buttons

| and a  |                                      |   |                                  |                           |                    |       |
|--|--------------------------------------|---|----------------------------------|---------------------------|--------------------|-------|
| Property Description of  | f Increment / D                      | ecrement Buttor   | ns <sub>corr</sub> oll           | 1                         | "Ollar,            |       |
| After pressing this button constant value. Then, wexceeds the limit (minim maximum) into the PLC | rite the result int<br>um and maximu | to PLC correspond<br>um) set in HMI, HM   | ding register. I                 | f the addition            | or subtraction re  |       |
| Write Address<br>Read Address  |                                      | et the read and writ<br>ery. (Please refer to                                       |                                  |                           |                    |       |
| Text / Text Size<br>Font / Text Color  | Windows® to                          | set the text, text s<br>determine the tex<br>Description of Ge                      | t display on th                  | e element. (I             |                    | able  |
| Picture Bank Name Picture Name   | (Please refer to                     | o Table 3.2.2 Prop  | erty Descripti                   | on of Genera              | al Buttons.)       |       |
| Transparent Effect Transparent Color   | (Please refer to                     | o Table 3.2.2 Prop  | erty Description                 | on of Genera              | al Buttons.)       |       |
| Foreground Color<br>Style  | (Please refer to                     | o Table 3.2.2 Prop  | erty Descripti                   | on of Genera              | al Buttons.)       | nanli |
| Function   | element. The e                       | modify the eleme<br>elements that their<br>: Increment button                       | characteristic                   | s can be mo               |                    |       |
| Trigger<br>Trigger Mode  | before or after address to be        | use this setting to<br>writing the setting<br>ON. If the PLC ad<br>address to be OF | value. Note: t<br>dress needs to | this function be triggere | can only trigger F | LC >  |



Example of Increment / Decrement Buttons:

Adjust D1000 value by pressing buttons +/-.



Fig. 3.2.6 Example of Increment / Decrement buttons

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### ■ Goto Screen / Previous Page (Previous View) Buttons

Table 3.2.7 Property description of Goto Screen / Previous Page (Previous View) buttons

#### Property Description of Goto Screen / Previous Page (Previous View) Buttons

There are three kinds of selection for switching screens:

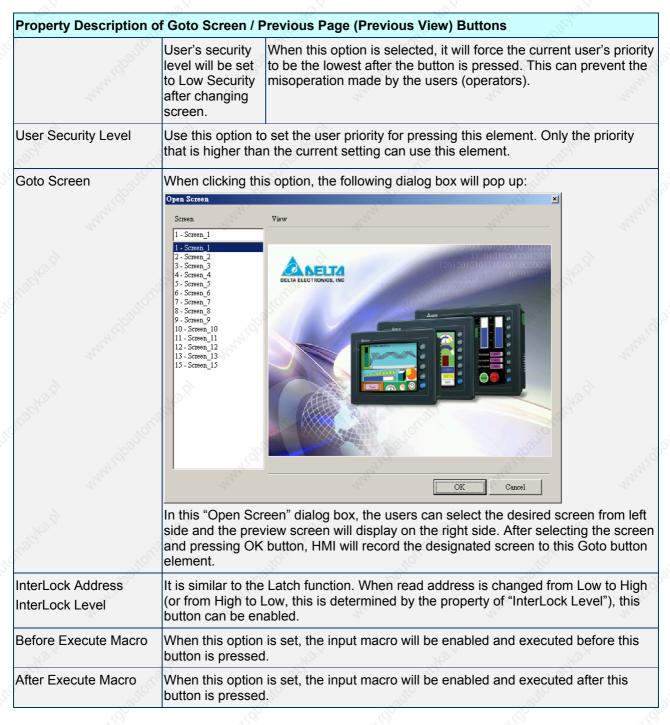
- 1. Goto screen: press this button on the screen and HMI can go to a specific screen.
- 2. Previous page: press this button on the screen and HMI can switch to the previous screen.
- 3. Previous view: press this button on the screen and HMI can switch to previous view, just like Back command in **Windows® Explorer Browse**.



The above example screens describe the operation of previous page button. In screen 1, if press "Goto 2" button, HMI will switch to the screen 2. If press "Goto 3" button on screen 2, HMI will switch to screen 3. Then, if press previous page button on screen 3, HMI will return to screen 2. If press previous page button on screen 2, HMI will switch to screen. (Note: however, if the function of the button created on screen 2 is "previous view", not "previous page", when press "previous view" button on screen 2, HMI will switch to screen 3, not screen 1 and this is just the difference between "Previous page" and "Previous view".)

| Text / Text Size<br>Font / Text Color | Windows® to                   | determine the to                     | t size, font and to<br>ext display on the<br>General Buttons.)  | element. (Plea                      |                    | 121.10              |
|---------------------------------------|-------------------------------|--------------------------------------|---|-------------------------------------|--------------------|---------------------|
| Picture Bank Name<br>Picture Name     | (Please refer to              | o Table 3.2.2 Pr                     | operty Description  | n of General Bu                     | uttons.)           |                     |
| Transparent Effect Transparent Color  | (Please refer to              | o Table 3.2.2 Pr                     | operty Descriptio   | n of General Bu                     | uttons.)           |                     |
| Foreground Color<br>Style             | (Please refer to              | o Table 3.2.2 Pr                     | operty Descriptio   | n of General Bu                     | uttons.)           | NA !C               |
| Function                              | element. The                  | elements that the                    | nent characteristice<br>eir characteristics<br>revious page and   | can be modifie                      | d directly by usin |                     |
| Trigger<br>Trigger Mode               | before or after address to be | writing the setting on. If the PLC a | to trigger the desing value. Note: the address needs to DFF by themselve  | nis function can<br>be triggered ag | only trigger PLC   | na ió               |
| Detail                                | This dialog box               | Detail  Close is on  User            | y when the button e Sub-Screen (The Goto : aly valid in Sub-Screen) 's security level will be set r changing screen | Screen Button                       | oto screen".       | , r <sup>n</sup> io |
| nathka "                              | Close Sub-<br>Screen          | button is only                       | otion is selected,<br>y valid in Sub-Scr<br>ve) sub screen wi   | een. When pres                      |                    |                     |

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Example of Goto Screen buttons:

Use different screen buttons to switch to the designated screen

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Fig. 3.2.7 Example of Goto Screen buttons

## ■ System Function Button



Fig. 3.2.5 System function button options

Table 3.2.8 System function buttons

| Button Type             | Macro | Read | Write | Function  |
|-------------------------|-------|------|-------|---|
| System Date Time        | No    | No   | No    | It is used to set HMI system time and date (year-month-day, hours:minutes:seconds)  |
| Password Table<br>Setup | No    | No   | No    | It is used to set all password priority.  |
| Enter Password          | No    | No   | No    | HMI provides passwords function.  |
| Contrast<br>Brightness  | No    | No   | No    | It is used to adjust HMI contrast and brightness.   |
| Low Security            | No    | No   | No    | After pressing this button, HMI will set the password to the lowest level (Level is 0).                                     |
| System Menu             | No    | No   | No    | After pressing this button, HMI will change screen to system menu.  |
| Report List             | No    | No   | No    | After pressing this button, HMI will output the screen data to the specific device. It is usually used with print function. |

For the property description of system function buttons, please refer to the following Table 3.2.9:

Table 3.2.9 System function buttons

| Property Description of                        | of System Function      | n Buttons   | 9  | 9  |
|--|-------------------------|---|--|--|
| Text / Text Size<br>Font / Text Color          | Windows® to det         | the text, text size, font and te<br>ermine the text display on the<br>scription of General Buttons.)  |  |  |
| Picture Bank Name<br>Picture Name              | (Please refer to Ta     | able 3.2.2 Property Description   | n of General Buttons.)   |  |
| Transparent Effect Transparent Color           | (Please refer to Ta     | able 3.2.2 Property Description   | n of General Buttons.)   | <sup>3</sup> 2)  |
| Foreground Color<br>Style                      | (Please refer to Ta     | able 3.2.2 Property Description   | n of General Buttons.)   | 2  |
| Function                                       |                         | dify the element characteristic<br>nents that their characteristics<br>following items:   |  |  |
| Kalika d                                       | System Date & Time      | Use this option to set the sy-<br>users only need to press SY<br>system setting screen and e<br>below.  | <b>'S</b> button on HMI pane   | l to enter HMI   |
| NO ST  | NO (2) WHANIGH          | Date/Time X 2003-01-13 09:20:51  Quit Save  |  |  |
| Nated.   | Password Table<br>Setup | After selecting this option, do to the User Security Level in screen data to HMI, if the us setting level, this "Password the "Password Keypad" diale   | n property table. After of<br>ser security level is low<br>I Table" will not be ope<br>og box will display. Pa | downloading<br>ver than the<br>ened and only<br>ssword Table |
| rest No. 12                                    | 1800 j                  | can be opened or not depen<br>higher than the setting level<br>open Password Table, it onl<br>change the password that le<br>users still cannot change or<br>higher than the users'.  | or not. Even though the use indicates that the use evel is lower than the use.                                 | ne users can<br>ers can<br>isers'. The                       |
| Ratification which is                          | alke di                 | Password Table  1 2 3 ▲ 00000000 0 11111111 1 1 2222222 2 33333333 3 4 44444444 4 4 4 5 555555 5 6666666 6 77777777 7 Care & Ca | CLD 0 ENT ####   | 1111 1<br>2222 2<br>3333 3<br>4444 4                         |
| , 4, 4, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, | "KHI (db"               | Maximum Priority  | Password 5 L   | evels  |

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| before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  |             |   | V. V.   | _^`  |                                  |
|--|-------------|---|---|--|----------------------------------|
| Contrast Brightness  This button provides the users to adjust HMI LCD contrast at brightness settings. After pressing this button, the users will the following pop-up window to adjust HMI LCD contrast and brightness settings. If the users press: "Set for default Contrabutton, it will set HMI LCD to the default settings.  Low Security  Using this button can set the user priority to the lowest (Leve 0). This option makes the user priority level become the lowe to protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system error. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description (Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address roeds to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.         |             | Enter Password                          | open the corresponding prior<br>higher level the users input,   | rity by the inpuy passw  | ord. The                         |
| Contrast Brightness  This button provides the users to adjust HMI LCD contrast and brightness settings. After pressing this button, the users will the following pop-up window to adjust HMI LCD contrast and brightness settings. If the users press: "Set for default Contrabutton, it will set HMI LCD to the default settings.  Low Security  Using this button can set the user priority to the lowest (Leve 0). This option makes the user priority level become the lowest or protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system error. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OF. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.                 |             | Ar Ch                                   | 1 2 3   |  |                                  |
| Brightness  brightness settings. After pressing this button, the users will the following pop-up window to adjust HMI LCD contrast and brightness settings. If the users press "Set for default Contra button, it will set HMI LCD to the default settings.  Low Security  Using this button can set the user priority to the lowest (Leve 0). This option makes the user priority level become the lowe to protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system error. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description (Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device using the users can set this option in the property table.  The Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only. |             | undilipo                                |   | MANAGO   | zen <sup>i</sup>                 |
| Low Security  Using this button can set the user priority to the lowest (Leve 0). This option makes the user priority level become the lowe to protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system error. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON left he PLC address to be the triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device  This option is provided in Report List button only. When the users select a Report Device  The Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.  |             | _                                       | brightness settings. After pre<br>the following pop-up window<br>brightness settings. If the use  | essing this button, the u<br>to adjust HMI LCD cor<br>ers press "Set for defau                             | users will g<br>ntrast and       |
| Low Security  Using this button can set the user priority to the lowest (Leve 0). This option makes the user priority level become the lowe to protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system performent. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device  This option is provided in Report List button only. When the users select a Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.   |             | nent loo                                | LCD Modulate  | Walding of   |                                  |
| O). This option makes the user priority level become the lowe to protect control system parameter not to be modified when the users exit the different screens. It can also avoid the misoperation that may cause system error. (This function is also provided for Goto screen button.)  System Menu  After pressing this button, HMI will be back to system menu screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device window is shown as the figure above. The Report Device can be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.   |             | 940 x                                   | 10°   | in the second  | ,87                              |
| screen. The users can return to operation screen just by activating "Run" function or startup HMI again.  Report List  This button has many functions. It can be used flexibly depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Report Device can set this option in the property table.  Print Device  The Report Device window is shown as the figure above. The Report Device car be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.  |             | Low Security                            | <ol> <li>This option makes the use<br/>to protect control system par<br/>the users exit the different so<br/>misoperation that may cause</li> </ol> | er priority level become<br>ameter not to be modif<br>creens. It can also avoi<br>e system error. (This fu | e the lowe<br>fied when<br>d the |
| depending on the properties of the "Report List" option (Plea refer to page 2-124 in Chapter 2 and the following description Report Device).  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Repo List button, the users can set this option in the property table.  Print Device  The Report Device window is shown as the figure above. The Report Device car be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.   |             | System Menu                             | screen. The users can return  | to operation screen ju   |                                  |
| before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves.  This option is provided in Report List button only. When the users select a Repo List button, the users can set this option in the property table.  Print Device  The Report Device window is shown as the figure above. The Report Device car be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.   |             | Report List                             | depending on the properties refer to page 2-124 in Chapte   | of the "Report List" opt   | tion (Pleas                      |
| List button, the users can set this option in the property table.  Print Device  SMC  Cuss Disk  Printer  The Report Device window is shown as the figure above. The Report Device car be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.  | 9,5         | before or after wri<br>address to be ON | ting the setting value. Note: thi . If the PLC address needs to b   | s function can only trig<br>be triggered again, the  | ger PLC                          |
| The Report Device window is shown as the figure above. The Report Device car be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.  | port Device | List button, the us                     |   |  | ct a Repor                       |
| be SMC, USB Disk, and Printer. Please note that USB Disk and Printer are provided in DOP-AE series HMI only.   |             | © SMC                                   |   |  |                                  |
| joing pulput the history records and alarm data to sing card.  |             | be SMC, USB Dis                         | sk, and Printer. Please note tha<br>AE series HMI only.   | t USB Disk and Printer   |                                  |
| USB Disk Output the history records and alarm data to USB Disk.  |             | CMC                                     |   |  |                                  |

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|                                   | Printer      | HMI will check if Print Typesetting function is set or not first. If Print Typesetting function is set already, the screen data will be output to   |
|-----------------------------------|--------------|---|
| Muly.                             | Here's       | the printer directly. If HMI detects the Print Typesetting function is not set yet, the Hard Copy function will be enabled.                         |
| User Security Level               |              | on to set the user priority for pressing this element. Only the priority than the current setting can use this element.                             |
| InterLock Address InterLock Level |              | the Latch function. When read address is changed from Low to High to Low, this is determined by the property of "InterLock Level"), this e enabled. |
| Before Execute Macro              | When this op | otion is set, the input macro will be enabled and executed before this ssed.  |
| After Execute Macro               | When this op | otion is set, the input macro will be enabled and executed after this ssed.   |

# Example of System Function Buttons:



Fig. 3.2.8 HMI System Menu Screens

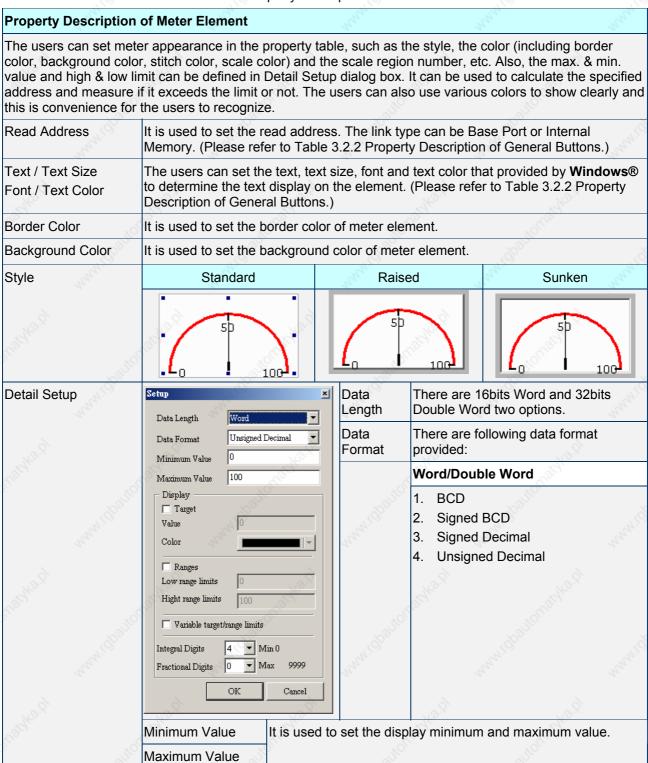
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## 3.3 Meter Element



Fig. 3.3.1 Meter element options

Table 3.3.1 Property Description of Meter Element



| 410                                   | - 10  |  | -10                                       | 4/0  |
|---------------------------------------|---|--|---|--|
| Property Description                  | of Meter Element  | Nath Land  | Nath.                                     | Think.   |
| Whitipaile                            | Target<br>Value<br>Color  | this option. If the by the users were the thickness of th | his option is set, th                     | et value display or not by using<br>e target value and its color s<br>the figure shown below: (He<br>its color is in blue.)      |
| Regular (1991)                        | 10 to |  | 100-                                      | ,baltorraty <sup>ke</sup>  |
| Many C.                               | Ranges (Enable range setting)   | Please refer to  | the description of                        | Low & High Region Color.   |
| REPARE D                              | Variable target/range limits  | the low limit ac   | ddress is Read Add                        | high limit is a variable value,<br>ress+1, the high limit addresess of target value is Read                                      |
| 'Ipania                               | Integral Digits   | Use this option  | to determine the c                        | ligit number of integer and  |
| nani s                                | Fractional Digits   |  | n. The digit numbe                        | r is not a real digit number   |
| *18/12.1gl                            |   | HMI will exami   | ne the value by refe                      | and maximum value, after erring to the selected data   |
| Low Region Color<br>High Region Color | option in the Detail S<br>30 and the color of lo  | Setup dialog box<br>ow limit region i  | k is selected. If the s in green, and the | able only when the "Ranges"<br>users set the low limit value i<br>n set the high limit value is 70<br>ement will be shown as the |
| REPART!                               | 50  |  |   |  |
| Stitch Color                          | It is used to set the s   | stitch color of th   | e meter element.                          | "uny" "uny   |
| Scale Color                           | It is used to set the s   | scale color of th  | e meter element.                          | 4. 4.  |
| Scale Region Number                   |   | ons to increase  |   | element. The users can use ale region number. The settin   |

# Example of Meter Element:

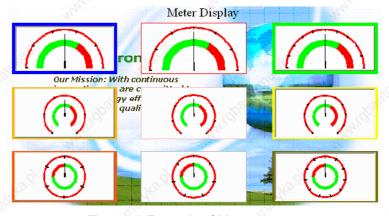


Fig. 3.2.9 Example of Meter element

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## 3.4 Bar Element

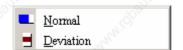
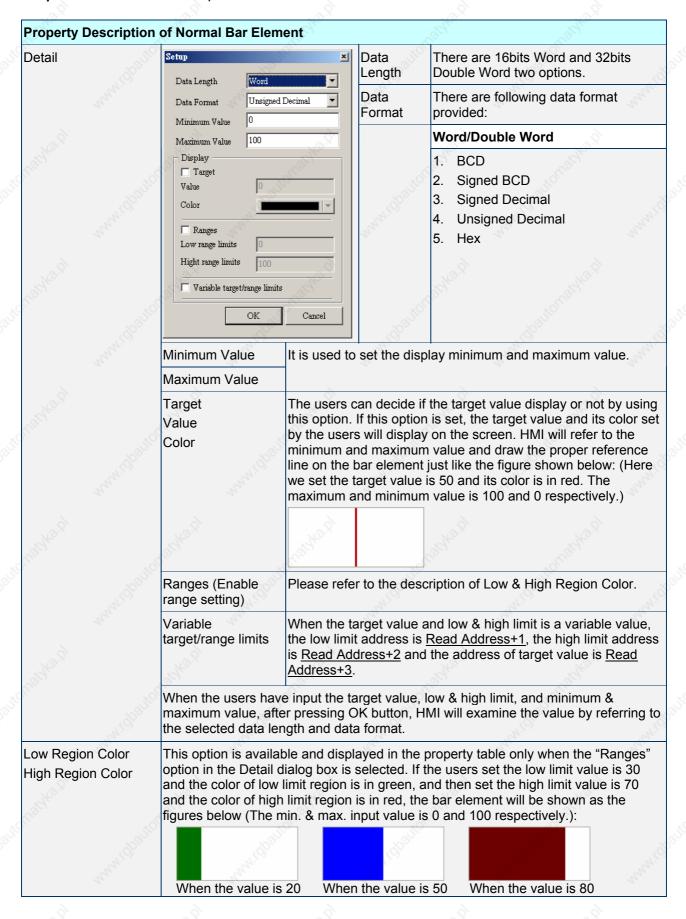


Fig. 3.4.1 Bar element options

Table 3.4.1 Property Description of Bar Element

|  |  | -01                  | - 000  | -02                    |             |  |  |
|--|--|----------------------|--|------------------------|-------------|--|--|
| <b>Property Description</b>                | of Norma   | al Bar Element       |  |                        |             |  |  |
| HMI reads the value o bar element and then |  |                      | ific address (register) a                                    | and converts the value | e to normal |  |  |
| Read Address                               |  |                      | ress. The link type can<br>ble 3.2.2 Property Desc           |                        |             |  |  |
| Text / Text Size<br>Font / Text Color      | to detern  |                      | ext size, font and text co<br>on the element. (Pleas<br>ns.) |                        |             |  |  |
| Border Color                               | It is used   | to set the border co | olor of the normal bar el                                    | ement.                 | 272         |  |  |
| Foreground Color<br>Background Color       | example  |                      | nd and background color<br>or of the following exam          |                        |             |  |  |
| Style                                      | 8  | Standard             | Raised   | Sunk                   | en          |  |  |
|  | S. Cated   | Michigal Co.         | W  |                        |             |  |  |
| Display Format                             | Left   | The display progr    | essing direction is from                                     | right to the left.     | , wall      |  |  |
|  | Right The display progressing direction is from left to the right. |                      |  |                        |             |  |  |
| 10.0                                       | Тор  | The display progr    | essing direction is from                                     | bottom to the top.     | 3,          |  |  |
|  | Botom  | The display progr    |  |                        |             |  |  |

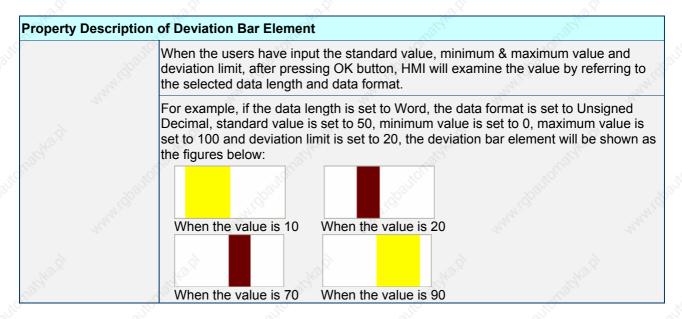
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Table 3.4.1 Property Description of Bar Element

| Property Description                  | of Deviation Bar El   | ement   | 10/11/10  | Najio.  |  |
|---------------------------------------|---|---|---|---|--|
|                                       | alue and the users ha   | ve a deviation  | on value. The                                       | ister). Subtract the setting standard en, the users can convert the deviation   |  |
| Read Address                          |   |   |   | pe can be Base Port or Internal<br>ty Description of General Buttons.)  |  |
| Text / Text Size<br>Font / Text Color |   | t display on  | the element.  | text color that provided by <b>Windows</b> (Please refer to Table 3.2.2 Property  |  |
| Border Color                          | It is used to set the   | border color  | of the deviat                                       | tion bar element.   |  |
| Foreground Color<br>Background Color  |   | reground co   |   | und color of the deviation bar element.  owing example bar element is green a   |  |
|                                       |   | John John John John John John John John   |   |   |  |
| Style                                 | Standard  |   | Rais  | ed Sunken   |  |
|                                       | St. Cityle Co.  | ionaphay  |   |   |  |
| Display Format                        | Horizontal The  | deviation va  | lue display h                                       | orizontally.  |  |
|                                       | Vertical The  | deviation va  | lue display v                                       | ertically.  |  |
| Detail                                | Deviation Input  Data Length Word                             | ×   | Data<br>Length                                      | There are 16bits Word and 32bits Double Word two options.   |  |
|                                       |   | d Decimal 🔻   | Data<br>Format                                      | There are following data format provided:   |  |
|                                       | Minimum Value 0  Maximum Value 100  V Display Deviation Limit |   | Mayio   | Word/Double Word  1. BCD  2. Signed BCD   |  |
|                                       | Limit 0 Color Variable Standard Value/I                       | Deviaion Limit  | , NO  | <ul><li>3. Signed Decimal</li><li>4. Unsigned Decimal</li><li>5. Hex</li></ul>  |  |
|                                       | OK  | Cancel  | "they top go  |   |  |
|                                       | Standard Value  | It is used to value.  | o set the star                                      | ndard value for calculating deviation   |  |
|                                       | Minimum Value   | The minim   | um and max  | imum value in the deviation bar eleme   |  |
|                                       | Maximum Value   | Maria distriction |   |   |  |
|                                       | Display Deviation<br>Limit                                    | selected. A color set b   | Also, the devi<br>y the users. I<br>value will be o | color can be set only when this option ation value will display in the designat f this option is not selected, the displayed in the foreground color direction. |  |
|                                       | Variable Standard<br>Value/Deviation<br>Limit                 | When standard value and high limit of deviation value is variable. The address of standard value is Read Address+1 and the address of deviation limit value is Read Address+2.  |   |   |  |



#### Example of Deviation Bar Element:

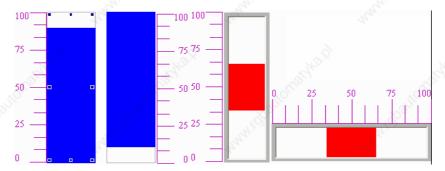


Fig. 3.4.2 Example of Deviation bar element

Read: D1000, use the deviation bar element to display the value of PLC corresponding register=Dn

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# 3.5 Pipe Element



Fig. 3.5.1 Pipe element options

Table 3.5.1 Property Description of Pipe Element

| <b>Property Description</b>           | of Pipe (1) / Pipe (2) Element   |  |   |                   |
|---------------------------------------|--|--|---|-------------------|
|                                       | of the corresponding PLC specific and then display it on the screen                                  |  | ister). Then, convert   | the value to Pipe |
| Read Address                          | It is used to set the read address Memory. (Please refer to Table                                    |  |   |                   |
| Text / Text Size<br>Font / Text Color | The users can set the text, text to determine the text display or Description of General Buttons     | the element.   |   |                   |
| WaterMark Color<br>Inside Tube Color  | It is used to set the watermark element.  Pipe (1) Element   | color and insi   | Pipe (2) Element  | mund mund         |
| 1.190.00                              | The watermark color is in blue. The inside tube color is in black                                    | c. John .  | The watermark color<br>The inside tube color  |                   |
| Style                                 | Standard   | Hara.  | Rotation  | 180               |
| neighte is                            |  |  |   |                   |
| Detail Setup                          | Setup  Data Length  Word  ▼  | Data<br>Length   | There are 16bits W Double Word two c  |                   |
|                                       | Data Format Unsigned Decimal  Minimum Value 0  | Data<br>Format   | There are following provided:   | data format       |
|                                       | Maximum Value 100  |  | Word/Double Wor   | d Age             |
|                                       | Display Target Value  Color Ranges Low range limits Hight range limits  Variable target/range limits | White I gold of the control of the c | <ol> <li>BCD</li> <li>Signed BCD</li> <li>Signed Decimal</li> <li>Unsigned Deci</li> <li>Hex</li> </ol> |                   |
|                                       | OK Cancel  | , ibaito   | . Wal   |                   |

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| - L'O                                 | U811   |   |
|---------------------------------------|--|---|
| <b>Property Description</b>           | n of Pipe (1) / Pipe (2  | 2) Element  |
| ~aji                                  | Minimum Value  | It is used to set the minimum and maximum capacity of the pipe  |
|                                       | Maximum Value  | element.  |
| 145 B                                 | Target<br>Value<br>Color   | The users can decide if the target value display or not by using this option.   |
| Z <sub>Q</sub>                        | Ranges (Enable range setting)  | Please refer to the description of Low & High Region Color.   |
|                                       | Variable<br>target/range limits                                      | When the target value and low & high limit is a variable value, the low limit address is <u>Read Address+1</u> , the high limit address is <u>Read Address+2</u> and the address of target value is <u>Read Address+3</u> .   |
|                                       | maximum value, aft   | ve input the target value, low & high limit, and minimum & ter pressing OK button, HMI will examine the value by referring to ength and data format.  |
| Low Region Color<br>High Region Color | option in the Detail<br>30 and the color of<br>and the color of high | able and displayed in the property table only when the "Ranges" Setup dialog box is selected. If the users set the low limit value is low limit region is in green, and then set the high limit value is 70 th limit region is in red, the pipe element will be shown as the min. & max. input value is 0 and 100 respectively.): |
|                                       |  |   |
|                                       | When the value is  | S 20 When the value is 50 When the value is 80  |

## **Property Description of Pipe (3) Element**

It is used to connect to several pipes. Pipe (3) element is shown as the figure below:



Pipe Gauge

Use this option to set the pipe gauge. The selectable range is from  $1 \sim 5$ . The setting value 1 represents at least 13 pixels and the setting value 2 represents at least 26 pixels and vise versa.

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# Property Description of Pipe (4) Element

It is used to connect to several pipes. Pipe (4) element is shown as the figure below:



| Style     | Standard | Rotation 90 | Rotation 180 | Rotation 270 |
|-----------|----------|-------------|--------------|--------------|
| ANN HOUSE |          |             |              |              |

Pipe Gauge

Use this option to set the pipe gauge. The selectable range is from 1 ~ 5. The setting value 1 represents at least 13 pixels and the setting value 2 represents at least 26 pixels and vise versa.

## Property Description of Pipe (5) Element

It is used to connect to several pipes. Pipe (5) element is shown as the figure below:



|             | 63.7     | 27.7                   | and the second second |   |
|-------------|----------|------------------------|-----------------------|---|
| Style       | Standard | Rotation 90            | Rotation 180          | Rotation 270                                      |
| Tagh Ka fal | ヴ        | Ü                      | Ç                     | J   |
| Pipe Gauge  |          | at least 13 pixels and |                       | is from 1 ~ 5. The setting represents at least 26 |

| <b>Property Descriptio</b> | n of Pipe (6) / Pipe (7) Element   |
|----------------------------|--|
| Horizontal and vertical    | al pipes. It is used to display the direction of water flow.   |
| Read Address               | It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)                                      |
| Mobile Cursor Color        | When there is any data occurred in the read address, the mobile cursor will display. The users can use this option to set the mobile cursor color.   |
| Pipe Gauge                 | Use this option to set the pipe gauge. The selectable range is from 1 ~ 5. The setting value 1 represents at least 13 pixels and the setting value 2 represents at least 26 pixels and vise versa. |

# 3.6 Pie Element



Fig. 3.6.1 Pie element options

Table 3.6.1 Property Description of Pie Element

| 44/  | 1 45.0 6.0.7 1   | Topolty D   | escription or r  | o Element  | 14/   |  |  |  |  |
|--|--|---|--|--|---|--|--|--|--|
| Property Description   | on of Pie Element  |   | M  | 74,  | 71,2,   |  |  |  |  |
| set the minimum & n of the specific addre value of the address | of Pie elements for the<br>naximum value, low & I<br>ss and quickly judge its<br>is less than the lower I<br>to recognize and give a | high limit a<br>s quantity t<br>limit or hig  | nd element co<br>by the increment<br>her than the high   | lor, etc. It can be ι<br>nt and decrement  | used to display the size<br>measure of area. If the |  |  |  |  |
| Read Address   |  | It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.) |  |  |   |  |  |  |  |
| Text / Text Size<br>Font / Text Color                          | The users can set the determine the text dis Description of General  | splay on the  | e element. (Ple  |  | rided by <b>Windows®</b> to<br>e 3.2.2 Property     |  |  |  |  |
| Border Color<br>Foreground Color<br>Background Color           | It is used to set the bore For example, the bore foreground color is se  | der color o   | f the following  | example pie elem   |   |  |  |  |  |
| Style  | Standard   | Ra  | ised   | Sunken   | Transparent   |  |  |  |  |
| Detail Setup   | Setup  Data Length Word  | ×   | Data Length  | There are 16bits Double Word two   | Word and 32bits o options.                          |  |  |  |  |
|  | Data Length Word  Data Format Unsigned D  Minimum Value 0  | ecimal 🔻  | Data Format  | There are following provided:  | ng data format                                      |  |  |  |  |
|  | Maximum Value 100  |   | 74/0   | Word/Double W  | ord   |  |  |  |  |
|  | Display Target Value  Color Ranges Low range limits Hight range limits Variable target/range limits  OK                              | Cancel  | Wald in the little of the litt | <ol> <li>BCD</li> <li>Signed BCD</li> <li>Signed Decided</li> <li>Unsigned Decided</li> <li>Hex</li> </ol> | mal   |  |  |  |  |
|  | Minimum Value  | It is use   | ed to set the m  | inimum and maxir   | num value of the pie                                |  |  |  |  |
|  | Maximum Value  | elemer  |  |  | Dally   |  |  |  |  |

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| Property Descripti                    | on of Pie Element   | Cardy.   | "Galage   | Sept.   |   |
|---------------------------------------|---|--|---|---|---|
|                                       | Target<br>Value<br>Color  | using this optic<br>color set by the<br>to the minimur<br>reference line | on. If this option is<br>e users will display<br>n and maximum v<br>on the bar elemer | et value display or reset, the target value on the screen. How alue and draw the put just like the figure alue is 80 and its contact. | e and its<br>II will refer<br>proper<br>shown |
|                                       | Ranges (Enable range setting)  Variable target/range  | 9  | 6,  | f Low & High Regio  |   |
|                                       | limits  | the low limit ac   | ddress is <u>Read Ad</u><br>ad Address+2 and  | dress+1, the high lithe address of targ   | mit   |
|                                       | When the users have in value, after pressing Ok data length and data for  | K button, HMI w  |   |   |   |
| Low Region Color<br>High Region Color | This option is available option in the Detail Sett 30 and the color of low and the color of high limbelow (The min. & max | up dialog box is<br>limit region is in<br>nit region is in re            | selected. If the us<br>green, and then sed, the pie elemen                            | ers set the low limit<br>set the high limit val<br>t will be shown as t   | value is<br>ue is 70                          |
| Kill Mark                             | When the value is 2   | 0 When the   | value is 50 Why   | en the value is 80  |   |

# Example of Pie Element:

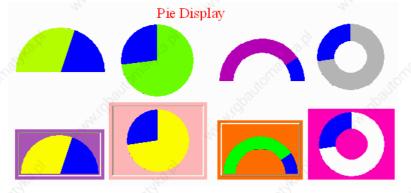


Fig. 3.6.2 Example of Pie element

### Indicator

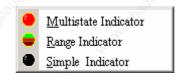


Fig. 3.7.1 Indicator element options

Table 3.7.1 Property Description of Multistate Indicator Element

| Property Description of   | of Multist  | tate Indicator Element  |  |  |  |  |  |
|---|---|---|--|--|--|--|--|
| changes message to us<br>important message or in<br>display method or differe   | er no ma<br>nportant<br>ent text s  | ethod to indicate the state of some specific address. It will send state atter it is Bit, LSB or WORD. If this address is an significant indicator or alarm, it can be used to inform the users immediately by changing state etting. Or let the users know more information according to the changes of s can also handle the corresponding situation at the first time. |  |  |  |  |  |
| Read Address  |   | ed to set the read address. The link type can be Base Port or Internal y. (Please refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |
| When the read address is set to the contact of the controller, i.e. PLo multistate indicator will change depending on the state (ON or OFF) corresponding contact. For example, the users can set that when the indicator will display the text "Start" and when the value is 0, the indicator display the text "Stop". The users also can add picture into each state multistate indicator and then the corresponding picture will show whactivated. |   |   |  |  |  |  |  |
| Text / Text Size<br>Font / Text Color   | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.) |   |  |  |  |  |  |
| Twinkle   | When Y  | Yes is selected, it indicates that the element will twinkle to remind the users.  |  |  |  |  |  |
| Picture Bank Name Picture Name  | (Please   | refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |
| Transparent Effect Transparent Color  | (Please   | e refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |
| Foreground Color<br>Style   | (Please   | e refer to Table 3.2.2 Property Description of General Buttons.)  |  |  |  |  |  |
| Data Length   | Bit   | Indicator element can have two states.  |  |  |  |  |  |
| 'Illiania   | Word  | Indicator element can have 256 states.  |  |  |  |  |  |
| and different   | LSB   | Indicator element can have 16 states.   |  |  |  |  |  |
| Data Format   | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.  |   |  |  |  |  |  |
| Add/Remove State  | value is  | It is used to set the state numbers of multistate indicator. If the data length of the value is in Word, 1~256 states can be set. If the data length of the value is in LSB, 16 states can be set. If the data length of the value is in Bit, only 2 states can be  |  |  |  |  |  |
| - 175   | •   |   |  |  |  |  |  |

Example of Indicator Elements:















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Table 3.7.2 Property Description of Range Indicator Element

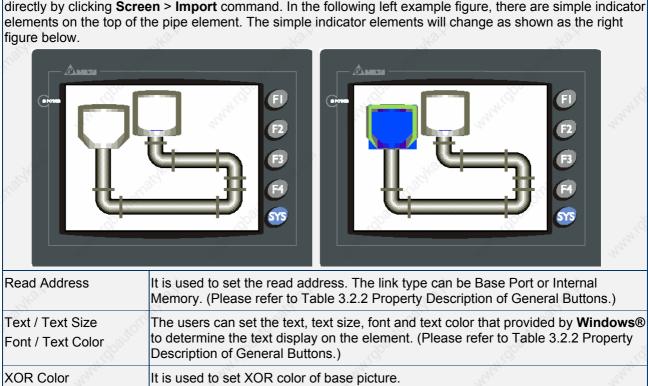
| Range indicator provides a method to indicate the state of some specific address. It will send state cha message to user no matter it is Bit, LSB or WORD. HMI reads the value of the corresponding PLC speaddress (register) and compare this read value with the lower limit value and then, display the corresponding state of comparison result on HMI screen.  Read Address  It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)  Text / Text Size Font / Text Color Description of General Buttons.)  The users can set the text, text size, font and text color that provided by Wind to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)  Twinkle  When Yes is selected, it indicates that the element will twinkle to remind the uplicture Name  Picture Name  Picture Name  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  It is used to set the state numbers of range indicator. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is not always the plant of the value is not always the plant of the value is not be compared to the value is not plant of the value is not plant of the value is not plant of the value is not not plant of the value is not plant of the value is not not plant of                            | Property Description                           |                            | <u> </u>  | Element  | alifoc.   |   | alio,  | •   |
|--|--|----------------------------|---|--|---|---|--|---|
| Memory. (Please refer to Table 3.2.2 Property Description of General Buttons Text / Text Size Font / Text Color The users can set the text, text size, font and text color that provided by Wind determine the text display on the element. (Please refer to Table 3.2.2 Prop Description of General Buttons.)  Twinkle When Yes is selected, it indicates that the element will twinkle to remind the u Picture Bank Name Picture Name Picture Name Picture Name Picture Name (Please refer to Table 3.2.2 Property Description of General Buttons.)  Proreground Color Style  Add/Remove State It is used to set the state numbers of range indicator. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the data length of the value is in Eit, only 2 states can be set. If the can addit is not a state on the value is in Eit.  Range 0 Range 1 Range 2 Range 100 50 33 1 Whe                           | message to user no m<br>address (register) and | atter it is I<br>I compare | Bit, LSB or this read v   | WORD. HMI revalue with the lo  | ads the valu  | e of the  | e corresponding  | g PLC specific  |
| Tourish the sext display on the element. (Please refer to Table 3.2.2 Propersion of General Buttons.)  When Yes is selected, it indicates that the element will twinkle to remind the ure picture Name  Picture Name  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Pro                           | Read Address                                   |                            |   |  |   |   |  |   |
| Picture Bank Name Picture Name  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)  (Please refer to Table 3.2.2 Property Description of General Buttons.)                           |  | to dete                    | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.) |  |   |   |  |   |
| Picture Name  Transparent Effect Transparent Color  Foreground Color Style  Add/Remove State  It is used to set the state numbers of range indicator. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 btate States can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in LSB, 1 Data Double Word two options.  Data There are 16bits Word and 32th Length Double Word two options.  Data There are following data format Pormat Provided:  Word/Double Word  1. BCD 2. Signed BCD 3. Signed Decimal 4. Unsigned Decimal 5. States to set the range there is n numbers of states, it indicates that there is Range for the users to use. The users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0 Range 1 Range 2 Range 100 50 33 1  When the value of read address is higher than 100, the range indicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. In represent total range numbers. For example, if the read address is \$5 the total state number of the element is 5, it indicates that it is Range 0~4 for the users to use. Then, the lower limit value Range 0~4 for the users to use. Then, the lower limit value of Range 1 is \$2 and vise.  | Twinkle  | When `                     | es is sele  | cted, it indicates   | that the ele  | ment w  | vill twinkle to re   | mind the users.   |
| Transparent Color  Foreground Color Style  Add/Remove State  It is used to set the state numbers of range indicator. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in Bit, only 2 states can be 2 Length  Data Length  Data Length  Data Data Double Word two options.  Data There are 16bits Word and 32b Length  Double Word two options.  Data There are following data format provided:  Word/Double Word  1. BCD  2. Signed BCD  3. Signed Decimal  4. Unsigned Decimal  Range  OK States, it indicates that there is Range for the users to use. The users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0 Range 1 Range 2 Range 100 50 33 1  When the value of read address is higher than 100, the ran indicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that is Range 0-4 for the users to use. Then, the lower limit value of Range 1 is \$2 and vise versa.  |  | (Please                    | refer to Ta   | able 3.2.2 Prope   | erty Descript   | ion of (  | General Buttons  | s.)   |
| Add/Remove State  It is used to set the state numbers of range indicator. If the data length of the vis in Word, 1~256 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. In Limits    Data  | - AV   | (Please                    | refer to Ta   | able 3.2.2 Propo   | erty Descript   | ion of (  | General Buttons  | s.)   |
| is in Word, 1~256 states can be set. If the data length of the value is in LSB, 1 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If the data length of the value is in Bit, only 2 states can be set. If there are 16bits Word and 32b Double Word two options. There are following data format provided:    Word/Double Word  | <u> </u>                                       | (Please                    | refer to Ta   | able 3.2.2 Prope   | erty Descript   | ion of (  | General Buttons  | s.)   |
| Range Constant Limits  Selecting this option can use default 5 states to set the rang there is n numbers of states, it indicates that there is Range for the users to use. The user address is higher than 100, the range indicator will display in red. When the value of the read address is \$0, the range indicator will display in green, a vise versa.  Variable Limits  Length  Double Word two options.  There are following data format provided:  Word/Double Word  1. BCD 2. Signed BCD 3. Signed Decimal 4. Unsigned Decimal 5 states to set the range for the users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0 Range 1 Range 2 Range 100 So 33 1  When the value of read address is higher than 100, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that it is Range 0-4 for the users to use. Then, the lower limit value of Range 1 is \$2 and vise numbers in the lower limit value of Range 1 is \$2 and vise numbers.   | Add/Remove State                               | is in W                    | ord, 1~256  | states can be s  | et. If the dat  | a lengt   | h of the value is  | s in LSB, 16  |
| Range Constant Limits    Constant Limits   Const                           | Detail   |                            | 120   |  |   | There are 16bits Word and 32bits Double Word two options. |  |   |
| Range Constant Limits    Constant Limits   Range   O   |  | Data Fo                    | rmat Un   |  |   |   |  | data format   |
| Range Constant Limits  Range Constant Limits  Selecting this option can use default 5 states to set the range for the users to use. The users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0  Range 1  Range 2  Range 0  Range 1  Range 2  Range 0  Range 1  When the value of read address is higher than 100, the range indicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0-4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and vise.   |  | (8)                        |   | Nagh.  |   | Word/Double Word  |  |   |
| Limits there is n numbers of states, it indicates that there is Range for the users to use. The users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0 Range 1 Range 2 Range 100 50 33 1  When the value of read address is higher than 100, the range indicator will display in red. When the value of the read address higher than 50, the range indicator will display in green, a vise versa.  Variable Limits When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0~4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and visit in the lo |  | • c                        | Range<br>Minin  | num 4  | in idealia.   | 2. S<br>3. S  | igned BCD<br>igned Decimal   | al white  |
| Limits there is n numbers of states, it indicates that there is Range for the users to use. The users can specify the foreground of state 0, 1, 2, 3, and 4 as red, green, blue, yellow and pur respectively.  Range 0 Range 1 Range 2 Range 100 50 33 1  When the value of read address is higher than 100, the range indicator will display in red. When the value of the read address higher than 50, the range indicator will display in green, a vise versa.  Variable Limits When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0~4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and visit in the lo |  | NO                         |   | 700  |   | 38  |  |   |
| When the value of read address is higher than 100, the rangindicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0~4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit |  | Range                      |   | there is n num<br>for the users to<br>of state 0, 1, 2                 | bers of state<br>o use. The us                                | s, it ind<br>sers ca                                      | icates that ther<br>n specify the fo                                       | re is Range n-1 preground color                                       |
| When the value of read address is higher than 100, the rangindicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0~4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates that the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates the lower limit value of Range 1 is \$2 and visit indicates  |  |                            | -4"   | Range 0  | Range   | 1   | Range 2  | Range 3   |
| indicator will display in red. When the value of the read add is higher than 50, the range indicator will display in green, a vise versa.  Variable Limits  When this option is selected, there is Range n-1 for the use use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the is Range 0~4 for the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and visitation.   |  | 10.0                       |   | 100  | 50  | 10.5  | 33   | ر<br>ا  |
| Limits use. n represents the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the state number of the users to use. Then, the lower limit value Range 0 is \$1, the lower limit value of Range 1 is \$2 and vision in the state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state numbers are numbers and n-1 represent total range numbers. For example, if the read address is \$0 the total state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates that the state number of the element is 5, it indicates the state number of the element is 5, it indicates the state number of the element is 5, it indicates the state number of the element is 5, it indicates the state number of the element is 5, it indicates the state number of the element is 5, it indicates the state number of the element i                     |  |                            | "Millog   | indicator will di<br>is higher than                                    | splay in red.   | When  | the value of the   | e read address  |
| AV VCISA.  |  | Kelegha d                  |   | use. n represe<br>total range nur<br>the total state<br>is Range 0~4 f | nts the total<br>nbers. For e<br>number of th<br>or the users | state n<br>xample<br>e elem<br>to use.                    | umbers and n-<br>, if the read add<br>ent is 5, it indic<br>Then, the lowe | 1 represents the dress is \$0, and eates that there er limit value of |

#### Chapter 3 Element Function | ScrEdit Software User Manual

Table 3.7.3 Property Description of Simple Indicator Element

#### **Property Description of Simple Indicator Element**

For the users' convenience, simple indicator provides two states (ON/OFF) to let the users change the base picture quickly. The users can also import the completed CAD drawing into a simple indicator element directly by clicking Screen > Import command. In the following left example figure, there are simple indicator elements on the top of the pipe element. The simple indicator elements will change as shown as the right figure below.



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# 3.8 Data Display



Fig. 3.8.1 Data Display element options

Table 3.8.1 Function of Data Display elements

| Element Type        | Function  |
|---------------------|---|
| Numeric Display     | Display the value of the specific address.                    |
| Character Display   | Display the text or character of the specific address.        |
| Date Display        | Display date of HMI.  |
| Time Display        | Display time of HMI.  |
| Day-of-week Display | Display day-of-week of HMI.                                   |
| Prestored Message   | Display message according to the state of HMI.                |
| Moving Sign         | Display message by moving sign according to the state of HMI. |

# ■ Numeric Display

Table 3.8.2 Property Description of Numeric Display Element

| <b>Property Description</b>            | on of Numeric Displ   | ay Element   | roll,                  | 10K                   |  |  |  |  |
|--|---|--|------------------------|-----------------------|--|--|--|--|
| This element will reaset by the users. | nd the value of the set   | tting address and display  | the read value imme    | diately in the format |  |  |  |  |
| Read Address                           | It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.) |  |                        |                       |  |  |  |  |
| Text Size<br>Text Color                |   | the text size and text cole<br>element. HMI provides 8                                 |                        |                       |  |  |  |  |
| Border Color<br>Background Color       | selected as Raised  | n can be set only when the<br>I and Sunken. The style of<br>ground color is set to gre | of the element below i | s selected as         |  |  |  |  |
| CELANO EL                              |   | he style of the element is<br>these two options are dis                                |                        | he Border Color and   |  |  |  |  |
| Style                                  | Standard  | Raised   | Sunken                 | Transparent           |  |  |  |  |
| Mahay                                  | 1234  | 1234   | 1234                   | 1234                  |  |  |  |  |
| 9                                      |   |  |                        |                       |  |  |  |  |

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| Leading Zero |  |  | ers select the Leading Zero option.                                     |  |  |  |  |
|--------------|--|--|---|--|--|--|--|
|              | (Please note that t  | he integral digits is set to 4.)   |   |  |  |  |  |
|              | 0888   |  |   |  |  |  |  |
|              |  | (If YES is selected, the numeric   | value will show as this one.)   |  |  |  |  |
|              | a Charles  |  |   |  |  |  |  |
|              | 888  |  |   |  |  |  |  |
|              |  | (If NO is selected, the numeric v  | value will show as this one.)   |  |  |  |  |
| Detail       | Alder.   | Detail   | ×   |  |  |  |  |
|              |  | Data Length Word   |   |  |  |  |  |
|              | 10 P   | Data Format Unsigned Decima  | al .  |  |  |  |  |
|              | Cardy,   | Integral Digits 4 ▼ Mim 0  Fractional Digits 0 ▼ Max   | 9999  |  |  |  |  |
|              | 110°   |  |   |  |  |  |  |
|              |  | Gain 1.0 Offset 0  | Interpretation  |  |  |  |  |
|              | n'en'  | Offset 0   | Arr. May.   |  |  |  |  |
|              |  |  | Cancel  |  |  |  |  |
|              | . 16 S.  | 74 N   | - Weigh   |  |  |  |  |
|              | Date Length  | Date Length There are 16bits Word and 32bits Double Word two options.  |   |  |  |  |  |
|              | Data Format  | There are following data formation   | at provided:  |  |  |  |  |
| Natural Co.  | 4410   | Word   | Double Word   |  |  |  |  |
|              | The state of the s | 1. BCD   | 1. BCD  |  |  |  |  |
|              | 9  | 2. Signed BCD  | 2. Signed BCD   |  |  |  |  |
|              | " Cho.,  | 3. Signed Decimal  | 3. Signed Decimal   |  |  |  |  |
|              | 10 CC  | 4. Unsigned Decimal  | 4. Unsigned Decimal   |  |  |  |  |
|              | 6,   | <ul><li>5. Hex</li><li>6. Binary</li></ul>   | <ul><li>5. Hex</li><li>6. Binary</li></ul>                              |  |  |  |  |
|              | "Hay"  | O. Dillary   | 7. Floating   |  |  |  |  |
|              | 20   | 1,   | l localing  |  |  |  |  |
|              | Integral Digits  | Use this ontion to determine the   | he digit number of integer and  |  |  |  |  |
|              | Fractional Digits  | decimal fraction. The digit nur  | per is not a real digit number  |  |  |  |  |
|              | Tractional Digits  | value. It is only the display for decimal number only when the "Floating".   | mat. The digit number will be a real<br>e data format is selected as    |  |  |  |  |
|              | Gain (a)   |  | read address value) + (b) this  |  |  |  |  |
|              | Offset (b)   |  | play numeric value (y). For example<br>et value (b) is 3, when the read |  |  |  |  |
|              | "They  | address value is 3, then the d   | isplay numeric value will be equal to                                   |  |  |  |  |
|              | D 1 . #  | $(2) \times 3 + (3) = 9.$  | th  |  |  |  |  |
|              | Round off  | If this option is selected, after above, all numeric values can screen.  | be rounded off and display on the                                       |  |  |  |  |
| ast Refresh  | If this option is sele   | ected, the element can be displa   | ayed immediately when switching   |  |  |  |  |
|              |  |  | uding display element and input   |  |  |  |  |
|              |  | <u>element) can be fast refreshed on one screen.</u> The users can set the Fast Refresh Rate by clicking <b>Screen &gt; Screen Properties</b> command. There are three levels of the |   |  |  |  |  |
|              |  | and they are High, Medium and  |   |  |  |  |  |

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# ■ Character Display

Table 3.8.3 Property Description of Character Display Element

| <b>Property Descriptio</b>       | n of Character Display Element  | 72,   | 27,71               |
|----------------------------------|---|---|---------------------|
| and display on the so            | is element to read the value of the specific address<br>reen. The read value must be in ASCII format or t<br>ax. string length is 28words.)   |   |                     |
| Read Address                     | It is used to set the read address. The link type (Please refer to Table 3.2.2 Property Description   |   | nal Memory.         |
| Text Size<br>Text Color          | The users can set the text size and text color that text display on the element. HMI provides 8~64 to use.  |   |                     |
| Border Color<br>Background Color | (Please refer to Table 3.8.2 Property Description   | n of Numeric Display Elem   | ent.)               |
| Style                            | (Please refer to Table 3.8.2 Property Description   | n of Numeric Display Elem   | ent.)               |
| String Length                    | The range is with 1 ~ 28 words.   | E E   | Walning Control     |
| Magha by Maharidan               | ABC   | F2<br>F3<br>F4<br>S13   |                     |
| Religion Maharidher              | If we set the read address as Internal Memory 0 Screen Open Macro as follows:  \$0 = 65 \$1 = 66 \$2 = 67 \$3 = 68 \$4 = 69 Then, the above screen will display.  | , i.e. \$0, the string length i   | s 5 and set         |
| Cathabl                          | Please note that character display element read of the internal memory \$ address is Word, there Memory \$0, the display character will be <b>A(65)</b> _versa.   | fore, when reading the Inte   | ernal               |
| Fast Refresh                     | If this option is selected, the element can be disting the screen. Please note that only 4 elements (in element) can be fast refreshed on one screen. The Rate by clicking Screen > Screen Properties of Fast Refresh Rate and they are High, Medium as | ncluding display element a<br>The users can set the Fast<br>ommand. There are three | nd input<br>Refresh |

## Date Display

Table 3.8.4 Property Description of Data Display Element

| Property Description             | on of Date Display Element   |
|----------------------------------|--|
| Display HMI system               | date. There are several date formats selectable for the users to use.  |
| Text Size<br>Text Color          | The users can set the text size and text color that provided by HMI to determine the text display on the element. HMI provides 8~64 kinds of default text font for the users to use. |
| Border Color<br>Background Color | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |
| Style                            | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |
| Date Format                      | Provide MM/DD/YY, DD/MM/YY, DD.MM.YY three kinds of formats.   |

## ■ Time Display

Table 3.8.5 Property Description of Time Display Element

| Property Description             | on of Time Display Element   |
|----------------------------------|--|
| Display HMI system               | time. There are several time formats selectable for the users to use.  |
| Text Size<br>Text Color          | The users can set the text size and text color that provided by HMI to determine the text display on the element. HMI provides 8~64 kinds of default text font for the users to use. |
| Border Color<br>Background Color | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |
| Style                            | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |
| Time Format                      | Provide HH:MM:SS, HH:MM two kinds of formats.  |

## Day-of-week Display

Table 3.8.6 Property Description of Day-of-week Display Element

| Property Description                  | n of Day-of-week Display Element  |
|---------------------------------------|---|
| element is set to 7. It               | day ~ Monday) of the week. The state default setting of the Day-of-week display indicates that there are 7 states for this element. Each state has its predefined day SUN, MON SAT. The users can change it directly in the property table. |
| Text / Text Size<br>Font / Text Color | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)                           |
| Border Color<br>Background Color      | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)  |
| Style                                 | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)  |

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## **■** Prestored Message

Table 3.8.7 Property Description of Prestored Message Element

| <b>Property Description</b>                 | n of Pres | stored Message Element   |                   | Ala,                | 24,         |  |  |  |
|---|-----------|--|-------------------|---------------------|-------------|--|--|--|
| Display the state con and text for each sta |           | C corresponding contact or re  | egister directly. | The users can set s | tate number |  |  |  |
| Read Address                                |           | It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)  |                   |                     |             |  |  |  |
| Text / Text Size<br>Font / Text Color       | to deter  | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)  |                   |                     |             |  |  |  |
| Border Color<br>Background Color            | (Please   | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |                   |                     |             |  |  |  |
| Style                                       | (Please   | refer to Table 3.8.2 Property  | Description of N  | Numeric Display Ele | ment.)      |  |  |  |
| Data Type                                   | Bit       | It can have two states.  | 'IQUILL           | '12 <sub>9120</sub> |             |  |  |  |
| WHY!  | Word      | It can have 256 states.  | 71/2              | "Hyll"              | "Any i      |  |  |  |
| 1,  | LSB       | It can have 16 states.   |                   | 4.                  | 4.          |  |  |  |
| Data Format                                 |           | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.   |                   |                     |             |  |  |  |
| Add/Remove State                            | the valu  | It is used to set the state numbers of prestored message element. If the data length of the value is in Word, 1~256 states can be set. If the data length of the value is in LSB, 16 states can be set. If the data length of the value is in Bit, only 2 states can be set. |                   |                     |             |  |  |  |

# ■ Moving Sign

Table 3.8.8 Property Description of Moving Sign Element

| Property Description                  | on of Mov  | ing Sign Element   | ::0 <sup>110</sup>               |  |  |
|---------------------------------------|--|--|----------------------------------|--|--|
| of PLC correspondir                   | ng contact   | s movement, lighting, or special display<br>or register. The users can determine the<br>ng points, and interval(ms) in the prope |                                  |  |  |
| Read Address                          | It is used to set the read address. The link type can be Base Port or Internal Memory (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |                                  |  |  |
| Text / Text Size<br>Font / Text Color | The users can set the text, text size, font and text color that provided by <b>Windows®</b> to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.) |  |                                  |  |  |
| Border Color<br>Background Color      | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |  |                                  |  |  |
| Style                                 | (Please refer to Table 3.8.2 Property Description of Numeric Display Element.)   |  |                                  |  |  |
| Data Type                             | Bit  | It can have two states.  | , K <sup>O</sup> FI <sup>O</sup> |  |  |
|                                       | Word   | It can have 256 states.  | (J) (J)                          |  |  |
|                                       | LSB  | It can have 16 states.   | Nagar Nagar                      |  |  |
| Data Format                           | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.   |  |                                  |  |  |

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| Property Description of Moving Sign Element |  |  |  |  |  |
|---|--|--|--|--|--|
| Add/Remove State                            | It is used to set the state numbers of moving sign element. If the data length of the value is in Word, 1~256 states can be set. If the data length of the value is in LSB, 10 states can be set. If the data length of the value is in Bit, only 2 states can be set. |  |  |  |  |
| Direction                                   | Left   | The display progressing direction is from right to the left. |  |  |  |
|   | Right  | The display progressing direction is from left to the right. |  |  |  |
|   | Тор  | The display progressing direction is from bottom to the top. |  |  |  |
|   | Botom  | The display progressing direction is from top to the bottom. |  |  |  |
| Moving Points                               | It is used to set the movement of the moving sign. The unit is Pixel and the range is within 1 $\sim$ 50 Pixels.   |  |  |  |  |
| Interval(ms)                                | It is used to set the interval time between two movements. The unit is ms and the range is within $50 \sim 3000$ ms.   |  |  |  |  |

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# 3.9 Graph Display

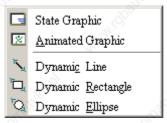


Fig. 3.9.1 Graph Display element options

Table 3.9.1 Function of Graph Display elements

| Element Type      | lcon | Function  |  |
|-------------------|------|---|--|
| State Graphic     |      | It is used to create and display one or more state pictures on the certain positions of the HMI screen. Different pictures can be shown on the screen according to the different states.  |  |
| Animated Graphic  | ×    | It is used to create and display an animated picture on any position of the HMI screen. The users can control the X and Y direction to move and show the animated pictures freely. Different pictures can be shown on the screen according to the different states. |  |
| Dynamic Line      |      | It is used to draw and display a dynamic line on the HMI screen. The users can control the X and Y direction to move the dynamic line element and change its size freely.   |  |
| Dynamic Rectangle | Ē    | It is used to draw and display a dynamic rectangle on the HMI screen. The users can control the X and Y direction to move the dynamic rectangle element and change its size freely.   |  |
| Dynamic Ellipse   | O    | It is used to draw and display a dynamic ellipse on the HMI screen. The users can control the X and Y direction to move the dynamic ellipse element and change its size freely.   |  |

# ■ Static Graphic

Table 3.9.2 Property Description of Static Graphic Element

| Property Description                 | n of Stat   | c Graphic Element  | , ĝ     |  |  |
|--------------------------------------|---|--|---------|--|--|
| read addresses conti                 | rolled by I   | C, the users can create static graphic elements<br>PLC. The read value of each state can be conv<br>splay on the HMI screen. |         |  |  |
| Read Address                         | It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.) |  |         |  |  |
| Picture Bank Name<br>Picture Name    | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |  |         |  |  |
| Transparent Effect Transparent Color | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |  |         |  |  |
| Foreground Color                     | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |  |         |  |  |
| Data Length                          | Bit   | It can have two states.  | May May |  |  |
|                                      | Word  | It can have 256 states.  | 8       |  |  |
|                                      | LSB   | It can have 16 states.   | 11/40.7 |  |  |
| Data Format                          | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.  |  |         |  |  |

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| Property Descriptio | n of Static  | Graphic Eleme                                   | ent   | Caldre .  | Caldy Service   |                           |
|---------------------|--------------|---|---|---|---|---------------------------|
| Add/Remove State    | value is in  | Word, 1~256 s                                   | tates can be                                  | set. If the data le                                       | nent. If the data lengtl<br>ngth of the value is in<br>t, only 2 states can be                            | LSB, 16                   |
| Auto Change         | No           | regarded as t<br>determined by<br>the read addr | the state num<br>y the value oress \$0 is 0,  | nber. It means that<br>of the read addres                 | ne read address will be<br>at the state number is<br>as. For example, if the<br>an state; if the value of | value of                  |
|                     | Yes          |   |   |   | of the read address is hange automatically.   | s a non-                  |
| 7919/10 dj          | Variation    | condition of caccording to I                    | hanging eler<br>Read Addres<br>ue, the static | ment. The elemer<br>ss+1. If the value<br>graphic element | of the <u>Read Address</u> wit will change automated of the <u>Read Address</u> will change automatic     | tically<br><u>+1</u> is a |
| Transparent         | is usually t | used with the transcription                     | ansparent co                                  | olor setting of the                                       | isplayed in transparei<br>element. Please refer   |                           |
|                     |              |   | re d  | nt transparent col  | un, apartouankari   |                           |
|                     |              |   | The transp                                    | arent color of the  | whole drawing has be  | een set.                  |
|                     | Note: If Ye  | s is selected (s                                | et to Transp                                  | arent), the foregro                                       | ound color option is di   | sabled.                   |

# Example of Static Graphic element:

The designated read address = D100. The internal memory value and each state should be as follows:



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## Animated Graphic

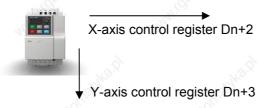
Table 3.9.3 Property Description of Animated Graphic Element

| <b>Property Descriptio</b>           | n of Anii   | mated Graphic                      | Element 🎤   | My,                     | 77,7        |                |
|--------------------------------------|---|------------------------------------|---|-------------------------|-------------|----------------|
| several read address                 | es contro<br>element  | olled by PLC. T<br>s and display o | an create animated graphic el<br>he read value of each state c<br>on the HMI screen. The move   | an be converted and tra | nsmitted to |                |
| Read Address                         |   |                                    | ad address. The link type car 3.2.2 Property Description of   |                         | al Memory   |                |
|                                      | Read Address Read Address+1   |                                    | Use the value of Read Address to switch the state of animated graphic element.  Use the value of Read Address+1 to be the horizontal axis position of the animated graphic element. |                         |             |                |
|                                      |   |                                    |   |                         |             | Read Address+2 |
|                                      | Picture Bank Name<br>Picture Name   | (Please                            | (Please refer to Table 3.2.2 Property Description of General Buttons.)  |                         |             |                |
| Transparent Effect Transparent Color | (Please   | refer to Table                     | 3.2.2 Property Description of   | General Buttons.)       |             |                |
| Clear Picture                        |   |                                    | r previous animated graphic of the element.   | element when moving th  | ie element  |                |
| Data Length                          | Word  | It can have                        | 256 states.   | Mary.                   | " Lange     |                |
|                                      | LSB It can have 16 states.  |                                    |   |                         |             |                |
| Data Format                          | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.  |                                    |   |                         |             |                |
| Add/Remove State                     | It is used to set the state numbers of animated graphic. If the data length of the value is in Word, 1~256 states can be set. If the data length of the value is in LSB, 16 states can be set. If the data length of the value is in Bit, only 2 states can be set. |                                    |   |                         |             |                |

Example of Animated Graphic element:

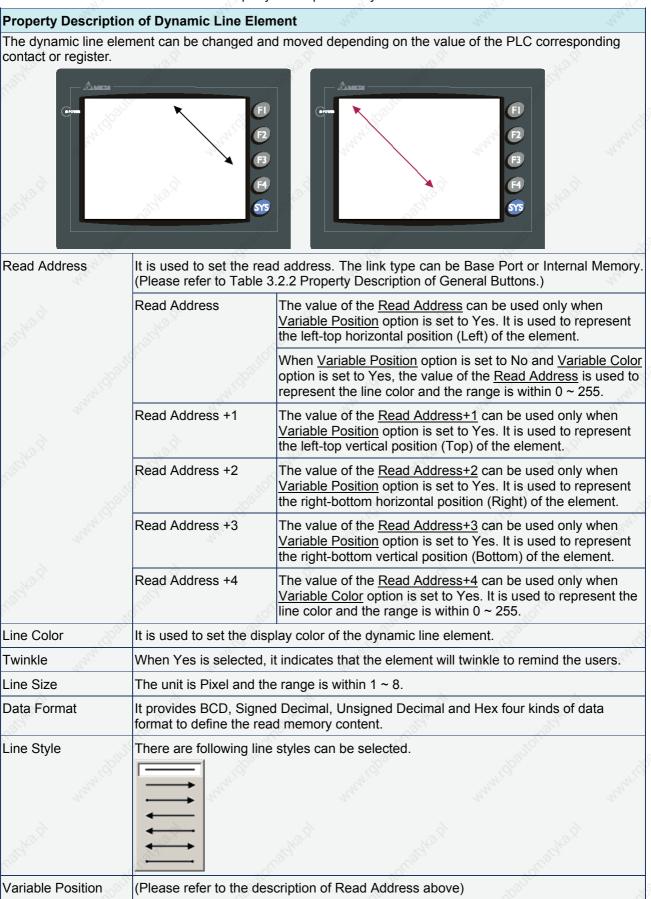
The designated read address = D100. The internal memory value and each state should be as follows:

State control register Dn+1



#### Dynamic Line

Table 3.9.4 Property Description of Dynamic Line Element



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| <b>Property Description</b> | of Dynamic Line Element                                 | Triple. |
|-----------------------------|---|---------|
| Variable Color              | (Please refer to the description of Read Address above) |         |

# ■ Dynamic Rectangle

|                                | Table 3.9.5 Property D   | escription of Dynamic Rectangle Element  |  |  |  |  |
|--------------------------------|--|--|--|--|--|--|
| Property Description           | n of Dynamic Rectang   | le Element   |  |  |  |  |
|                                | le element, including ele<br>corresponding contact o   | ement size and color can be changed and moved depending on   |  |  |  |  |
|                                | FI<br>F2<br>F3   | FI F2 F3 F4  |  |  |  |  |
| Read Address                   |  | ad address. The link type can be Base Port or Internal Memory. 3.2.2 Property Description of General Buttons.)   |  |  |  |  |
| , while part                   | Read Address   | The value of the <u>Read Address</u> can be used only when <u>Variable Position</u> option is set to Yes. It is used to represent the left-top horizontal position (Left) of the element.  |  |  |  |  |
| "Mog                           | Read Address +1  | The value of the Read Address+1 can be used only when Variable Position option is set to Yes. It is used to represent the left-top vertical position (Top) of the element.   |  |  |  |  |
| <sup>I</sup> B <sub>EE</sub> , | Read Address +2  | The value of the Read Address+2 can be used only when Variable Size option is set to Yes. It is used to represent the right-bottom horizontal position (Right) of the element.   |  |  |  |  |
| of Arten.                      | Read Address +3  | The value of the Read Address+3 can be used only when Variable Size option is set to Yes. It is used to represent the right-bottom vertical position (Bottom) of the element.  |  |  |  |  |
| King Mark                      | Read Address +4  | The value of the Read Address+4 can be used only when Variable Color option is set to Yes. It is used to represent the rectangle foreground color and the range is within 0 ~ 255.   |  |  |  |  |
| Mary Mary Col                  | address of <u>Variable Size</u><br>represent the right-both<br>will represent the right-                               | Variable Position option is set to No, the internal memory ze option will increase one (one increment). (Read Address will tom horizontal position (Right) of the element. Read Address+1 bottom vertical position (Bottom) of the element. Read ent the foreground color of the element.) |  |  |  |  |
| Twinkle                        | When Yes is selected, it indicates that the element will twinkle to remind the users.                                  |  |  |  |  |  |
| Foreground Color               | It is used to set the foreground color of the dynamic rectangle element.   |  |  |  |  |  |
| Line Size                      | The unit is Pixel and th   | ne range is within 1 ~ 8.  |  |  |  |  |
| Data Format                    | It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content. |  |  |  |  |  |
| Transparent                    |  | lected, the element will display only with the border and there is t. The Foreground Color option will be disabled also.   |  |  |  |  |

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| Property Description | n of Dynamic Re    | ctangle Element            | Nat He        | Waldy.                                    |        |
|----------------------|--------------------|----------------------------|---------------|---|--------|
| Round Radius         | 0~38 pixels roun   | nd radius are provided for | selection.    | M. H. | wanid) |
| Variable Position    | (Please refer to t | the description of Read Ad | ddress above) | Aro il                                    |        |
| Variable Size        | (Please refer to t | the description of Read Ad | ddress above) | KOLUGE.                                   |        |
| Variable Color       | (Please refer to t | the description of Read Ad | ddress above) | (R)                                       | ્હેં   |

## Dynamic Ellipse

# Table 3.9.6 Property Description of Dynamic Ellipse Element **Property Description of Dynamic Ellipse Element** The dynamic ellipse element, including element size and color can be changed and moved depending on the value of the PLC corresponding contact or register. Read Address It is used to set the read address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.) Read Address The value of the Read Address can be used only when Variable Central Point option is set to Yes. It is used to represent the horizontal position of the element center point. Read Address +1 The value of the Read Address+1 can be used only when Variable Central Point option is set to Yes. It is used to represent the vertical position of the element center point. Read Address +2 The value of the Read Address+2 can be used only when Variable Radius option is set to Yes. It is used to represent the horizontal radius of the element. Read Address +3 The value of the Read Address+3 can be used only when Variable Radius option is set to Yes. It is used to represent the vertical radius of the element. Read Address +4 The value of the Read Address+4 can be used only when Variable Color option is set to Yes. It is used to represent the ellipse foreground color and the range is within $0 \sim 255$ . Please note that when Variable Central Point option is set to No, the internal memory address of Variable Radius option will increase one (one increment). (Read Address will represent the horizontal radius of the element. Read Address+1 will represent the vertical radius of the element. Read Address+2 will represent the foreground color of the element.) Line Color It is used to set the display color of the dynamic ellipse element.

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| on of Dynamic Ellipse Element  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| When Yes is selected, it indicates that the element will twinkle to remind the users.  |  |  |  |  |  |  |
| It is used to set the foreground color of the dynamic ellipse element.   |  |  |  |  |  |  |
| The unit is Pixel and the range is within 1 ~ 8.   |  |  |  |  |  |  |
| It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content.   |  |  |  |  |  |  |
| When this option is selected, the element will display only with the border and there is no color in the element. The Foreground Color option will be disabled also. |  |  |  |  |  |  |
| (Please refer to the description of Read Address above)  |  |  |  |  |  |  |
| (Please refer to the description of Read Address above)  |  |  |  |  |  |  |
| (Please refer to the description of Read Address above)  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

# 3.10 Input Element

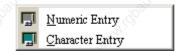


Fig. 3.10.1 Input element options

Set write and read address for the users to input and display address value. Write and read address can be the same or different.

Table 3.10.1 Function of Input elements

| Element Type    | Icon | Function   |
|-----------------|------|--|
| Numeric Entry   |      | It is used to input and display the numeric value of specific PLC address. |
| Character Entry |      | It is used to input and display the characters of specific PLC address.    |

## ■ Numeric Entry

Table 3.10.2 Property Description of Numeric Entry Element

|   | - Table 0: 10:2 1 10pen   | ly Description of Nume   | no Entry Elomont   | 70×   |  |  |
|---|---|--|--|---|--|--|
| Property Description                        | n of Numeric Entry Ele  | ement  | "Wajey,  | "Wigh,  |  |  |
| show up and the user send the input setting | meric entry element on rs can use it to input the value to PLC correspous rhe users can also specture setting value.  | e setting value directly.<br>nding register. The ma                  | When pressing EN   | ITER key, HMI will<br>ım input setting values |  |  |
| Write Address<br>Read Address               | It is used to set the read and write address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)  Please note that if the users set the write address only, after press "Compile" key, HMI will copy the write address data into the read address automatically. |  |  |   |  |  |
| Text Size<br>Text Color                     | The users can set the text size and text color that provided by HMI to determine the text display on the element. HMI provides 8~64 kinds of default text font for the users to use.  |  |  |   |  |  |
| Border Color<br>Background Color            | ####  | d Sunken. The style ond color is set to blue style of the element is | f the element below<br>and its border color<br>s set to Transparen | is selected as                                |  |  |
| Style                                       | Standard  | Raised   | Sunken   | Transparent                                   |  |  |
| Sight,                                      | ####  | ####   | ####   | ####  |  |  |

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| Leading Zero          | n of Numeric Entry The following figure  |   | ranca if the usors   | s select the Los                      | ding Zero ont      | tion |
|-----------------------|--|---|--|---------------------------------------|--------------------|------|
| Leading Zero          | (Please note that th   |   |  | s select the Lea                      | ding Zero opi      | uon. |
|                       | 0077   |   |  |                                       |                    |      |
|                       | 00//   | (If VES is sele                                   | cted, the numeric  | r value will sho                      | w as this one      | ١    |
|                       |  | (11 120 13 3010                                   | occu, tric riument   | value will still                      | w as this one      | .,   |
|                       | 77   | KOLOGA,   |  |                                       |                    |      |
|                       |  | (If NO is selec                                   | ted, the numeric   | value will show                       | as this one.)      |      |
| rigger<br>rigger Mode | The users can use or after writing the s ON. If the PLC add to be OFF by thems   | setting value. No<br>ress needs to be             | te: this function o  | an only trigger                       | PLC address        | to I |
| etail                 | to bo or r by thome  | Input Valu  | E  | ×                                     | -37/ <sub>52</sub> |      |
| otan                  | Contraction of the Contraction o | Data Leng   |  |                                       |                    |      |
|                       | (8)  | Data Eng  | 17 : 15 : 1  |                                       |                    |      |
|                       | May.   | Minimum   | 0  |                                       |                    |      |
|                       |  | Maximum   | 9999   |                                       |                    |      |
|                       |  | Integral Di                                       | gits 4 Min 0   |                                       |                    |      |
|                       | all the second   | Fractional  | 0 ▼ Max 9  | 999                                   |                    |      |
|                       | 30   | □ Variab  | le Minimum/Maximum Valu                                      | ie                                    |                    |      |
|                       | .undico  | Gain  | 1.0  | and the second                        |                    |      |
|                       | 27,  | Offset<br>Round                                   | off  | 12                                    |                    |      |
|                       | 100  | 7 70 410  |  | ncel                                  |                    |      |
|                       | alighe.  | Vigo.   | O. C.  |                                       |                    |      |
|                       | Date Length  | There are 16bi                                    | ts Word and 32bi   | ts Double Word                        | two options.       |      |
|                       | Data Format  | There are follow                                  | wing data format   | provided:                             |                    | 3    |
|                       | Tr.  | Wo  | ord  | Doub                                  | le Word            | U.   |
|                       | 3  | 1. BCD  | 1  | BCD                                   |                    |      |
|                       | 19/2°  | 2. Signed BC                                      | 200  | J                                     |                    |      |
|                       | 10 m   | <ol> <li>Signed De</li> <li>Unsigned [</li> </ol> | ×O.  | , , , , , , , , , , , , , , , , , , , |                    |      |
|                       | (1)  | 5. Hex  | 5  | 70,                                   | Connai             |      |
|                       | May .  | 6. Binary   | 6  | . Binary                              |                    |      |
|                       |  |   | 7  | . Floating                            |                    |      |
|                       | Minimum<br>Maximum   |   | set the minimum<br>nine the range of                         |                                       |                    | ng   |
|                       | Integral Digits  |   | to determine the   |                                       |                    |      |
|                       | Fractional Digits  | value. It is only                                 | n. The digit numb<br>the display formater<br>only when the c | at. The digit nu                      | mber will be a     | a re |
|                       | When <u>Variable Mini</u><br>minimum value is d  | mum/Maximum                                       |  |                                       |                    |      |

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| Property Description              | n of Numeric Entry  | y Element   | - 114.00 m  | 29.44°  |  |  |  |  |
|-----------------------------------|---|---|---|---|--|--|--|--|
| <u>"</u>                          | Gain (a)  | The users can u   |   | address value) + (b) this   |  |  |  |  |
|                                   | Offset (b)  | equation to determine the display numeric value (y). For example if Gain value (a) is 2 and Offset value (b) is 3, when the read address value is 3, then the display numeric value will be equal to (2) x 3 + (3) = 9. |   |   |  |  |  |  |
|                                   | Round off   |   |   | peration of the equation bunded off and display on the  |  |  |  |  |
|                                   |   | kamine the value b  |   | value, after pressing OK<br>lected data length, data  |  |  |  |  |
| Input Mode                        |   | ouch Popup. For t   |   | Non-Popup three options. The ctive input mode, please refer   |  |  |  |  |
| User Security Level               |   | set the user priorit<br>current setting can   |   | element. Only the priority that   |  |  |  |  |
| Display Asterisk (*)              | If YES is selected setting value.                               | , the screen will sh  | ow as the following                               | figure when inputting the   |  |  |  |  |
| RETHER!                           |   | #* 9999 Min:0  2 3 CLR 5 6 DEL 8 9 Ente   | <b>(</b>  |   |  |  |  |  |
| Kigo.                             |   | 30  |   |   |  |  |  |  |
| Fast Refresh                      | the screen. Pleas element) can be far Rate by clicking <b>S</b> | se note that only 4 of ast refreshed on or creen > Screen P   | <u>elements (including</u><br>ne screen. The user | mmediately when switching display element and input s can set the Fast Refresh d. There are three levels of the |  |  |  |  |
| Set Low Security                  |   |   | riority to be the lowers (o                       | est after the button is pressed perators).  |  |  |  |  |
| InterLock Address InterLock Level |   |   |   | changed from Low to High (or<br>InterLock Level"), this button  |  |  |  |  |
| Before Execute<br>Macro           | When this option i button is pressed.                           |   | cro will be enabled                               | and executed before this  |  |  |  |  |
| After Execute Macro               | When this option i is pressed.                                  | s set, the input ma   | cro will be enabled                               | and executed after this button  |  |  |  |  |

## Example of Numeric Entry element:

After pressing the numeric entry element, a system built-in numeric keypad (TEN-KEY) will display on the screen as shown as the figure below. The example here is to input numeric value 99 into PLC corresponding register, D100.

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Fig. 3.10.2 TEN-KEY input dialog box

# ■ Character Entry

Table 3.10.3 Property Description of Character Entry Element

| 50                               | Table 3:10:31 Topert   | y Description of Ghare  | dotor Entry Element   | -05                                   |  |  |  |
|----------------------------------|--|---|---|---------------------------------------|--|--|--|
| <b>Property Descriptio</b>       | n of Character Entry E   | Element   |   |                                       |  |  |  |
| display them on the s            | ite and read address to<br>screen. The input and d<br>ame or different. (The r | isplay text or characte   | er must be in ASCII f   |                                       |  |  |  |
| Write Address<br>Read Address    | Internal Memory. (P<br>Buttons.)<br>Please note that if the                    | It is used to set the read and write address. The link type can be Base Port or Internal Memory. (Please refer to Table 3.2.2 Property Description of General Buttons.)  Please note that if the users set the write address only, after press "Compile" key, HMI will copy the write address data into the read address automatically.                       |   |                                       |  |  |  |
| Text Size<br>Text Color          |  | The users can set the text size and text color that provided by HMI to determine the text display on the element. HMI provides 8~64 kinds of default text font for the users to use.  |   |                                       |  |  |  |
| Border Color<br>Background Color | selected as Raised "Raised". Its backgr  | can be set only when<br>and Sunken. The style<br>ound color is set to blue<br>e style of the element<br>olor these two options  | e of the element bel-<br>ue and its border co<br>nt is set to Transpa | ow is selected as lor is set to gray. |  |  |  |
| Style                            | Standard   | Raised  | Sunken  | Transparent                           |  |  |  |
|                                  | ****   | ****  | ****  | ****                                  |  |  |  |
| Character Length                 | The range is with 1  | The range is with 1 ~ 28 words. The default setting is 4words.  |   |                                       |  |  |  |
| Trigger<br>Trigger Mode          | before or after writing address to be ON. I                                    | The range is with 1 ~ 28 words. The default setting is 4words.  The users can use this setting to trigger the designated PLC address to be ON before or after writing the setting value. Note: this function can only trigger PLC address to be ON. If the PLC address needs to be triggered again, the users should set the address to be OFF by themselves. |   |                                       |  |  |  |

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|                                   | - 10°   |  | **************************************   |  |  |  |  |
|-----------------------------------|---|--|--|--|--|--|--|
| Property Description              | of Character E  | Entry Element                                    | The state of the s | Tugg,  |  |  |  |
| Input Mode                        | The default se  |  | For the description  | Non-Popup three options. of Active input mode, please  |  |  |  |
| User Security Level               | Use this option to set the user priority for pressing this element. Only the priority that is higher than the current setting can use this element. |  |  |  |  |  |  |
| Display Asterisk (*)              | If YES is selected, the screen will show as the following figure when inputting the text or character.    FI  |  |  |  |  |  |  |
| Fast Refresh                      | the screen. <u>F</u> element) can Rate by clicki  | Please note that only 4 be fast refreshed on o   | elements (including<br>ne screen. The use<br>Properties comman   | immediately when switching a display element and input rs can set the Fast Refresh d. There are three levels of Low. |  |  |  |
| Set Low Security                  | Use this option pressed. This   | on to force the current ps can prevent the misor | oriority to be the low<br>peration made by th  | vest after the button is e users (operators).  |  |  |  |
| InterLock Address InterLock Level |   | to Low, this is determi                          |  | changed from Low to High<br>of "InterLock Level"), this  |  |  |  |
| Before Execute Macro              | When this opto  |  | acro will be enabled   | and executed before this   |  |  |  |
| After Execute Macro               | When this opto  |  | acro will be enabled   | and executed after this  |  |  |  |

## Example of Character Entry element:

After pressing the character entry element, a system built-in character keypad (ASCII-KEY) will display on the screen as shown as the figure below. The users can input the text or character in ASCII format into PLC corresponding register, (D1000~Dn). n represents the character length.

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\*\*\*\*\*\*\*



Fig. 3.10.3 ASCII-KEY input dialog box

## 3.11 Curve Element

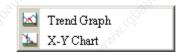


Fig. 3.11.1 Curve element options

Table 3.11.1 Function of Curve elements

| Element Type | Icon     | Function  |
|--------------|----------|---|
| Trend Graph  | M        | It is used to display the value change of the read address by trend graph. The trend graph can only display and set the change of Y-axis.       |
| X-Y Chart    | <b>W</b> | It is used to display the value change of the read address by trend graph. The trend graph can display and set the change of X-axis and Y-axis. |

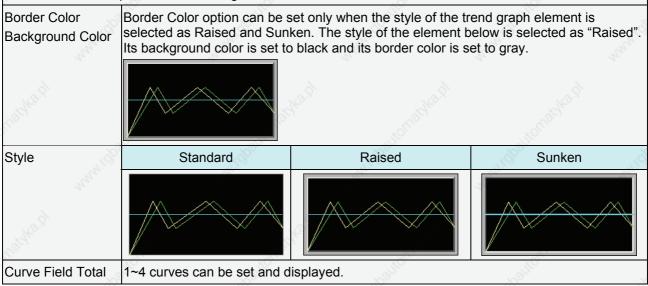
## Trend Graph

Table 3.11.2 Property Description of Trend Graph Element

## **Property Description of Trend Graph Element**

The first step for setting trend graph is to set the curve number in "Curve Field Total" option (range is 1~4) in property table. Then, setting the read address, read format, curve width and color in "Detail Setup" option to complete the setup.

HMI will convert a series value of setting address to a trend graph on the screen. For example, if there are 100 sampling points and four curves, there will be 100 X 4 = 400 points. If HMI is connected to Delta PLC, suppose that the read address is D0, it will read 400 words (D0~D399) after the address is triggered. Setting Y-axis of curve 1 is D0~D99, Y-axis of curve 2 is D100~D199, Y-axis of curve 3 is D200~D299 and Y-axis of curve 4 is D300~D399. If the value exceeds maximum value, it will be displayed with maximum value. If the value is less than minimum value, it will be displayed with minimum value. After setting, the users should set the address of the control block to trigger read data of trend graph, trend graph drawing and clear the curve. Please refer to Chapter 5 for the settings of the control block.



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## **Property Description of Trend Graph Element Detail Setup** Sample Number Max. Sample Number Unsigned Decimal -Read Format Curve1 | Curve2 | Curve Width Curve Color Cancel Sample Number When Sample Number is a constant: The max. sample number is defined as the following: Max. Sample 1. When the element style is selected as "Standard", the max. Number sample number is the element width and the unit is pixels. 2. When the element style is selected as "Raised" or "Sunken", the max. sample number is the element width minus the border width (the value of the border width is 14 pixels). The border width is shown as the place where the arrow sign ends. Please note that when the sample number is a constant, the Max. Sample Number option is disabled. When Sample Number is a variable value: the system will refer to the value of Read Address+1 and regard the value as the max. sample number. Then, the Max. Sample Number option will be enabled. If the read value is more than the set Max. Sample Number, the system will take the set Max. Sample Number as the actual max. sample number. Read Format Word BCD 2. Signed BCD 3. Signed Decimal **Unsigned Decimal** Read Address It is used to set the read address. The link type can be Base Port or Internal Memory. It is used to set trigger and clear flag. When sample flag is triggered, Sample Flag it will start to read data and draw the graph. This sample flag is located within the control block. Please refer to Chapter 5 for the settings of the control block. Minimum It is used to set the minimum and maximum value of the display data, i.e. the minimum and maximum value of Y-axis. If the read value is more the maximum or less than the minimum, the system will display Maximum the minimum and maximum value still.

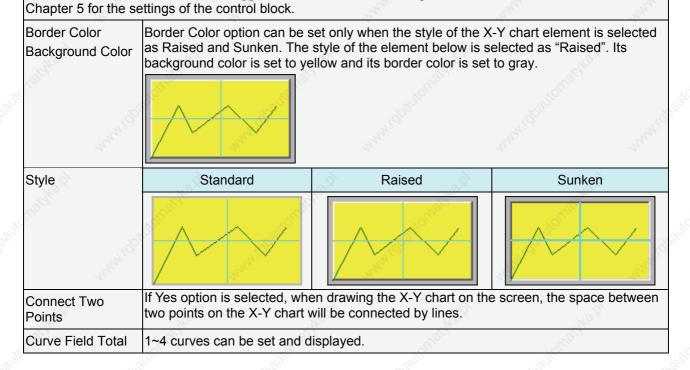
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|                          | Curve Width                       | It is used to the display curve width. The range is within $1 \sim 8$ and the unit is pixel. |
|--------------------------|-----------------------------------|--|
| "untay;                  | Curve Color                       | It is used to the display curve color.   |
| Grid Color               | Please refer to horizontal direct | the figure below. The grid color is set to red and the grid number in tion is set to 3.      |
| Grid Number in<br>Horiz. |                                   |  |

## X-Y Chart

Table 3.11.3 Property Description of X-Y Chart Element

# Property Description of X-Y Chart Element HMI will convert a series value of setting address to a X-Y chart on the screen. For example, if there are 100 sampling points and four curves, there will be 100 x 4 x 2 = 800 points. If HMI is connected to Delta PLC, suppose that the read address of X-axis is D0 and the read address of Y-axis is D500, it will read 800 words (D0~D399 and D500~D899) after the address is triggered. Setting X-axis of curve 1 is D0~D99, Y-axis of curve 1 is D500~D599, X-axis of curve 2 is D100~D199 and Y-axis of curve 2 is D600~D699, X-axis of curve 3 is D200~D299 and Y-axis of curve 3 is D700~D799, X-axis of curve 4 is D300~D399 and Y-axis of curve 4 is D800~D899. If the value exceeds maximum value, it will be displayed with maximum value. If the value is less than minimum value, it will be displayed with minimum value. After setting, the users should set the address of the control block to trigger read data and the drawings of the X-Y chart. Please refer to



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## **Property Description of X-Y Chart Element Detail Setup** Data Sample Number Max. Sample Number 10 Unsigned Decimal Horiz, Read Address None Vert. Read Addtress None Sample Flag Curve1 | Curve2 | Horiz, Minimum Horiz. Maximum 100 Vert. Minimum Vert. Maximum 100 Curve Width Curve Color Sample Number When Sample Number is a constant: The max. sample number is defined as the following: Max. Sample When the element style is selected as "Standard", the max. Number sample number is the element width and the unit is pixels. 2. When the element style is selected as "Raised" or "Sunken", the max. sample number is the element width minus the border width (the value of the border width is 14 pixels). The border width is shown as the place where the arrow sign ends. Please note that when the sample number is a constant, the Max. Sample Number option is disabled. When Sample Number is a variable value: the system will refer to the value of Read Address+1 and regard the value as the max. sample number. Then, the Max. Sample Number option will be enabled. If the read value is more than the set Max. Sample Number, the system will take the set Max. Sample Number as the actual max. sample number. Read Format Word BCD Signed BCD Signed Decimal **Unsigned Decimal** 5. Hex It is used to set the read address of the horizontal data. The link type Horiz. Read can be Base Port or Internal Memory. Address It is used to set the read address of the vertical data. The link type Vert. Read can be Base Port or Internal Memory. Address

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| Property Descript | ion of X-Y Chart E   | Element  |  |  |  |  |
|-------------------|--|--|--|--|--|--|
| Mahaleg.          | Sample Flag  | It is used to set trigger and clear flag. When sample flag is trigger it will start to read data and draw the X-Y chart. This sample flag i located within the control block. Please refer to Chapter 5 for the settings of the control block. |  |  |  |  |
|                   | Horiz. Minimum   | It is used to set the minimum and maximum value of the horizontal display data, i.e. the minimum and maximum value of X-axis. If the   |  |  |  |  |
|                   | Horiz. Maximum   | read value is more the maximum or less than the minimum, the system will display the minimum and maximum value still.  |  |  |  |  |
|                   | Horiz. Minimum   | It is used to set the minimum and maximum value of the vertical  |  |  |  |  |
|                   | Horiz. Maximum   | display data, i.e. the minimum and maximum value of Y-axis. If the read value is more the maximum or less than the minimum, the system will display the minimum and maximum value still.   |  |  |  |  |
|                   | Curve Width  | It is used to the display curve width. The range is within 1 ~ 8 and the unit is pixel.  |  |  |  |  |
| Co.               | Curve Color  | It is used to the display curve color.   |  |  |  |  |
| Grid Color        | Please refer to the figure below. The grid color is set to red and the grid number in horizontal and vertical direction are both set to 2. |  |  |  |  |  |
| Horiz. Line Numbe |  | TENED IN TENED IN TENED  |  |  |  |  |
|                   | <u>/</u>   |  |  |  |  |  |

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## 3.12 Sampling Element



Fig. 3.12.1 Sampling element options

The sampling element is designed to display the history data by history graph or table and can be updated immediately for the users to use and read more easily. Let us review the History Setup function (see page 2-132) again. History Setup should be used with sampling elements. The users can click "Option" > "History Setup" (Choosing History Setup command from menu bar) to execute this function.

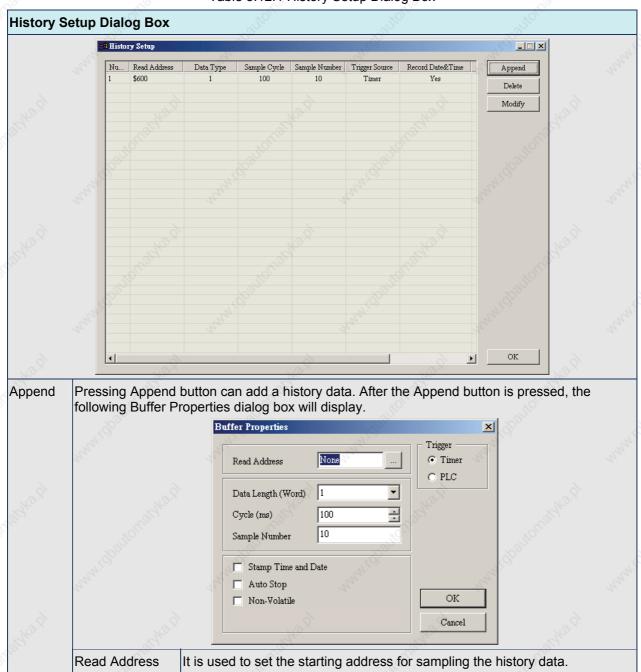


Table 3.12.1 History Setup Dialog Box

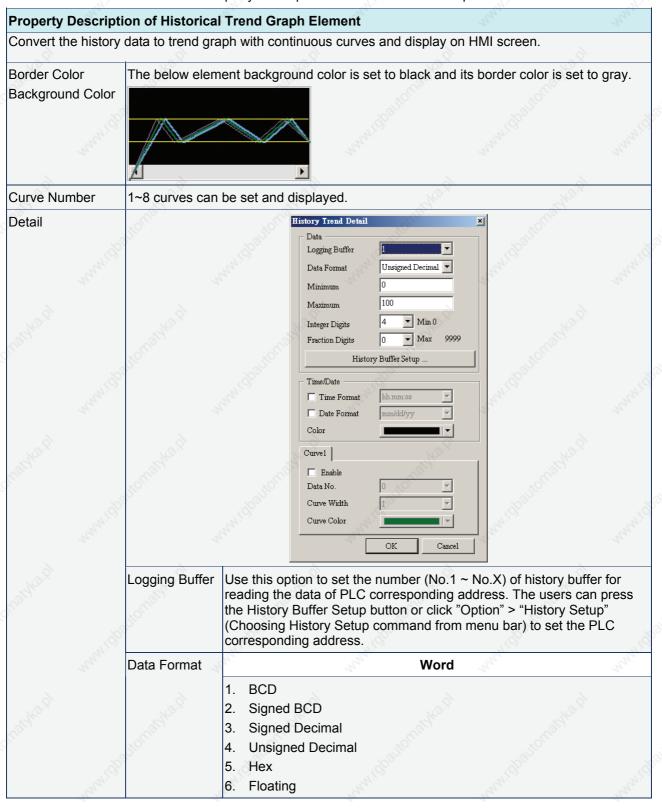
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| History S | Setup Dialog Box      | 2014   | The state of the s | Tild.   |
|-----------|-----------------------|--|--|---|
|           | Data Length<br>(Word) | It is used to set how much within 1 ~ 13 continuous W can be sampled.  |  |   |
| ETHE !    | in,                   | For example: If the setting value there are 6 continuous Worsen Sample Number option is used to some solution in the setting value of value of the setting value of the setting value of value of valu | rds (M100, M101,, used to set the max. set to 100, the system  | M105) can be sampled. The sample number. If the   |
|           | Cycle (ms)            | It is used to set the samplin<br>read address one time). If t<br>ineffective. The range of the   | he Trigger option is F   | PLC, this option will be  |
|           | Sample Number         | This option is used with the selected, HMI will stop recordance the setting value of is not selected, when record Sample Number option, it were record into the last address and the number of records deleted and the second record will become to the for 99th record. Therefore, the record.  | ording the data after the Sample Number oped number of data exceptill delete the first recess. For example, if the in history exceeds 10 cord will become to the orth recordand the  | tion. If the Auto Stop option seeds the setting value of ord and insert the new setting value is set to 100 to the first record will be a third record, the third 100th record will become to |
|           | Stamp Time and Date   | Use this option to determine sampling operation.   | e if the time and date   | are also recorded during  |
|           | Auto Stop             | Use this option to determine record data is reached.   | e if HMI stop recordir   | ng when the max. number of  |
|           | Non-Volatile          | Using this option can enable power is turned off. The cape 240MBytes and DOP-AE is battery when the power is to save data in USB Disk or Scapacity for saving history of SMC card.)  | pacity for saving histoseries is <b>360MBytes</b> .<br>curned off.) (In some his MC card when the po   | ory data of DOP-A series is<br>(The power of SRAM is<br>HMI models, the users can<br>ower is turned off and the   |
|           | Trigger               | There are Timer and PLC to controlled by the Timer of the PLC option is selected, it in register for sampling history action.  | he HMI or the externancial discates that the trigger   | al controller, i.e. PLC. Whe er bit designated by the   |
|           | OK / Cancel           | Press OK button to save the saving data.   | e data and exit. Pres  | s Cancel to exit without  |
| Delete    | Pressing Delete b     | outton can delete a history da   | ata.   | The The   |
| Modify    | Pressing Modify b     |  |  |   |

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## Historical Trend Graph

Table 3.12.2 Property Description of Historical Trend Graph Element



| Property De | escripti | ion of Historica         | I Trend Graph Element  |
|-------------|----------|--------------------------|--|
|             |          | '.<br>'2 <sub>0</sub> '. | Please note that if the data format is selected as "Floating", the Data Length option in the History Setup dialog box must be greater than or equal to 2words or the following warning message dialog box will display on the screen.  |
|             |          | Juffaithe di             | SerEdit  Select Floating Data Format(At least 2 Words in History Buffer Sampling Number)   |
|             |          | Minimum                  | It is used to set the minimum and maximum value of the display data, i.e. the minimum and maximum value of Y-axis. If the read value is  |
|             |          | Maximum                  | more the maximum or less than the minimum, the system will display the minimum and maximum value still.  |
|             |          | Integral Digits          | Use this option to determine the digit number of integer and decimal   |
|             |          | Fractional<br>Digits     | fraction. The digit number is not a real digit number value. It is only the display format. The digit number will be a real decimal number only when the data format is selected as "Floating".  |
|             |          | 4                        | Time/Date  |
|             |          | Time Format              | Provide HH:MM:SS, HH:MM two kinds of formats.  |
|             |          | Date Format              | Provide MM/DD/YY, DD/MM/YY and DD.MM.YY three kinds of formats   |
|             |          | Color                    | When time or date format is selected, the users can use this option to designate the display color.  |
|             |          |                          | Curve (No.1 ~ 8)   |
|             |          | Enable                   | If this option is selected, the following curve options are enabled and can be set.  |
|             |          | Data No.                 | It is used to set the reading Word data when triggering every time. For example, if the Data Length option in the History Setup dialog box is set to 3words, there are 0 ~ 2 data numbers can be selected in this option. When selecting 1, it indicates that this Curve 1 reads the data of the Read Address+1 set in History Setup dialog box. |
|             |          | , n. j.                  | Please note that if the data format is selected as "Floating", and the Data Length option in the History Setup dialog box is an odd numbers of words, ensure to set the Data No. as an even number.  |
|             |          | Curve Width              | It is used to the display curve width. The range is within 1 ~ 8 and the unit is pixel.  |
|             |          | Curve Color              | It is used to the display curve color.   |
| Grid Color  | they.    |                          | the figure below. The grid color is set to red and the grid number in ction is set to 3.   |
| irid Numbe  | r        |                          | \$ Childhe is  |

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## Example of Historical Trend Graph element:

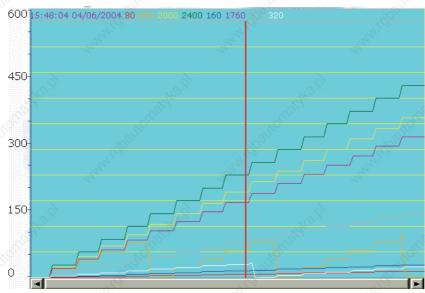


Fig. 3.12.2 Historical Trend Graph

## Historical Data Table

Table 3.12.3 Property Description of Historical Data Table Element

| Property Descripti  | ion of Historical Data Table Element  |
|---|---|
| History Setup dialog length is within 1 ~ 8 Data Length. For ex | data to numeric data and display on HMI screen by a data table. The read address in the g box needs to be set and its data length should be in several words. The range of data 8words. The Data No. in History Data Detail dialog will also correspond to the selected cample, if the value of Data Length is set to 5, the Data No. selection will be 5 also. The field Number is 8. This number will also be related to Data No. |
| Border Color  | The below element background color is set to green and its border color is set to gray.   |
| Background Color  | hh:mm:ss mm/dd/yy ####  |
|   |   |
| Data Field Number   | 1~8 data fields can be set.   |

| Detail |             | 30                       | H  | istory Data Detail   | 10  | ×   | "Jio  |   |
|--------|-------------|--------------------------|--|--|---|---|---|---|
|        |             | 3                        | Status (g)   | Logging Buffer<br>Histor   | J Buffer Setup  |   |   |   |
|        |             | Jonatyka pi              | (disalicinate)   | Time/Date Time Format Date Format Color  | hh:mm:ss<br>mm/dd/yy  |   |   |   |
|        |             | Jonathko di              | annidbaltofrafa  | Data Length Data Format Data No. Display Color Integer Digits Fraction Digits Leading Zero | Word Unsigned Deci 0 4 Min 0 Max  | 0 9999  |   |   |
|        |             | Logging Buffer           | reading the dathe History Bu   | ata of PLC of<br>uffer Setup I<br>story Setup  | number (Noorrespond   | ling addre<br>lick "Optic                           | .X) of history buses. The users on "> "History Sour bar) to set the         | can press<br>etup"                      |
|        | Time Format | Provide HH:N             | Tir  | ne/Date<br>MM two ki   | nds of for  | mats.   | 21414   |   |
|        |             | Date Format Color        | .00  |  |   |   | .YY three kinds   |   |
|        |             | 37                       | designate the  | display col  | or.   |   | _''q <sub>20</sub>  |   |
|        |             | 3                        | t <sub>tte</sub> .   | Data N   | o. (No. 1~  | 8)  | Mr.   | The state                               |
|        |             | Date Length              | There are 16b  | oits Word ar   | nd 32bits D   | ouble Wo  | ord two options.  | _                                       |
|        |             | Data Format              | There are follo  | owing data   | format pro  | vided:  | - A0;   | ×                                       |
|        |             | W. C. C.                 | *OLU,0   | Word   | "OLLO   |   | Double Word   | l                                       |
|        |             | <sup>Ull</sup> ighter by | <ol> <li>BCD</li> <li>Signed B0</li> <li>Signed D0</li> <li>Unsigned</li> <li>Hex</li> <li>Binary</li> </ol> | ecimal   | 2<br>3<br>4<br>5  | 3. Signed 4. Unsign 5. Hex 6. Binary                |   |   |
|        |             | Data No.                 | example, if the to 3words, the When selectir Read Address  | e Data Lengere are 0 ~ 2<br>ng 1, it indic<br>s+1 set in H                                 | ng Word da<br>gth option i<br>2 data num<br>ates that th<br>istory Setu | in the Hist<br>bers can<br>his Curve<br>up dialog l | triggering every<br>fory Setup dialo<br>be selected in t<br>1 reads the dat | g box is se<br>this option.<br>a of the |
|        |             | McCurac,                 | the Data Len   | gth option   | in the His  | tory Setu   | p dialog box is<br>No. as an ever   | s an odd                                |

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|   | Property Description of Historical Data Table Element |                      |   |  |  |
|---|---|----------------------|---|--|--|
| 1 |   | Display Color        | It is used to the display data color.   |  |  |
|   |   | Integral Digits      | Use this option to determine the digit number of integer and decimal  |  |  |
|   |   | Fractional<br>Digits | fraction. The digit number is not a real digit number value. It is only the display format. The digit number will be a real decimal number only when the data format is selected as "Floating". |  |  |

Example of Historical Data Table element:

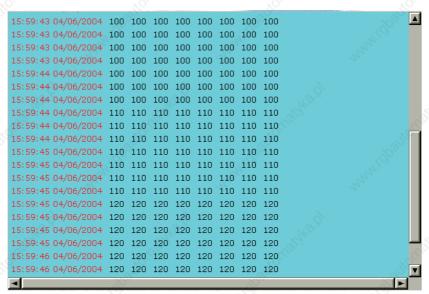


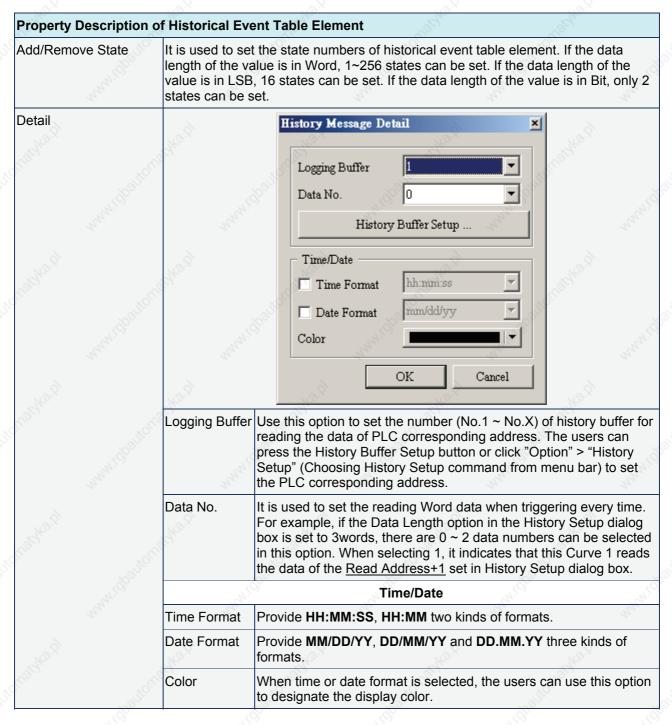
Fig. 3.12.3 Historical Data Table

## **■** Historical Event Table

Table 3.12.4 Property Description of Historical Event Table Element

| VAV                                   |  | V/V   | VAV                    | V2-V              |                   |
|---------------------------------------|--|---|------------------------|-------------------|-------------------|
| Property Description of               | of Histor  | ical Event Table Elemen   | 1241.CT                | "H <sub>iOL</sub> | , all             |
|                                       |  | text or character and displ<br>and HMI will display messa   |                        |                   | le. The users     |
| Text / Text Size<br>Font / Text Color | Window<br>3.2.2 P<br>Every in  | The users can set the text, text size, font and text color that provided by <b>Windows</b> ® to determine the text display on the element. (Please refer to Table 3.2.2 Property Description of General Buttons.)  Every input message in each state will be converted to a state value. The system will list all input message in the event table. |                        |                   |                   |
| Border Color<br>Background Color      | The bel  | low element background c  | olor is set to light y | yellow and its bo | order color is se |
| Data Length                           | Word   | It can have 256 states.   | 120                    | 11.               | 17                |
| agi.                                  | LSB  | It can have 16 states.  | 23                     |                   | , (t)             |
| Data Format                           | This option can be set only when the data length is selected as Word. It provides BCD, Signed Decimal, Unsigned Decimal and Hex four kinds of data format to define the read memory content. |   |                        |                   |                   |

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## Example of Historical Event Table element:

| 12 | D1000=0 | X Axis servo position ready      |
|----|---------|----------------------------------|
| 2. | D1000=1 | Y Axis servo position ready      |
| 3. | D1000=2 | Z Axis servo poistion ready      |
| 4. | D1000=3 | Rotation Inveiter Poistion ready |
| _  |         | Motion controller home ready     |

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- 6. D1000=5 Water motor over load
- 7. D1000=6 Oil pump over load



Fig. 3.12.4 Historical Event Table

## 3.13 Alarm Element

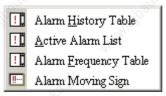


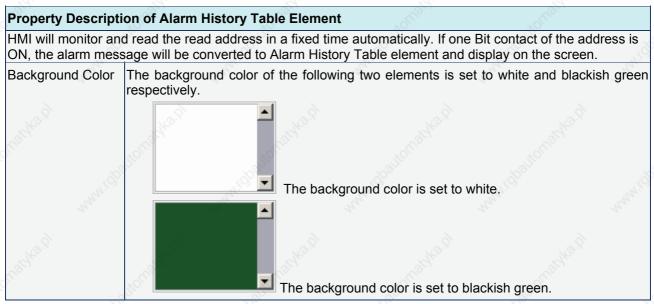
Fig. 3.13.1 Alarm element options

Table 3.13.1 Function of Alarm elements

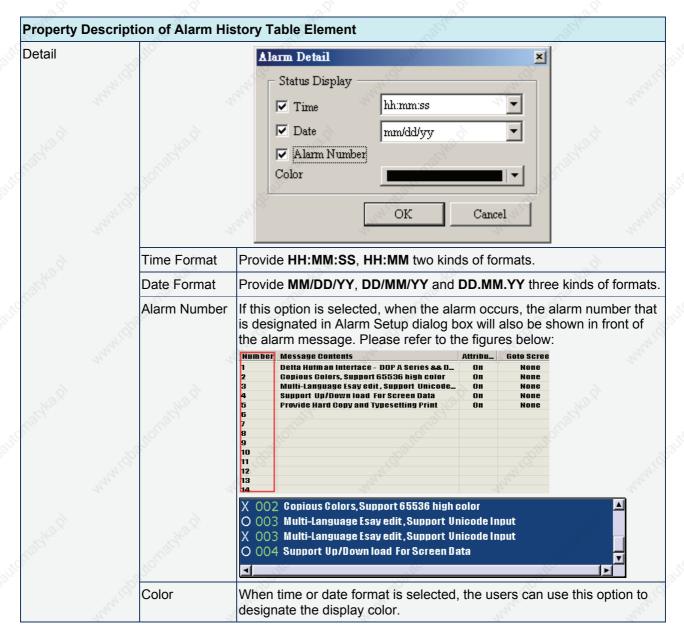
| Element Type        | Icon    | Function   |
|---------------------|---------|--|
| Alarm History Table |         | HMI will monitor and read the read address in a fixed time automatically. If one Bit contact of the address is ON, the alarm message will be converted to Alarm History Table element and display on the screen. |
| Active Alarm List   | !!      | HMI will only display the current alarm message by using Active Alarm List element on the screen if some certain Bit contact of the corresponding address is ON.   |
| Alarm Frequency     | <u></u> | HMI will monitor and read the read address set. If some certain Bit contact of the address is ON, the ON frequency of the contact will be converted to Alarm Frequency Table element and display on the screen.  |
| Alarm Moving Sign   |         | HMI will only display the current alarm message by using Alarm Moving Sign element on the screen if some certain Bit contact of the corresponding address is ON.   |

## Alarm History Table

Table 3.13.2 Property Description of Alarm History Table Element

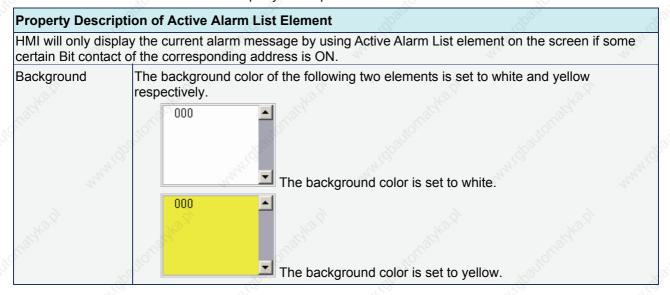


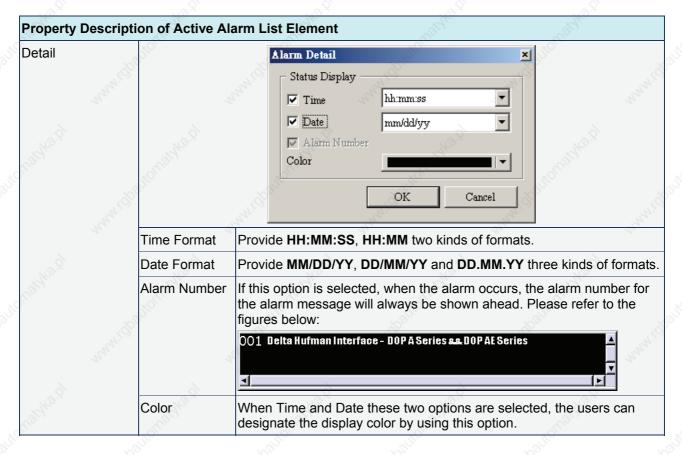
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#### Active Alarm List

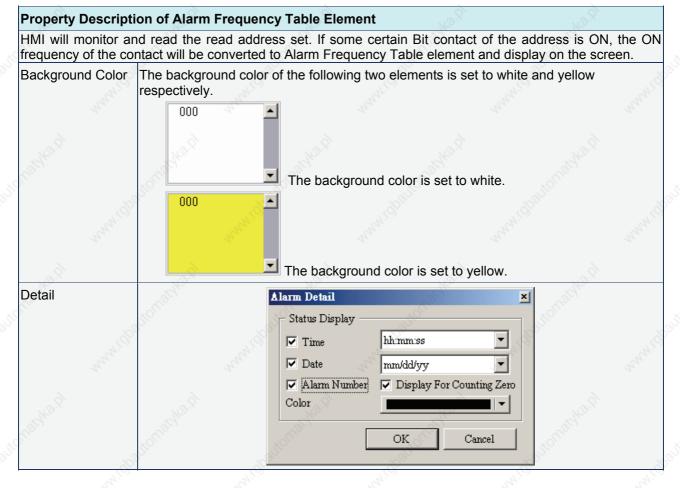
Table 3.13.3 Property Description of Active Alarm List Element





## Alarm Frequency Table

Table 3.13.4 Property Description of Alarm Frequency Table Element

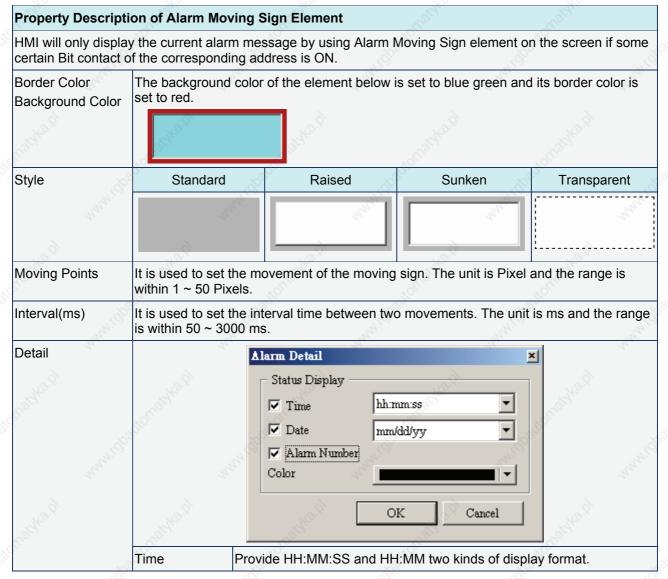


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| Time Format                  | Provide HH:MM:SS, HH:MM two kinds of formats.  |
|------------------------------|--|
| Date Format                  | Provide MM/DD/YY, DD/MM/YY and DD.MM.YY three kinds of formats.  |
| Alarm Number                 | If this option is selected, when the alarm occurs, the time and date when the alarm occurred will also be shown in front of the alarm message. Please refer to the figure below:   |
| Polyton,                     | 7:28 01/17/2006 Multi-Language Esay edit, Support Unicode Input 1 7:29 01/17/2006 Support Up/Down load For Screen Data 1 7:31 01/17/2006 Provide Hard Copy and Typesetting Print 1 |
| Display for Counting<br>Zero | Use this option to decide if show the message on the Alarm Frequency Table element or not when the occurring times of the alarm message is zero.                                   |
| Color                        | When Time and Date these two options are selected, the users can designate the display color by using this option.   |

## Alarm Moving Sign

Table 3.13.5 Property Description of Alarm Moving Sign Element



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| Property De | escript | ion of Alarm Mo | ving Sign Element   |
|-------------|---------|-----------------|---|
|             | .89     | Date            | Provide MM/DD/YY, DD/MM/YY and DD.MM.YY three kinds of display format.  |
|             |         | Alarm Number    | If this option is selected, when the alarm occurs, the alarm number that is designated in Alarm Setup dialog box will also be shown in front of the alarm message. Please refer to the figures below: |
| - Style . Y |         | 21/40.X         | 004 Support Up/Down load For Screen Data  |
| 300         |         | Color           | When Time and Date these two options are selected, the users can designate the display color by using this option.  |

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## 3.14 Graphic Element

Maybe the users need some graphics that are not provided. Therefore, the following basic graphic elements are for the users to create their own graphs or drawings.



Fig. 3.14.1 Graphic element options

## ■ Line

Table 3.14.1 Property Description of Line Graphic Element

|  |  | , 1  |  |  |
|--|--|--|--|--|
| Property Description   | on of Line Graphic Element   | Zho.   | 27/6   |  |
| start the line and dra<br>selecting this line gra<br>move and adjust the | to draw and edit the line graphic ag across the work place on the saphic element, the users can see line more quickly and convenier. The range out of the line graphic | screen. Then, release the<br>e a rectangle range and<br>htly. The users can set li | ne mouse to finish the<br>this is designed for t<br>ine color, size and st   | e line. When<br>the users to<br>yle in   |
| KETHER TO HERE   | Line direction Line v  | width (1 to 8)   | White I gold for the state of t | annere de la companya |
| Line Color   | It is used to set the display col  | or of the line element.  | A. C.  | Х  |
| Line Size  | The unit is Pixel and the range  | s is within 1 ~ 8.   |  |  |
| Line Style   | There are following line styles  | can be selected.   | Waluri Oper  | nana iç  |
| CELHELY.   | No Normalika i   | all Charles In   | allofte the  | ×  |

#### Rectangle

Table 3.14.2 Property Description of Rectangle Graphic Element

## **Property Description of Rectangle Graphic Element**

Left-click the mouse to draw and edit the rectangle graphic element. The users can drag the mouse across work place on the screen until the rectangle is the size that the users want. Then, release the mouse to finish. The users can import the picture into the rectangle from picture bank and set rectangle color, size and style in property table. This option is a good choice for the users who just need to import some certain picture on the screen simply.

| picture on the screen                | i diripry.   |  |  |  |
|--------------------------------------|--|--|--|--|
| Line Color                           | It is used to set the display color of the rectangle element.  |  |  |  |
| Picture Bank Name<br>Picture Name    | (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |  |  |
| Transparent Effect Transparent Color | (Please refer to Table 3.2.2 Property Description of General Buttons.)   |  |  |  |
| Foreground Color                     | It is used to set the display color of the rectangle graphic element.  |  |  |  |
| Line Size                            | The unit is Pixel and the range is within 1 ~ 8.   |  |  |  |
| Transparent                          | When this option is selected, the element will display only with the border and there is no color in the element. The Foreground Color option will be disabled also. |  |  |  |
| Round Radius                         | 0~38 pixels round radius are provided for selection.   |  |  |  |

#### ■ Circle

Table 3.14.3 Property Description of Circle Graphic Element

## **Property Description of Circle Graphic Element**

The users can draw an ellipse or circle by using this option. The users can drag the mouse across work place on the screen until the ellipse or circle is the size that the users want. Then, release the mouse to finish. If the width and height of the circle graphic element are the same size, the circle graphic element will be a round shape circle. If the width and height of the circle graphic element are not the same size, it will be an ellipse element. When selecting this circle graphic element, the users can see a rectangle range and this is designed for the users to move and adjust the circle more quickly and conveniently. Changing the size of the rectangle range is changing the size of circle graphic element directly. The range out of the circle graphic element itself will be displayed in transparent color. There is a "Transparent" option in the element property table. Once Yes is selected, the element will display only with the border and there is no color in the element. If there is any other element under this circle graphic element, it will show up and can be viewed on the screen.



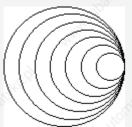
An ellipse that its "Transparent" setting in the property table is set to "No".

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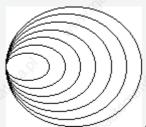
## **Property Description of Circle Graphic Element**



An circle that its "Transparent" setting in the property table is set to "No".



An circle that its "Transparent" setting in the property table is set to "Yes".



An ellipse that its "Transparent" setting in the property table is set to "Yes".

| Line Color       | It is used to set the line color of the circle graphic element.  |  |
|------------------|--|--|
| Foreground Color | It is used to set the display color of the circle graphic element.   |  |
| Line Size        | The unit is Pixel and the range is within 1 ~ 8.   |  |
|                  | When this option is selected, the element will display only with the border and there is no color in the element. The Foreground Color option will be disabled also. |  |

## Polygon

Table 3.14.4 Property Description of Polygon Graphic Element

## **Property Description of Polygon Graphic Element**

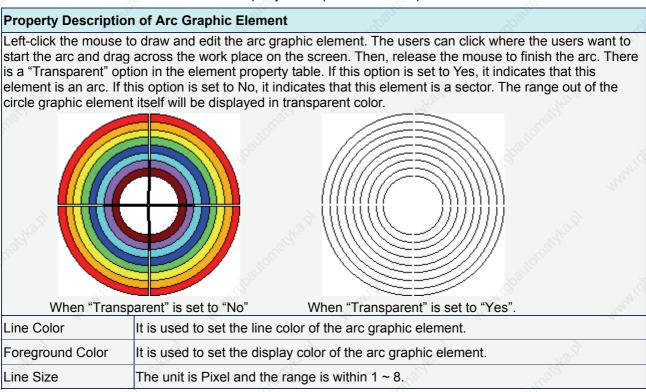
Left-click the mouse to determine each node of the polygon graphic element. The users can click where the users want to place the first node and drag the mouse across work place on the screen until the next node is decided and left-click the mouse again to determine the position of the next node. Repeat the above action until the polygon is the size that the users want. Then, right-click the mouse the mouse to finish. When selecting this polygon graphic element, the users can see a rectangle range and this is designed for the users to move and adjust the polygon more quickly and conveniently. Changing the size of the rectangle range is changing the size of circle graphic element directly. The range out of the circle graphic element itself will be displayed in transparent color. There is a "Transparent" option in the element property table. Once Yes is selected, the element will display only with the border and there is no color in the element. If there is any other element under this circle graphic element, it will show up and can be viewed on the screen.

Line Color It is used to set the line color of the polygon graphic element.

| Property Description | n of Polygon Graphic                                       | Element                          | Caldille            | Night.   |
|----------------------|--|----------------------------------|---------------------|--|
| Foreground           | It is used to set the diffigures below:  The foreground co |                                  |                     | lement. Please refer to the  |
| Line Size            | The unit is Pixel and                                      |                                  |                     | d color is set to tarquoise.   |
| Transparent          |  | ent. The Foreground<br>elow:     | d Color option will | with the border and there is<br>be disabled also. Please<br>tting in the property table is |
| RETAKE T             |  | A polygon that its set to "Yes". | "Transparent" se    | tting in the property table is   |

## Arc

Table 3.14.5 Property Description of Arc Graphic Element

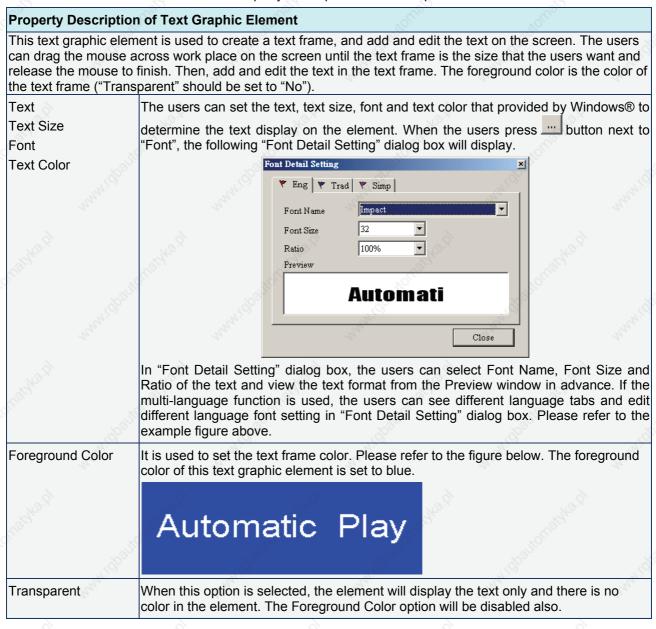


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| Property Description of Arc Graphic Element |   |    |  |
|---|---|----|--|
|   | When this option is selected, the element will no color in the element. The Foreground Colo | 50 |  |

#### ■ Text

Table 3.14.6 Property Description of Text Graphic Element



## ■ Scale

Table 3.14.7 Property Description of Scale Graphic Element

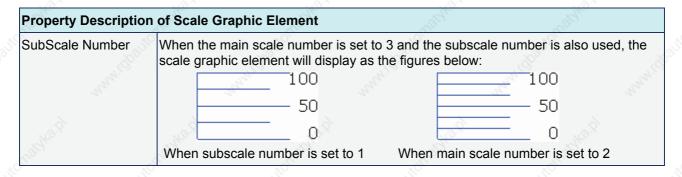
#### **Property Description of Scale Graphic Element**

The users can change the scale direction, main and sub scale number, and grid color in the property table to create a special and unique scale graphic element. The "Display Mark" option can be used to determine if the scale value display next to the scale or not. The minimum and maximum of the scale value can be set in "Detail Setup" option.

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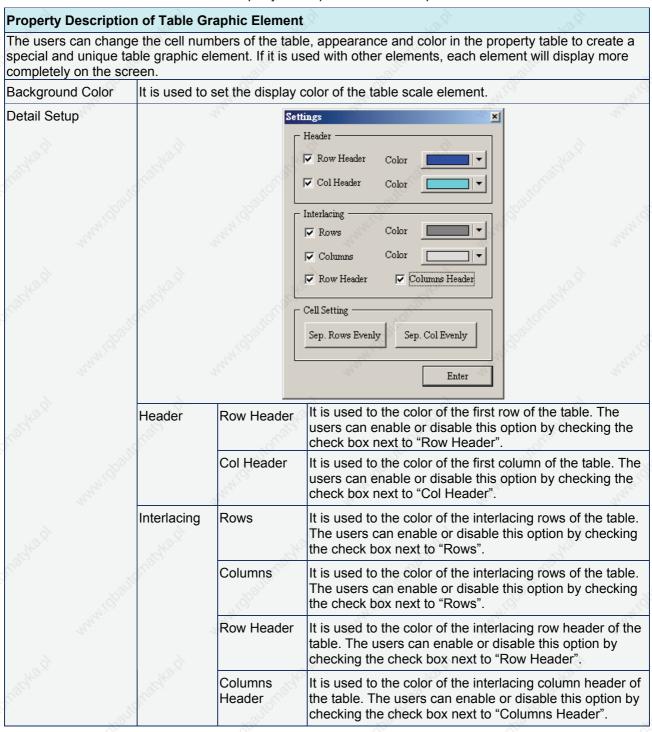
| Property Description Text Size   | The users can se                  | et the text size and   |                      |  |                                  |
|--|-----------------------------------|--|----------------------|--|----------------------------------|
| Text Color   | text display on the to use.       | ne element. HMI pro  | vides 8~70 kinds     | s of default te  | ext font for the users           |
| Style  | Standard                          | Rotation 9   | 90 Rota              | tion 180   | Rotation 270                     |
| Hatilka id   |                                   | 100<br>- 66<br>- 33<br>- 0 0 33 66                                       | 100<br>66<br>33<br>0 |  | 0 33 66 100                      |
| Main Scale   | Please refer to the               | he figures below:  | 200                  | The state of the s | 00                               |
| natyka.pl  | When main and                     | 100<br>-<br>0<br>lle number is set to 2                                  | When mai             |  | 00<br>50<br>0<br>per is set to 3 |
| Display Mark   | -                                 | ermine if the scale va   | -(6)'                |  |                                  |
| Detail Setup   | it is asea to dete                | Input Value  | dide display flext   | ×  | or riot.                         |
| REALING OF SHARE STATE S | Skathe b                          | Data Length  Data Format  Minimum  Maximum  Integral Digit  Fractional   | 0 ▼ Max 9            | 999<br>ncel  | ionatyka di                      |
|  | Date Length                       | There are 16bits W   | ord and 32bits D     | ouble Word t   | wo options.                      |
| Kightagi Tani  | Data Format                       | 1. BCD 2. Signed Decimal 3. Unsigned Decimal                             | Word/Doub            |  | iolugidhe g                      |
| 'M44'[U]   | Minimum                           | //inimum The users can set the minimum and maximum of input setting valu |                      |  | f input setting value            |
| 4.   | Maximum                           | Maximum to determine the range of input setting value.                   |                      |  |                                  |
| RELAKE D   | Integral Digits Fractional Digits | fraction. The digit number is not a real digit number value. I           |                      | per value. It is only all decimal number   |                                  |
| Mary Hillis  | button, HMI will                  | have input the minir<br>examine the value band fractional digits.        |                      |  |                                  |
| Grid Color   | It is used to set t               | the grid color of the  | scale graphic ele    | ment.  | 20                               |

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#### Table

Table 3.14.8 Property Description of Table Graphic Element



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|                   | Cell Setting                                     | Sep. Rows<br>Evenly | It is used to distribute rows  | rows of the table evenly. |  |
|-------------------|--|---------------------|--------------------------------|---------------------------|--|
| Mary.             |  | Sep. Col<br>Evenly  | It is used to distribute colum | nns of the table evenly.  |  |
| Border Color      | It is used to set the border color of the table. |                     |                                | 12,00                     |  |
| Grid Color        | It is used to set the grid color of the table.   |                     | 291/1/2                        |                           |  |
| Number of Rows    | The range is within 1 ~ 99.                      |                     | Alto)                          |                           |  |
| Number of Columns | The range is                                     | within 1 ~ 99.      | " (Q)                          | " " (Q <sub>Q</sub>       |  |

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# 3.15 Keypad Element

Table 3.15.1 Property Description of Keypad Element

# Property Description of Keypad (1) / (2) / (3) Element

Provide three kinds of default keypad elements for selection. The users can select decimal, hexadecimal or character these three kinds of keypad according to difference application requirement.

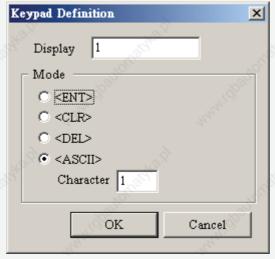


Keypad (1) Decimal Keypad



Keypad (3) Character Keypad

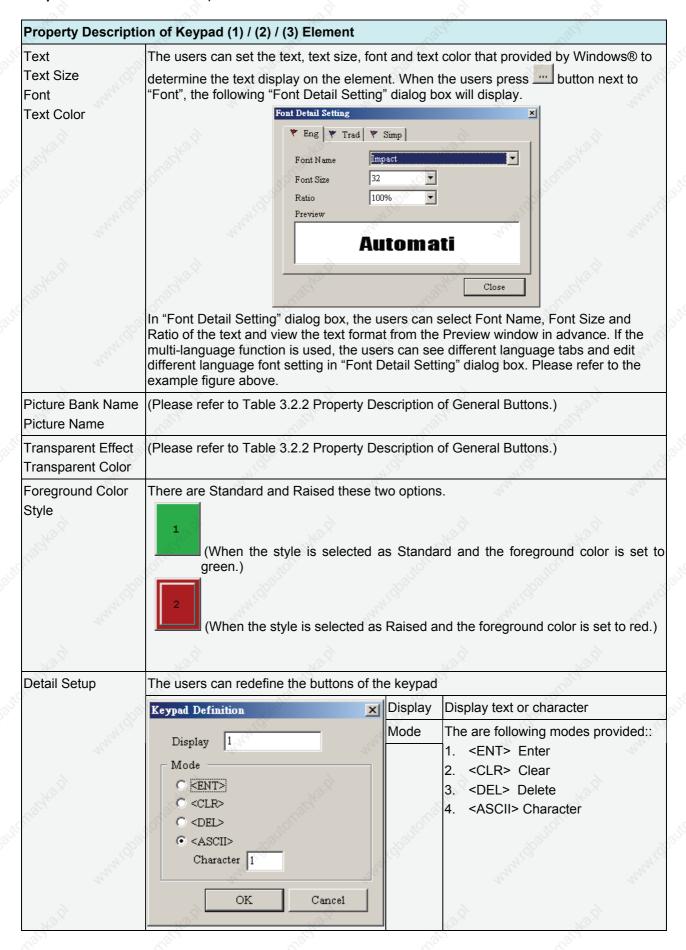
The users can redefine the display text of each button shown on the keypad. The other buttons, such as <ENT> (Enter), <CLR> (Clear), <DEL> (Delete) and <ASCII> (Input Character) can also be renamed flexibly. Please refer to the following figure below:



The keypad is displayed in a "Group" on the screen. The users can use "Ungroup" command from "Edit" menu bar to ungroup all the buttons. Then, the users move and change the button size freely. At this time, the users can redefine the display text shown on the button in the property table. When the "Text" option is inputted as number "1", the display text on the button will be "1". If the users refine it as number "2", the display text will be changed to "2". If it is refined as character "A", the display text will be changed to "A". If it is changed to character "%", the display text will be changed to "%" and vise versa.

The input character will be sent to Active Numeric Entry element or Active Character Entry element. For these two kinds of elements, the users have to set the Input Mode as "Active" option and set InterLock Address. Please refer to Table 3.10.2 & Table 3.10.3 for the property description of Numeric / Character Entry elements.

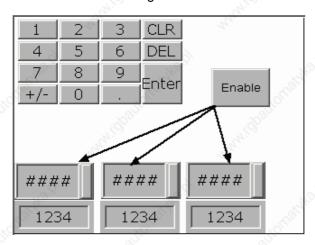
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# **Example for Creating a Keypad Element:**

# 1. Create the following elements first



The created elements are: one Keypad (1) element, one Momentary button, three numeric entry elements and three numeric display elements.

# 2. Related Element Property Description

| Element                           | Property Description  |
|-----------------------------------|---|
| Keypad (1)                        | Reserve the default value. The users can also change the display text.  |
| Momentary button                  | The write address is set to Internal memory \$10.1. The main function is used to enable the following numeric entry elements and let them receive the input value.  |
| Numeric Entry (Left)              | The write address is set to Internal memory \$0, Input Mode is set to Active and the InterLock Address is set to \$10.1. When the Momentary button is pressed, the numeric entry element will prepare to receive the input value. After the users press the Enter button, the numeric entry element will blink and it indicates that the numeric entry element is receiving the input value. When the value is received completely, the numeric entry element will stop blinking. In the figure below, the Numeric Entry (Left) will blink first. When the input value is transferred to the next element, the next element will blink next and vise versa. |
| Waldyra D. White I planto light.  | Please refer to the following figure:  ##### 2  ##### 3   |
| 18 <sup>1</sup> 10 <sup>1</sup> 1 | The element blinking order is determined by the order of creating elements.   |
| Numeric Entry (Middle)            | The write address is set to Internal memory \$1, Input Mode is set to Active and the InterLock Address is set to \$10.1.  |
| Numeric Entry (Right)             | The write address is set to Internal memory \$2, Input Mode is set to Active and the InterLock Address is set to \$10.1.  |
| Numeric Display (Left)            | The read address is set to Internal memory \$0.   |
| Numeric Display (Middle)          | The read address is set to Internal memory \$1.   |
| Numeric Display (Right)           | The read address is set to Internal memory \$2.   |
|                                   | AV AV   |

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# Chapter 4 Macro Function

Macro editing is a function in which allows the users to perform programming like programming in BASIC language. It provides the same language syntax as BASIC. It can also reduce the PLC program editing. Therefore, Macro is a very convenient function for the HMI users to use. After editing Macro, the users can test the Macro validity via either on-line simulation or off-line simulation on PC before downloading to HMI. The lines number for each macro is 512 lines and 128 words (max.) for writing comments or strings in a line. The sub-macro number is 512 sub-macros (number is 1-512). See Fig. 4.1 and Fig. 4.2.

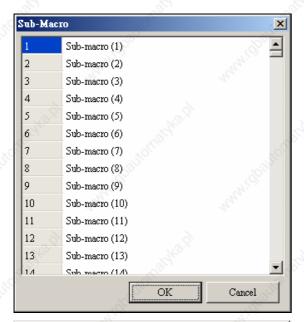


Fig. 4.1

The users can comment each macro by sub-macro function for the convenience of management, maintain and operation. The initial name of all sub-

macro is Sub-macro (n) (n is from 1 to 512).

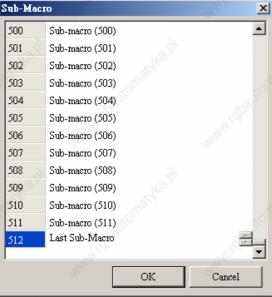


Fig. 4.2

The left-most field in the left window is sub-macro number. There are 512 sub-macros for editing. The users can write "CALL n (n is from 1 to 512)" to use sub-macro.

# 4.1 Macro Type

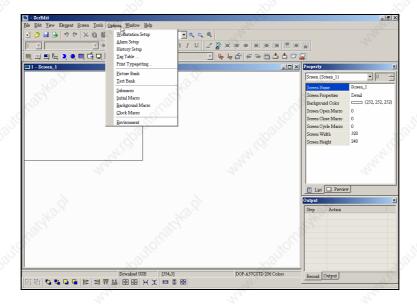


Fig. 4.1.1 Choosing Macro command from menu bar

| Macro Name         | Numbers | Remark  |  |
|--------------------|---------|---|--|
| Screen open Macro  | 1       | There is a screen open macro for each screen. Therefore, there are n screen open macros for n screen.   |  |
| Screen close Macro | 1       | There is a screen close macro for each screen. Therefore, there are n screen close macros for n screen. |  |
| Screen Cycle Macro | 11      | There is a screen cycle macro for each screen. Therefore, there are n screen cycle macros for n screen  |  |
| Initial Macro      | 1       | There is only an initial Macro in a program.  |  |
| Background Macro   | 1       | There is only an background Macro in a program.   |  |
| Clock Macro        | 1       | There is only an clock Macro in a program.  |  |
| On Macro           | 1       | The users can have an ON Macro for each specific button.  |  |
| Off Macro          | 10      | The users can have an OFF Macro for each specific button.   |  |
| Sub-macro          | 512     | There are only 512 sub-macros for a program.  |  |

Table 4.1.1 Macro command table

# ■ Screen Open Macro

The users can use open Macro to open each screen. Screen Open Macro will only be executed ONCE when you open screen (or switch to new screen) and finish execution ONCE. The screen element will be displayed after finishing executing Screen Open Macro. Therefore, the users need to pay close attention on designing Screen Open Macro to avoid infinite loop (program cannot be ended) as it may cause system delay or even cannot execute screen's elements permanently. It is not recommended to write too long macro unless necessary. Please pay close attention on loop usage and test Macro with on-line/off-line simulation before downloading to HMI.

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#### ■ Screen Close Macro

The users can use close Macro to close each screen. Screen Close Macro will only be executed ONCE when you close screen and finish execution ONCE. The Screen Open Macro of new screen will be only executed after finishing Screen Close Macro. Therefore, the users should also be careful for infinite loop (program cannot be ended) to avoid unexpected error.

#### ■ Screen Cycle Macro

The users can use cycle Macro to cycle each screen. Screen Cycle Macro will only be executed ONCE when you change screen and the macro will be executed continuously until the screen is changed, program or machine is stopped. Therefore, it is not recommended to write too long macro unless necessary.

# ■ Initial Macro

There is only one initial Macro in a program or a machine. It is executed in the beginning of program. The users can preset value to omit step-by-step settings and also control initial setting to avoid unexpected problem by unknown initial value. If the users need to setup any special setting in PLC special address, the users can use initial macro to set it. It saves much time with well-designed initial macro.

#### Background Macro

There is only one initial Macro in a program or a machine. It will be executed continuously like background. But the execution of Background Macro is to execute one or more commands at a time, not finish the execution ONCE. If there is other executed Macro, such as cycle macro, it won't have any influences. They are executed almost simultaneously (In fact, it is executed one by one physically. Since the execution time is so quick, it makes people feel that is executed simultaneously). The users do not need to write loop for continuous execution. Even the users writes END command for Macro it will still execute Macro again.

#### Clock Macro

There is only an initial Macro in a program or a machine. It will be executed continuously, finish the execution ONCE and be executed again like cycle macro. Therefore, the same, it is not recommended to write too long macro unless necessary.

#### On Macro

The users can use ON Macro for each specific button (Bit). It is called ON Macro because this start Macro is set to ON via setting the button (Bit). This Macro is also executed ONCE and finished executing ONCE. It will be started again when this button (Bit) is set to be ON again. The ON Macro will be only started when the button (Bit) is set to be ON and pressed button to be ON.

#### ■ Off Macro

The users can use OFF Macro for each specific button (Bit). Same as ON Macro, OFF Macro is started via setting this button (Bit). This Macro is also executed ONCE and finished executing ONCE. It will be started again when this button (Bit) is set to be OFF again. The OFF Macro will be only started when the button (Bit) is set to be OFF and pressed button to be OFF.

#### ■ Sub-macro

There are 512 sub-macros for editing. Sub-macro is similar to the subroutine in the in program. The users can write repeated action or function in sub-macro to save macro editing time and easy maintain. That means the users can write a sub-macro to make it functions as a specific 10 sub-macros. For example, a function is written named sub-macro 1, the users only need to write "CALL 1" in Macro whenever it is used. In this case, the users need only modify this sub-macro instead of modifying 10 macros if necessary. The sub-macro can be named by its function for easy management.

# 4.2 Macro Editing

After choosing the desired Macro command from menu bar, the users can start editing Macro by clicking any line shown as Fig. 4.2.1 below. The Macro command dialog box will pop up when any line is clicked. The Macro editing window will be different by clicking position. For the users' convenience, the most left number is line number.

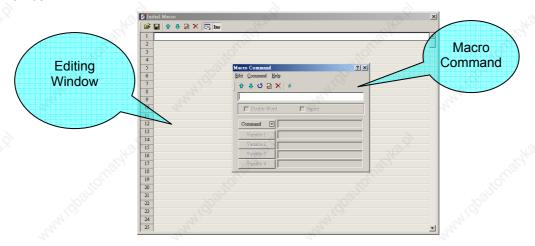


Fig. 4.2.1 Start editing Macro

The users can also use the icons on the toolbars (Fig. 4.2.2) for Macro editing.

Refer to Fig. 4.2.3, 512 lines (from 1 to 512) are available for editing Macro. Blank line in the program means that line will be set to comment line after updating as shown in Fig. 4-2-4.

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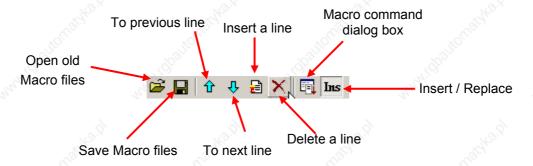


Fig. 4.2.2 Toolbar

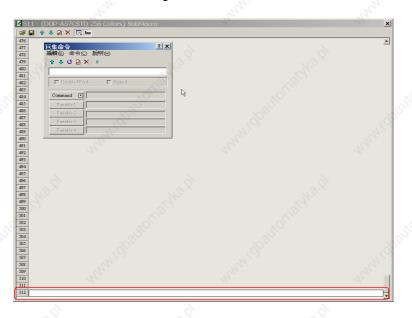


Fig. 4.2.3 Last line of Macro

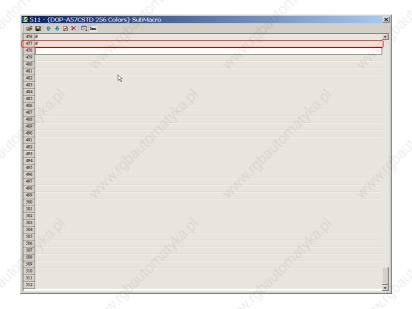


Fig. 4.2.4 Blank line becomes comment line

Once the editing Macro starts, the Macro command editing window will pop up (Fig. 4.2.5) by clicking any lines in the Macro. The users can determine the command that the users need by pressing the command button or clicking command from menu bar. Then, the users only need to move the mouse cursor to the position of the command and all the commands will display. At this time, the users can start to edit Macro. Refer to the following sections for Macro editing methods.

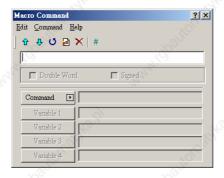


Fig. 4.2.5 Macro command editing window

#### ■ File

#### Open Macro

ScrEdit provides open old macro function for the convenience of editing macro. The users can open old Macro files when using any PLC brand to save Macro editing time without re-input. Refer to Fig. 4.2.6 for Open Macro window.

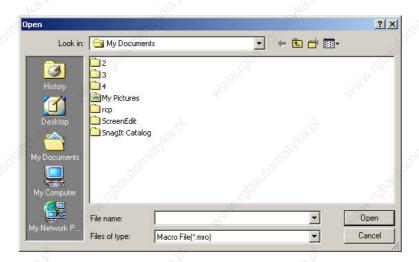


Fig. 4.2.6 Open Macro

### ■ Save As Macro

ScrEdit also provides "Save As" function for the users to modify old macro and save macro as other macro to backup or save re-input time of other macro commands.

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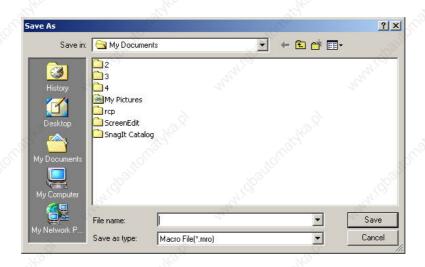


Fig. 4.2.7 Save As Macro

#### ■ Edit

The users can edit Macro via edit option in Macro Command dialog box. If it is PLC address, it will be in bracket to distinguish with internal memory.

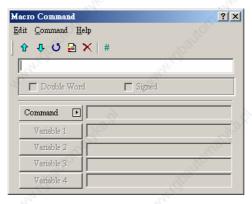


Fig. 4.2.8 Edit

#### Previous



Move the selected line to the upper line of macro and the upper line of macro will move backward a line.

#### ■ Next



Move the selected line to the lower line of macro and the lower line of macro will move forward a line.

# Update

# Update

Update the current line of macro. The modification will not be updated if "update" is not pressed after editing. This gives user a second chance to decide to modify or not. Therefore, if the users forget to update after editing, the users should re-do again.

#### ■ Insert



Insert the editing macro between two lines of macro. After inserting a new line, the existing line of macro will move backward a line.

#### ■ Delete



Delete the selected line. Lines after the delete line will be pushed upward after delete

#### ■ Comment

# Comment

Any comments or equations can be given for any lines to read/modify macro easily. The users can choose the desired text, characters or any symbols from menu bar or toolbar.

#### ■ Command

The users can use commands to edit the macro. No matter the command and equation all can be typed directly, or chosen from menu bar, or be selected by clicking button "Command". For the detailed options of Command, please see Fig. 4.2.9 to Fig. 4.2.18.



Fig. 4.2.9 Commands options



Fig. 4.2.10 Arithmetic

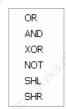


Fig. 4.2.11 Logical



Fig. 4.2.12 Data transfer

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# ■ Keypad

For the convenience of editing macro, ScrEdit allows the users to edit Macro by using keypad (key in manually). ScrEdit will check the validity automatically. If there are any errors, a warning dialog box will pop up to remind the users. There are no limit spaces between operand and operation symbol for the users to key in. After finishing inputting, ScrEdit will convert the macro to the best format automatically after updating the macro or pressing Enter key. But please notice that ScrEdit has not verified the macro yet at this time.

# 4.3 Macro Operation

#### ■ Definition

WORD 16 Bit data (It is made up of continuous 2 bytes, i.e. 16 bits, b15~b0. It can be used to

represent 0000~FFFF of hexadecimal system.

DWORD, DW 32 Bit data (It is made up of continuous 2 words, i.e. 32 bits, b31~b0. It can be used to

represent 00000000~FFFFFFF of hexadecimal.)

BYTE 8 Bit data (It is made up of continuous 2 nibbles, i.e. 8 bits, b7~b0. It can be used to

represent 00~FF of hexadecimal system.)

Signed A signed value is a numeric value with polarity. It means that the value is interpreted as

essentially the 'plus' sign that can be found in front of a positive number and the

'minus' sign that can be found in front of a negative number.

# Arithmetic Operation

Arithmetic Operation divides into two parts: Integer Operation and Floating Point Operation.

Each operand can be internal memory or constant. But it shall be internal memory only when outputting. Please refer to following table 4.3.1 and examples below for more information.

| Con               | nmand  | Equation        | Description    | Remark  |  |
|-------------------|--------|-----------------|----------------|---|--|
| u                 | +1100  | V1=V2 + V2      | Addition       | The calculation result can  |  |
| Operation         | 'M'(Q) | V1=V2 - V3      | Subtraction    | be stored as signed or unsigned WORD and                                |  |
| edo .             | *      | V1 = V2 * V3    | Multiplication | DWORD. When the data exceeds  |  |
| o<br>Integer      | 1      | V1 = V2 / V3    | Division       | the length of designated unit, the data out of range will be discarded. |  |
| <u>lu</u>         | %      | V1 = V2 % V3    | Get Remainder  |   |  |
| +                 | FADD   | V1=FADD(V2, V3) | Addition       | Floating Point Operation is   |  |
| Point<br>ion      | FSUB   | V1=FSUB(V2, V3) | Subtraction    | the operation of signed 32 Bit data.                                    |  |
|                   | FMUL   | V1=FMUL(V2, V3) | Multiplication | Ji aata:  |  |
| Floating<br>Opera | FDIV   | V1=FDIV(V2, V3) | Division       | , ģ   |  |
| ш                 | FMOD   | V1=FMOD(V2, V3) | Get Remainder  | "ighe"  |  |

Table 4.3.1 Arithmetic command table

# ■ +, FADD

#### **Addition**

Equation: V1 = V2 + V3[(Signed | DW)]

V1 = FADD(V2, V3) (Signed DW)

Perform the addition on V2 and V3, and store the addition result in V1.

Example:

The value contained within the internal memory address #2 plus 1

\$2 = \$2 + 1

The values contained within the internal memory address #1 and #2 are combined and the total is stored in the address #3.

\$3 = \$2 + \$1

The value contained within the internal memory address #4 plus 1.9

\$4 = FADD(\$4, 1.9)

The floating point values contained within the internal memory address #4 and #5 are combined and the total is stored in the address #6.

\$6 = FADD(\$5, \$4)

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# ■ -, FSUB

#### Subtraction

Equation: V1 = V2 - V3[(Signed | DW)]

V1 = FSUB(V2, V3) (Signed DW)

Perform the subtraction of V2 and V3, and store the subtraction result in V1.

Example:

Subtract 1 form the value contained within the internal memory address #2

\$2 = \$2 - 1

The value contained within the internal memory address #1 is subtracted from the value contained within the internal memory address #2 and the result of this calculation is stored in the internal memory address #3.

\$3 = \$2 - \$1

Subtract 1.9 form the value contained within the internal memory address #4

\$4 = FSUB(\$4, 1.9)

The floating point value contained within the internal memory address #4 is subtracted from the floating point value contained within the internal memory address #5 and the result of this calculation is stored in the internal memory address #6.

\$6 = FSUB(\$5, \$4)

#### \*, FMUL

# Multiplication

Equation: V1 = V2 \* V3[(Signed | DW)]

V1 = FMUL(V2, V3) (Signed DW)

Perform the multiplication of V2 and V3, and store the multiplication result in V1.

Example:

The value contained within the internal memory address #2 multiplied by 2

\$2 = \$2 \* 2

The value contained within the internal memory address #2 multiplied by #1 and the result of this calculation is stored in the address #3.

\$3 = \$2 \* \$1

The value contained within the internal memory address #4 multiplied by 1.5

\$4 = FMUL(\$4, 1.5)

The floating point value contained within the internal memory address #4 multiplied by #5 and the result of this calculation is stored in the address #6.

\$6 = FMUL(\$5, \$4)

■ /, FDIV

**Division** 

Equation: V1 = V2 / V3[(Signed | DW)]

V1 = FDIV(V2, V3) (Signed DW)

Perform the division of V2 and V3, and store the division result in V1. The value contained within V3 cannot be equal to 0(zero).

Example:

Subtract 1 form the value contained within the internal memory address #2

\$2 = \$2 - 1

The value contained within the internal memory address #2 divided by 5 and the result of this calculation is stored in the address #3.

\$3 = \$2 / 5

Subtract 1.9 form the value contained within the internal memory address #4

\$4 = FSUB(\$4, 1.9)

The value contained within the internal memory address #4 divided by 4.3 and the result of this calculation is stored in the address #6.

\$6 = FDIV(\$4, 4.3)

■ %, FMOD

**Get Remainder** 

Equation: V1 = V2 % V3[(Signed | DW)]

V1 = FMOD(V2, V3) (Signed DW)

Perform the division of V2 and V3, and store the remainder in V1. The value contained within V3 cannot be equal to 0(zero).

Example:

Subtract 1 form the value contained within the internal memory address #2

\$2 = \$2 - 1

The value contained within the internal memory address #2 divided by 5 and the remainder of the result of this calculation is stored in the address #3.

\$3 = \$2 % 5

Subtract 1.9 form the value contained within the internal memory address #4

\$4 = FSUB(\$4, 1.9)

The value contained within the internal memory address #4 divided by 4 and the remainder of the result of this calculation is stored in the address #6.

\$6 = FMOD(\$4, 4)

#### ■ ADDSUMW

#### **Repeated Addition**

Equation: V1 = ADDSUMW(V2, V3)[(DW)]

Perform the addition on V2, V2+1, V2+2, ..., V2+V3, and store the repeated addition result in V1.

Example:

\$2 = 1

\$3 = 2

\$4 = 3

\$5 = 3

0 = ADDSUMW(2, 5)

Add up the values contained within the internal memory address #2, #3, #4 and #5 (3 Words started from address #2) and the grand total is stored in the address #0. The value of the grand total is equal to 6.

# ■ Logical Operation

Six logical operations includes OR, AND, XOR, NOT, Shift-left and Shift-right. SHR. There are three operands for each operation. Each operand can be internal memory or constant. But it shall be internal memory only when outputting. The unit can be Word and Double Word. Please refer to following table 4.3.2 and examples below for more information.

| Command     | Equation      | Description                    | Remark                                   |
|-------------|---------------|--------------------------------|--|
|             | V1 = V2   V3  | Logical OR operation           | The calculation result can be            |
| &&          | V1 = V2 && V3 | Logical AND operation          | stored as WORD and                       |
| V           | V1 = V2 ^ V3  | Logical XOR operation          | DWORD.                                   |
| NOT         | V1 = NOT V2   | Logical NOT operation          | 1, 1,                                    |
| <b>}</b> << | V1 = V2 << V3 | Logical Shift-left operation   | 8  |
| >>          | V1 = V2 >> V3 | Logical Shift-rightt operation | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |

Table 4.3.2 Logical operation command table

#### ■ | Operand

**Logical OR operation** 

Equation: V1 = V2 | V3[(DW)]

Perform the logical OR operation on V2 and V3 and save the result of this calculation in V1.

Example:

\$2 = F000H

\$4 = 0F00H

\$2 = \$2 | \$4

Store the result of \$2 in FF00H

# ■ && Operand

**Logical AND operation** 

Equation: V1 = V2 && V3[(DW)]

Perform the logical AND operation on V2 and V3 and save the result of this calculation in V1.

Example:

\$2 = F000H

\$4 = 0F00H

\$2 = \$2 && \$4

Store the result of \$2 in 0000H

#### ^ Operand

# **Logical XOR operation**

Equation:  $V1 = V2 ^ V3[(DW)]$ 

Perform the logical XOR operation on V2 and V3 and save the result of this calculation in V1.

Example:

\$2 = F100H

\$4 = 0F00H

\$2 = \$2 ^ \$4

Store the result of \$2 in FE00H

#### ■ NOT

# **Logical NOT operation**

Equation: V1 = NOT V2 [(Signed | DW)]

Perform the logical NOT operation on V2 and V3 and save the result of this calculation in V1.

Example:

\$2 = F100H

\$4 = NOT \$2

Store the result of \$\$ in 0EFFH

# << Operand</p>

# **Logical Shift-left operation**

Equation:  $V1 = V2 \ll V3[(DW)]$ 

Shift V2 (WORD/DWORD) data to left (number of bit is V3). The result of this calculation is stored in V1.

Example:

\$2 = F100H

\$2 = \$2 << 4

\$2 shift-left 4 bits and becomes 1000H

#### >> Operand

**Logical Shift-right operation** 

Equation:  $V1 = V2 \gg V3[(DW)]$ 

Shift V2 (WORD/DWORD) data to right (number of bit is V3). The result of this calculation is stored in V1.

Example:

\$2 = F100H

\$2 = \$2 >> 4

\$2 shift-right 4 bits and becomes 0F10H

#### ■ Data Transfer

There are five commands for data transfer, including =, BMOV, FILL, CHR and FMOV. Please refer to following table 4.3.3 and examples below for more information.

| Command | Equation:        | Description                  | Remark                                   |
|---------|------------------|------------------------------|--|
| = 40    | V1 = V2          | Transfer data                | Data type for V1 only can be P, M        |
| BMOV    | BMOV(V1, V2, V3) | Block move                   | Data type for A1 and A2 only can be P, M |
| FILL    | FILL(V1, V2, V3) | Fill the memory              | 10/1                                     |
| CHR     | CHR(V1, "V2")    | Convert text to ASCII code   | V2 is a input string of texts            |
| FMOV    | V1 = FMOV(V2)    | Transfer floating point data | May.                                     |

P- PLC address, M- Internal memory, C- Constant

Table 4.3.3 Data transfer command table

#### ■ = Operand

Transfer data

Equation: V1 = V2[(Signed DW | DW)]

Transfer data from V2 to V1. No data change within A2 after executing MOV command.

Example:

The data within the internal memory address \$0 is designated the constant 4.

\$0 = 4

The data within the internal memory address #4 is designated the same as the data within the internal memory address \$2.

\$4 = \$2

#### ■ BMOV

**Block move Copy Block** 

Equation: BMOV(V1, V2, V3)

BMOV (V1, V2, V3) means to move data (number of word is A3) of data from address V2 to address V1 in block. Data format is word. If the block length is more than internal memory or max number of PLC register, there will be error when compiling.

Example:

Move the data in \$0, \$1, \$2, \$3, \$4 to \$10, \$11, \$12, \$13 in order. Total the same 4 Words.

\$0 = 1

\$1 = 2

\$2 = 3

\$3 = 4

BMOV(\$10, \$1, 4)

After executing BMOV command, \$10=1, \$11=2, \$12=3, \$13=4.

#### ■ FILL

#### **Fill the Memory**

Equation: FILL(V1, V2, V3) [(Signed)]

FILL(V1, V2, V3) means to fill address V1 with data in address V2 and the data number is V3. If the block length is more than internal memory or max number of PLC register, there will be error when compiling.

Example:

\$5 = 10

FILL(\$0, \$5, 4)

Executing FILL command to fill \$0, \$1, \$2, \$3 with constant 10.

# ■ CHR

**Convert Text to ASCII code** 

Equation: CHR(V1, "V2")

CHR(V1, "V2") means to convert text in address V2 to ASCII code and store in V1. The max length is 128 words.

Example:

CHR(\$1, "AB12")

After executing CHR command, 4241H will be stored in \$1 and 3130H will be stored in \$2.

#### ■ FMOV

**Transfer Floating Point Data** 

Equation: V1 = FMOV(V2) (Signed DW)

Transfer floating point data from V2 to V1. No data change within V2 after executing FMOV command.

Example:

Transfer constant 44.3 to the internal memory address \$0.

0 = FMOV(44.3) (Signed DW)

Transfer the same data of PLC 1@X0 to the internal memory address \$0.

0 = FMOV(1@X0) (Signed DW)

#### ■ Data Conversion

| Command | Equation          | Description                             |  |
|---------|-------------------|---|--|
| BCD     | V1 = BCD(V2)      | Converts BIN Data into BCD              |  |
| BIN     | V1 = BIN(V2)      | Decimal value conversion                |  |
| W2D     | V1 = W2D(V2)      | Convert WORD to DWORD                   |  |
| B2W     | V1 = B2W(V2, V3)  | Convert BYTE to WORD                    |  |
| W2B     | V1 = W2B(V2, V3)  | Convert WORD to BYTE                    |  |
| SWAP    | SWAP (V1, V2, V3) | Swap BYTE data                          |  |
| XCHG    | XCHG (V1, V2, V3) | Exchange data                           |  |
| MAX     | V1 = MAX(V2, V3)  | Get Maximum value                       |  |
| MIN     | V1 = MIN(V2, V3)  | Get Minimum value                       |  |
| A2H     | V1 = A2H(V2)      | Convert ASCII code to 4-digit integer   |  |
| H2A     | V1= H2A (V2)      | Convert hexadecimal integer to ASCII co |  |
| FCNV    | V1= FCNV (V2)     | Convert integer to floating point value |  |
| ICNV    | V1= ICNV (V2)     | Convert floating point value to integer |  |

Table 4.3.4 Data conversion command table

#### ■ BCD

Convert BIN Data into BCD value

Equation: V1 = BCD(V2)[(DW)]

The binary data in V2 is converted into BCD value, and stored in V1.

Example:

The binary data in \$4 is 5564. After executing BCD command, the binary data in \$4 is converted to 5564H.

\$4 = 5564

\$4 = BCD(\$4)

#### ■ BIN

#### Converts BCD Data into BIN value

Equation: V1 = BIN(V2) [(DW)]

The BCD data in V2 is converted into BCD value, and stored in V1.

#### Example:

The BCD (hexadecimal) data in \$4 is 5564H. After executing BIN command, the BCD data in \$4 is converted to 5564.

\$4 = 5564H

\$4 = BIN(\$4)

#### ■ W2D

#### **Convert WORD to DWORD**

Equation: V1 = W2D(V2) [Signed]

The WORD value in V2 is converted into DWORD value, and stored in V1.

#### Example:

The WORD value in decimal format in \$4 is -7. After executing W2D command, the value in \$7 is converted to -7.

\$4 = -7

\$7 = W2D(\$4)(Signed)

#### ■ B2W

# **Convert BYTE to WORD**

Equation: V1 = B2W(V2, V3)

Convert BYTE data (number of byte is V3) from V2 to WORD value and store the result in V1. The high byte will be filled with 0. In other words, that each word of V2 is two bytes. These two bytes will be converted to two words and stored in V1.

#### Example:

Assume that the value of \$65534 is 12. That means converting 12 BYTES (6 WORDS) to 12 WORDS from \$785 and store the result in \$10 to \$21.

\$10=B2W(\$785, \$65534)

#### ■ W2B

#### Convert WORD to BYTE

Equation: V1 = W2B(V2, V3)

Convert WORD data (number of word is V3) from low-byte of V2 to BYTE format (discard high-byte of V2) and store the result in V1.

Assume that the value of \$985 is 12. It means to read 12 WORDS from low-byte of \$986 and convert these 12 WORDS to 12 BYTES (6 WORDS) and store the result in \$65 to \$70.

```
$65= W2B($986, $985)
```

#### ■ SWAP

#### **Swap BYTE Data**

Equation: SWAP (V1, V2, V3)

Swap high-byte and low-byte of V2, V2+1, V2+2...V2+V3 (WORD) and store the result in the starting position of V1, V1+1, V1+2...V1+V3 in order.

#### Example:

Swap the high-byte and low-byte of \$10, \$11, ..., \$14 and store the result in \$1, \$2, .., \$5 in order.

SWAP(\$1, \$10, 5)

If \$11 = 1234H, after executing SWAP command, \$2 = 3412H.

#### ■ XCHG

# **Exchange Data**

Equation: XCHG (V1, V2, V3)[(DW)]

Exchange the data of V2, V2+1, V2+2...V2+V3 and the data of V1, V1+1, V1+2.., V1+V3. The data of V1 and V2 will be exchanged after executing XCHG command.

#### Example:

Exchange the data of \$10, \$11, ..., \$14 and the data of \$1, \$2, .., \$5 in order.

XCHG(\$1, \$10, 5)

If \$11 = 1234H and \$2 = 5678H, \$2 = 1234H and \$1 = 5678H after executing XCHG command.

#### ■ MAX

#### **Get Maximum Value**

Equation: V1 = MAX(V2, V3)[ (Signed DW | DW)]

Get the maximum value from V2 and V3 and store the result in V1.

Example:

\$0 = 0

\$1 = 2

\$2 =10

\$0 = MAX(\$1, \$2)

The result  $\rightarrow$  \$0 = 10

#### ■ MIN

#### **Get Minimum Value**

Equation: V1 = MIN(V2, V3)[ (Signed DW | DW)]

Get the minimum value from V2 and V3 and store the result in V1.

Example:

\$0 = 0

\$1 = 2

\$2 =10

\$0 = MIN(\$1, \$2)

The result  $\rightarrow$  \$0 = 2

#### ■ A2H

Converts 4 ASCII code to a four digits integer in hexadecimal format

Equation: V1 = A2H(V2)

Convert the ASCII code of V2 (4 WORDS) to integer and store the result in V1.

Example:

\$10 = 0034H

\$11 = 0033H

\$12 = 0036H

\$13 = 0038H

\$1 = A2H(\$10)

After executing A2H command, the data in \$1 will be converted to 4368H.

#### ■ H2A

Converts four digits integer in hexadecimal format to 4 ASCII code

Equation: V1= H2A (V2)

Convert V2 (1 WORD in hexadecimal format) to the ASCII (4 WORDS) code and store the result in V1.

Example:

\$2 = 1234H

\$10 = H2A(\$2)

After executing H2A command, \$10=0031H, \$11=0032H, \$12=0033H and \$13=0034H.

#### **■** FCNV

Convert integer to floating point value

Equation: V1= FCNV (V2)(Signed DW)

Convert floating point value or integer in V2 to floating point value and store in V1.

Example:

\$2 = 100

\$1 = FCNV(\$2)(Signed DW)

The result  $\rightarrow$  \$1 = 100.0

#### ■ ICNV

Convert floating point value to integer

Equation: V1= ICNV (V2)

Convert floating point value or integer in V2 to integer and store in V1.

Example:

FMOV(\$2, 100.5)

\$1 = ICNV (\$2)(Signed DW)

The result  $\rightarrow$  \$1 = 100

# Comparison

#### ■ IF...THEN GOTO LABEL ...

# **Equation: IF expression THEN GOTO LABEL identifier**

If the command of expression is true, then it will go to LABEL identifier perform the program.

Please refer to the following table for the command of expression.

| Command       | Description   | Remark  |
|---------------|---|---|
| V1 == V2      | V1 is equal to V2   | Tot.  |
| V1 != V2      | V1 is not equal to V2   | (Prof.)   |
| V1 > V2       | V1 is greater than V2   | " " " " " " " " " " " " " " " " " " "   |
| V1 >= V2      | V1 is greater than or equal to V2   | 27  |
| V1 < V2       | V1 is smaller than V2   | (g) (g)   |
| V1<= V2       | V1 is smaller than or equal to V2   | V1 and V2 should be   |
| V1 && V2 == 0 | Perform AND command on V1 and V2 and the result of AND operation is equal to 0    | internal memory or constant.  |
| V1 && V2 != 0 | Perform AND command on V1 andV2 and the result of AND operation is not equal to 0 | 9   |
| V1== ON       | V1 is ON  | to., "Ap.,  |
| V1== OFF      | V1 is OFF   | , of Contract of the Contract |

Table 4.3.5 Comparison command table

Example:

When \$2 is greater than or equal to 10, it will go to LABEL 1 and continue to perform the program.

IF \$2 >= 10 THEN GOTO LABEL 1

. . . .

LABEL 1

. . . .

Equation: IFB V1 == {ON | OFF} THEN GOTO LABEL identifier

If V1 is ON or OFF, it will go to LABEL identifier to perform the program. V1 is PLC address.

Example:

IFB 1@X0 == ON THEN GOTO LABEL 1

■ IF...THEN CALL ...

Equation: IF V1 == V2 THEN CALL macro

If V1 is equal to V2, it will call macro. V1 and V2 should be internal memory or constant.

Example

If \$2 is equal to 10, then it will cal sub-macro 1.

IF 10 = \$2 THEN CALL 1

# ■ IF...ELSE...ENDIF

**Equation:** 

IF expression1

Statement1

**ELSEIF expression2** 

Statement2

**ELSE** 

Statement3

**ENDIF** 

This is logical determination from multiple conditions. If expression1 is true, Statement1 will be executed. If expression1 is false, it will run expression2. If expression 2 is true, Stemenent2 will be executed. If both expression 1 and expression 2 are false, Statement3 will be executed.

For the command of expression, please refer to table 4.3.5 (Comparison command table).

Example

If \$1 is smaller than 100, \$1 = \$1 + 1 is executed. Otherwise \$1 = \$1 + 10 is executed.

IF \$1 < 100

1 = 1 + 1

**ELSE** 

\$1 = \$1 + 10

**ENDIF** 

#### ■ Flow Control

There are five types for flow control: GOTO, LABEL, CALL..RET, FOR...NEXT and END.

#### ■ GOTO

Unconditionally go to a specific Label. GOTO command will jump to designated label like Label V1 unconditionally.

**Equation: GOTO LABEL V1** 

Go to the internal designated Label V1 in the program unconditionally.

Example:

Go to the position of designated Label 2 and continue to execute the program unconditionally.

**GOTO LABEL 2** 

. . . .

LABEL 2

#### **■ LABEL**

Label such as Label V1

**Equation: LABEL V1** 

Please notice that the label cannot be repeated in a Macro.

Example:

Go to the position of designated Label 2 and continue to execute the program unconditionally.

**GOTO LABEL 2** 

. . . . .

LABEL 2

. . . . .

The Label 2 is repeated. An error will occur at this time to warn the users to indicate it is illegal.

LABEL 2

Ø.

# ■ CALL..RET

Call Sub-macro program

**Equation: CALL V1** 

V1 represents the sub-macro number. The sub-macro number could be  $001 \sim 512$  and V1 should be internal memory address or constant.

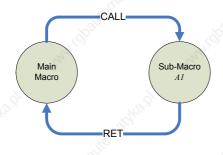


Fig. 4.3.1

The rights of macro control will be transferred to sub-macro after CALL V1 command is executed. V1 needs to return through RET command. RET command will transfer the rights of macro control to the next command of CALL command. The sub-macro number could be 001 ~ 512 and the users also can name it freely. In the sub-macro program, the users also can CALL another sub-macro but the levels for CALL sub-macro should be less than 6 levels due to memory limit and also for avoiding unexpected error.

#### ■ FOR...NEXT

Program Loop

**Equation:** 

FOR V1

**Statement** 

#### NEXT

It is for nested loops. "FOR" is the start of loop and "NEXT" is the end of loop. The nested loop can up to 5 levels max. V1 can be the internal memory or constant. When this command is executed, the number of V1 Statement will be executed continuously. Statement is the combination of a section of macro commands and also can be within the nested loop. The users can change V1 value through command, but the number of times cannot be changed.

Example:

\$10 = 10

\$1 = 0

FOR \$10

\$1 = \$1 + 1

\$10 = 2

**NEXT** 

After the operation, the result is \$1 = 10, \$10 = 2.

Please notice that the loop times will not change even the users reset the value within \$10.

#### ■ END

End the macro

Equation:

Statemenets1

**END** 

#### Statements2

End command is used to end the macro program. Statements2 will not be executed after Statemenets1 is executed. The program will execute from the command of the first line next time. Please notice that END means finishing executing macro. If END command is used in sub-macro, it indicates the program is end here.

Example:

\$1 = 10

\$1 = \$1 + 1

**END** 

\$1 = \$1 + 1

After the operation, the result is \$1 = 11, not \$1 = 12 as the END command has ended the macro program.

#### ■ Bit Setting

There are four settings for BIT settings: SETB, CLRBL, INVB and GETB.

| Command | Equation     | Description                      |
|---------|--------------|----------------------------------|
| SETB    | SETB V1      | Set V1 Bit to be ON              |
| CLRBL   | CLRB V1      | Set V1 Bit to be OFF             |
| INVB    | INVB V1      | Set V1 Bit to be inversed        |
| GETB    | V1 = GETB V2 | Get V2 Bit value and store in V1 |

Table 4.3.6 Bit setting command table

#### ■ SETB

Sets specific bit to be ON.

Equation: SETB V1

Set V1 Bit to be ON

Example:

Set a value of 0 to the 0 number of bit within the internal memory \$0.

\$0 = FFFEH

**SETB \$0.0** 

The result → \$0 = FFFFH

# ■ CLRB

Sets specific bit to be OFF.

Equation: CLRB V1

Set V1 Bit to be OFF

Example:

Set a value of 0 to the 0 number of bit within the internal memory \$0.

\$0 = FFFFH

CLRB \$0.0

The result  $\rightarrow$  \$0 = FFFEH

#### ■ INVB

Sets specific bit to be inversed. ON  $\rightarrow$  OFF, OFF  $\rightarrow$  ON

**Equation: INVB V1** 

Set V1 Bit to be inversed. ON → OFF, OFF → ON

Example:

Set a value of 0 to the 0 number of bit within the inversed internal memory \$0.

\$0 = FFFEH

INVB \$0.0

The result → \$0 = FFFFH

#### ■ GETB

Get bit value

Equation: V1 = GETB V2

Get V2 Bit value and store in V1

Example:

Get the 3<sup>rd</sup> Bit value within \$0 and store it to the 5<sup>th</sup> Bit within \$10.

\$2 = FFFEH

\$10 = 0

\$10.5 = GETB \$0.3

The result  $\rightarrow$  \$10 = 4

# ■ Communication

| Command        | Equation                   | Description                                |
|----------------|----------------------------|--|
| INITCOM        | V1= INITCOM (V2)           | Initial setup COM port                     |
| ADDSUM         | V1=ADDSUM(V2, V3)          | Use addition to calculate checksum         |
| XORSUM         | V1 = XORSUM(V2, V3)        | Use XOR to calculate checksum              |
| PUTCHARS       | V1 = PUTCHARS(V2, V3, V4)  | Output characters by COM port              |
| GETCHARS       | V1 = GETCHARS(V2, V3, V4)  | Get characters by COM port                 |
| SELECTCOM      | SELECTCOM(V1)              | Select COM port                            |
| CLEARCOMBUFFER | CLEARCOMBUFFER(V1, V2)     | Clear COM port buffer                      |
| CHRCHKSUM      | V1 = CHRCHKSUM(V2, V3, V4) | Calculate the length of texts and checksum |

Table 4.3.7 Communication command table

# ■ INITCOM

INITCOM → Initial setup COM port to start communication and set communication protocol.



Fig. 4.3.2 INITCOM

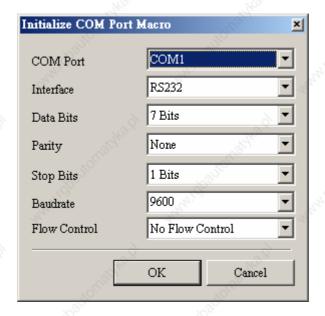
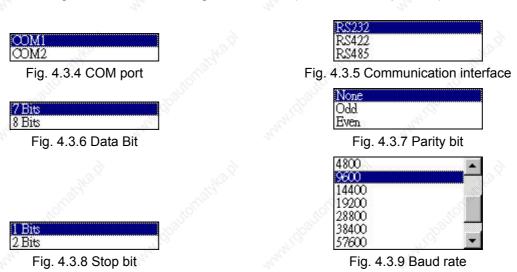


Fig. 4.3.3 Variable2 settings in INITCOM (communication protocol)



**Flow Control:** The transmission speed and communication validity are enhanced during communication due to new transmission technology, such as compress immediately, debug,...etc. But the new technology also makes the transmission speed between HMI and PC will longer than the actual transmission speed. Therefore, ensure the data security and transmit complete data between computer and HMI, the flow control is necessary.

No Flow Control: Flow control function is disabled.

CTS/RTS: It is flow control for hardware. It uses handshaking signal to control receiving and sending data. The control is achieved via internal modem or external modem that connect to HMI by connecting cable.

**DSR/DTR**: It is flow control for hardware also. It is used when PC and HMI is connected by cable directly.

**XON/XOFF**: It is flow control for software. It is only used for 2400bps modem. The control method is to generate control code by software and add it in the transmission data.

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Fig. 4.3.10 Flow control

#### ADDSUM

ADDSUM → It uses addition to calculate checksum. V1=ADDSUM(V2, V3). V1 is the value after calculation, V2 is the starting address for calculation and V3 is data length.



Fig. 4.3.11 ADDSUM

#### ■ XORSUM

 $XORSUM \rightarrow It$  uses XOR to calculate checksum. V1=XORSUM (V2, V3) V1 is the value after calculation, V2 is the starting address for calculation and V3 is data length.



Fig. 4.3.12 XORSUM

#### ■ PUTCHARS

PUTCHARS → Output characters by COM port. V1= PUTCHARS (V2, V3, V4). V1 is the response value after communication, V2 is the starting address of transmission data, V3 is data length, and V4 is the allowance communication time (unit is ms). The result will be stored in V1.



Fig. 4.3.13 PUTCHARS

#### **■ GETCHARS**

GETCHARS → Get characters by COM port. V1= GETCHARS (V2, V3, V4). V1 is the response value after communication, V2 is the starting address of transmission data, V3 is data length, and V4 is the allowance communication time (unit is ms). The result will be stored in V1.



Fig. 4.3.14 GETCHARS



Fig. 4.3.15 Example 1 of Delta PLC

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In example 1 of Delta PLC shows the initial setup operation of Delta PLC. The users can see the INITCOM command example in Fig. 4.3.15.

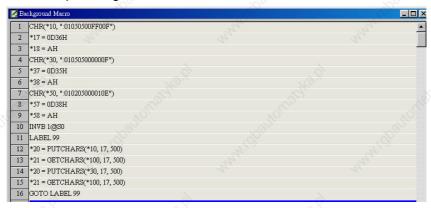


Fig. 4.3.16 Example 2 of Delta PLC

Example 2 of Delta PLC in Fig. 4.3.16 shows the communication macro for background macro. From Line 1 to line 3, the users can see that Y0 is set to be ON and written into internal memory \*10. From Line 4 to line 6, the users can see that Y0 is set to be OFF and written into internal memory \*30. Then, output ON data in line 12 and output OFF data in line 14. Therefore, when HMI execute these commands, the users can see Y0 LED will be ON and OFF alternately. From this example, the users can know that communication Macro let the users have the rights of PLC control simultaneously when you have PLC communication data. Even if Delta DOP series HMI does not support the types of PLCs or any new PLCs, the users still can control those PLCs by using communication Macro with communication protocol.

#### ■ SELECTCOM

SELECTCOM → It is used to select COM port. When not select connecting PLC (set PLC to NULL) in Options > Configuration in ScrEdit, the users can use two COM ports (0:COM1, 1:COM2) at the same time. (All communication commands will be processed via the COM port the users select after executing this command. Different macros will not support each other or have any interference.)

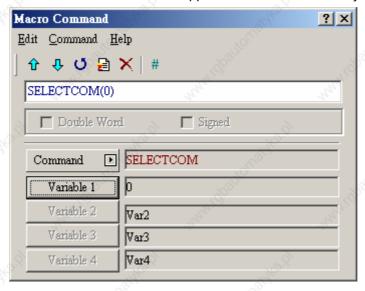


Fig. 4.3.17 SELECTCOM

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#### ■ CLEARCOMBUFFER

Clear COM port buffer.

| acro Command                             | The state of the s | ? ×   |
|--|--|-------|
| dit <u>C</u> ommand <u>H</u> e           | elp  |       |
| <b>ያ</b> ተ ር 🗏                           | ×   #  | 'S,   |
| CLEARCOMBUF                              | FER(Var1, Var2)  |       |
| ☐ Double Wor                             | I Signed   | ő     |
| Command 🕨                                | CLEARCOMBUFFER   | 10,   |
| Variable 1                               | Var1   | 'Ş,   |
| Variable 2                               | Var2   |       |
| Variable 3                               | Var3   |       |
| Variable 4                               | Var4   | 20,00 |
| Command Variable 1 Variable 2 Variable 3 | CLEARCOMBUFFER  Var1  Var2  Var3   | , (T) |

Fig. 4.3.18 CLEARCOMBUFFER

# Equation: CLEARCOMBUFFER(V1, V2)

V1 is the number of communication port. It represents as constant 0(COM1) or 1(COM2).

V2 is the type of buffer area. It represents as constant 0 (receiving buffer area) or 1(sending buffer area)

#### Example:

Clear sending buffer area of COM2

CLEARCOMBUFFER(1, 0)

#### **■** CHRCHKSUM

Calculate the data length of texts or characters and checksum.

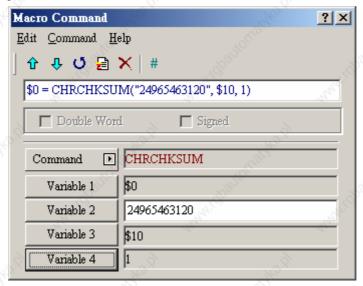


Fig. 4.3.19 CHRCHKSUM

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# Equation: V1 = CHRCHKSUM(V2, V3, V4)

V1 is the internal memory address where stores the text length of V2.

V2 is the string of text.

V3 is the internal memory address where stores the checksum of V2.

V4 is the data length of the checksum that stores in V3. 0 represents Byte and 1 represents Word.

Operation of checksum:

Convert format of each data characters to ASCII code and add up them. For example, convert '2' to ASCII code '31H', convert '4' to ASCII code '34H' and the checksum is 31H + 34H = 65H.

#### Example:

Calculate the data length of "24" and checksum

\$0 = CHRCHKSUM("24", \$10, 2)

After the above operation, 2 is stored in \$0 and 2 represents the data length is 2 bytes. The checksum stored in \$10 is 65H.

#### Others

| Command       | Equation                             | Descrption                                  |
|---------------|--------------------------------------|---|
| TIMETICK      | V1 = TIMETICK                        | Get the time from system startup to present |
| GETLASSERROR  | V1 = GETLASTERROR                    | Get last error value                        |
| #             | #V1                                  | Comment                                     |
| delay         | delay V1                             | System delay                                |
| GETSYSTEMTIME | V1 = GETSYSTEMTIME                   | Get system time                             |
| SETSYSTEMTIME | SETSYSTEMTIME(V1)                    | Set system time                             |
| GETHISTORY    | V1 = GETHISTORY (V2, V3, V4, V5, V6) | Get history data                            |

#### ■ TIMETICK

TIMETICK → Get the time from system startup to present and put into the specific address. An increment of 1 means 100ms is added.

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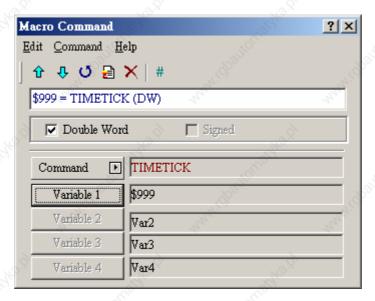


Fig. 4.3.20 TIMETICK

#### ■ GETLASTERROR

GETLASTERROR → Get last error value. If there is no error occurred, the result of GETLASTERROR will be 0. Even if each Macro is executed simultaneously, the error message will not interfere one another. For error code information, please refer to section 4.4.

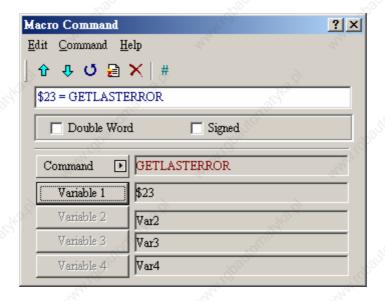


Fig. 4.3.21 GETLASTERROR

#### COMMENT

COMMENT → It lets Macro to be readable. Using this command will not affect macro function. The users only need to put "#" in front of the equation and the macro will become readable. If the users want to change the comment to be back to equation, just remove the "#" symbol.

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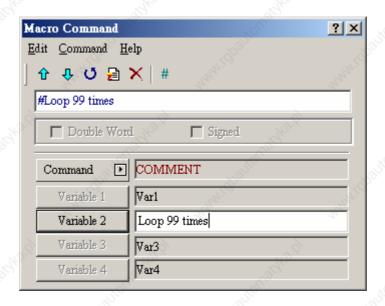


Fig. 4.3.22 COMMENT

#### ■ Delay

Delay → Delays the user setting time by system. As HMI system is a multiplexer system, the system delay problem may occur. Therefore, setting time will be increased due to "system busy" and the condition that the setting time move forward will not happen. The unit of delay time is ms.

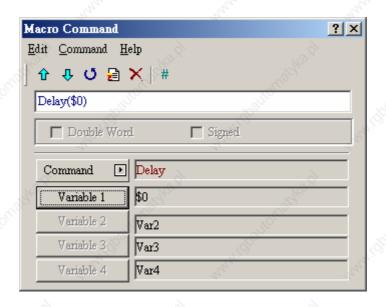


Fig. 4.3.23 Delay

# ■ GETSYSTEMTIME

Get system time

**Equation:** V1 = GETSYSTEMTIME

V1 is the starting address of continuous 7Words within the internal memory address.

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V1 Year V1 + 1Month V1 + 2Date V1 + 3Week V1 + 4Hour V1 + 5Minute V1 + 6 Second Example: Now the system time is 2006/01/04 Wed 09:26:25. Using this command to get the current system time and store in \$1~\$7. \$1 = GETSYSTEMTIME Get \$1 = 2006, \$2 = 01, \$3 = 4, \$4 = 3, \$5 = 9, \$6 = 26, \$7 = 25 **SETSYSTEMTIME** Set system time **Equation: SETSYSTEMTIME(V1)** V1 is the starting address of continuous 7Words within the internal memory address. V1 Year V1 + 1Month V1 + 2 Date V1 + 3Week V1 + 4Hour Minute V1 + 5V1 + 6Second Example: Set the current system time as 2006/01/04 Wed 09:26:25. \$1 = 2006 \$2 = 1 \$3 = 4 \$4 = 3 \$5 = 9\$6 = 26

\$7 = 25

SETSYSTEMTIME(\$1)

#### GETHISTORY

#### Get history data

Equation: V1 = GETHISTORY (V2, V3, V4, V5, V6)

V1 is the internal memory address where store the data length.

V2 is the internal memory, constant, the buffer number of history buffer area.

V3 is the internal memory, constant, the starting address for sampling.

V4 is the internal memory, constant, the points for reading

V5 is the internal memory, PLC address, the address where store the data

V6 is the internal memory, constant, the data type for reading

0: Data, 1: Time, 2: Time and Data

#### 4.4 Error Messages

When compiling, it will shows errors in output window for user to find out easily. Some errors occur because of the users' carelessness, sometimes just because the users miss to input some commands. Some errors will be found out easily in short program. But that will be difficulty in long Macro. To help the users to debug, ScrEdit provides error messages to show what the error is. But for those logic errors, the users should be aware of it and avoid making this kind of mistake.

#### Error messages when editing

#### ■ Code - 100: LABEL cannot be found

There is no such LABEL that GOTO designates.

#### ■ Code – 101: Recursion occurs

This error message is usually occurred in sub-macro. The ability of a sub-macro to CALL itself is called recursion. No matter it is called directly or indirectly. Basically, recursion cannot be adopted for sub-macro. The users can use GOTO or FOR (infinite times) to replace it.

#### ■ Code – 102: More than 3 nested FOR is used

This error message is to warn the users not to use more than 3 nested FOR commands. The purpose is to avoid insufficient memory. The users can use GOTO or IF to replace it.

#### ■ Code – 103: Sub-macro does not exist

This error message means that there is no sub-macro in the program. For example, CALL 5 means CALL sub-macro 5. If the users do not edit sub-macro 5 in the program, this error message will display to warn the users. The purpose is to warn the users to be more careful when editing (reduce input error or avoid forgetting editing the corresponding sub-macro) and prevent unexpected error.

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#### ■ Code – 104: Number of NEXT is less than the number of FOR

Number of NEXT and FOR should match. This error code is used to remind the users finding out the missing NEXT.

#### ■ Code -105: Number of FOR is less than the number of NEXT

Number of FOR and NEXT should match. This error code is used to remind the user if there is any missing FOR.

#### ■ Code-106: Repeated LABEL

This error message means that there are repeated LABEL in the same Macro. The program will be confusing with that. That may be caused by carelessness (input error or forget to edit the corresponding sub-macro) and the users will get error message during editing to avoid unexpected error.

#### ■ Code-107: There is RET in Macro

This error message means that there is RET command in Macro. RET command should be used for sub-macro to return program. But in Macro, it should use END not RET.

#### ■ HMI Macro Error Messages

The users can read error messages by macro. Once there is an error and the users execute a correct command before reading error message, the error message will be overwritten. When executing each macro, each Macro error message will not be influenced by other macro.

#### ■ Code-10: GOTO Error

This message means that there is GOTO error in macro.

#### ■ Code-11: Stack Overflow

This message means that stack in macro is full. That may be cause by using too many sub-macros or execute different macros at the same time. This is to avoid insufficient memory.

# ■ Code-12: CALL Empty Sub-macro

This is CALL sub-macro error. The sub-macro that is called should not be an empty sub-macro. This message is to avoid unexpected error.

#### ■ Code-13: Data Read Error

This is data read error. Sometimes this may be caused by memory data error but most of the time is PLC data read error.

#### ■ Code-14: Data Write Error

This is data write error. Sometimes this may be caused by memory data error but most of the time is PLC data write error.

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#### ■ Code-15: Divisor is 0

This error message means that the devisor is 0 when performing division operation.

### HMI Communication Error Messages



Fig. 4.4.1 Example of n HMI Communication Error Message

## Communication Busy

Error Message: Com? Station?: Communication Busy ...

#### ■ Unknown Code

Error Message: Com? Station?: Receive Unknow Code ...

### ■ No Response from Controller

Error Message: Com? Station?: Controller No Response ...

#### **■ HMI CheckSum Error**

Error Message: Com? Station?: Check Sum Error in HMI Message ...

#### ■ Controller CheckSum Error

Error Message: Com? Station?: Check Sum Error in Controller Message ...

#### ■ Incorrect Command

Error Message: Com %d Station %d: Command Can Not be Executed ...

# ■ Incorrect Address

Error Message: Com? Station?: Address Fault ...

#### ■ Incorrect Value

Error Message: Com? Station?: Value is Incorrect ...

#### Controller is Busy

Error Message: Com? Station?: Controller is Busy ...

#### ■ CTS Signal Fail

Error Message: Com ? Station ?: CTS Signal Fail ...

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# ■ No Such Resource in Controller

Error Message: Com? Station?: No Such Resource ..

#### ■ No Such Service in Controller

Error Message: Com? Station?: No Such Service ...

#### ■ Must Retry

Error Message: Com ? Station ?: Must Retry ...

#### ■ HMI Station Number Error

Error Message: Com? Station?: HMI Station Number Error ...

#### ■ Controller Station Number Error

Error Message: Com? Station?: Controller Station Number Error ...

#### ■ UART Communication Error

Error Message: Com? Station?: UART Communication Error ...

#### ■ Other Communication Error

Error Message: Com? Station ?: Other Communication Error ...

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# Chapter 5 Control Block and Status Block

For two-way communication and display screen between DOP series and all brands' PLC, it needs to define the address of HMI control block and status block in Standard tab. Please choose Options > Configuration to find the Standard tab in Configuration dialog box (Fig. 5.1 and Fig. 5.2).

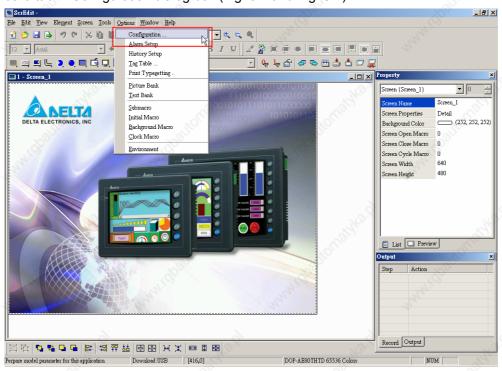


Fig. 5.1 Configuration settings

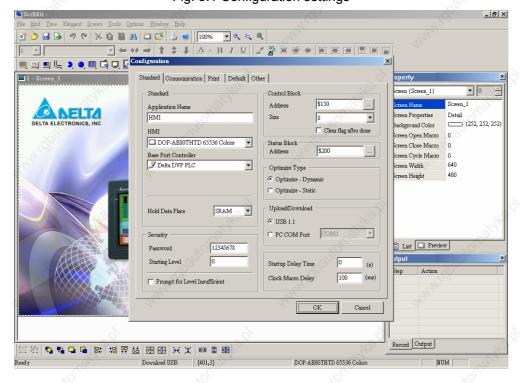


Fig. 5.2 Standard tab

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# 5.1 Control Block

HMI can be controlled via PLC by designating the register from control block settings. The register is a continuous data block and its length is from 0 to 8 WORDs. The length is different depends on function. For example, it needs at least 7 WORDs for recipe function. When the control block size is set to 0, the control block function is disabled. If the control block function is enabled, HMI can judge the operation that commanded by the external controller by reading the setting in control block rapidly and continuously.

The function and explanation of each WORD are listed below. (In the following table, we assume that the users use Delta PLC, so the available starting addresses in control block are  $Dn \sim Dn+7$  ( $D0 \sim D7$ ).)

| Word Number   |   | Register Number                                     | Example |      |
|---------------|---|---|---------|------|
| 0 Register fo |   | Register for designating Screen Number (SNIR)       | Dn      | (D0) |
| Way.          | 1 | Control Flag Register (CFR)                         | Dn+1    | (D1) |
|               | 2 | Curve Control Register (CUCR)                       | Dn+2    | (D2) |
|               | 3 | Register for Sampling History Buffer (HBSR)         | Dn+3    | (D3) |
|               | 4 | Register for Clearing History Buffer (HBCR)         | Dn+4    | (D4) |
| 20            | 5 | Recipe Control Register (RECR)                      | Dn+5    | (D5) |
| VIII.         | 6 | Register for designating Recipe Group Number (RBIR) | Dn+6    | (D6) |
| 8             | 7 | System Control Flag Register (SCFR)                 | Dn+7    | (D7) |

# ■ Register for Designating Screen Number (SNIR)

| Word | Function                |       |   |
|------|-------------------------|-------|---|
|      | Designate screen number | "Mo x | " |

This register SNIR (Dn) is used to designate HMI screen by setting PLC (D0). HMI screen can be switched automatically by changing D0.

#### ■ Control Flag Register (CFR)

| Bit Number | 12.0°                          | Function | 70 S   |     |
|------------|--------------------------------|----------|--------|-----|
| 0          | Enable / disable communication | ı Kara   | Wig.   |     |
| 1 3        | Enable / disable back light    | Salle    | Paris. |     |
| 2          | Enable / disable buzzer        | 74:00    | 7410   |     |
| 3          | Clear alarm buffer             | 4,       | 21,    | 1/1 |
| 4          | Clear alarm counter            | , ĝ      | ŝ      |     |
| 5~7        | Reserved                       | The same | 2016   |     |
| 8          | Setting user level bit0        | NIGE.    | "IIgh  |     |
| 9          | Setting user level bit1        | 77900    | 77/920 |     |
| 10         | Setting user level bit2        | May      | My and | 44  |
| 11~15      | Reserved                       |          | 2      |     |

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#### **■** Enable / Disable Communication

Control the HMI communication. When Bit 1 is set to ON, it will disable HMI communication. When Bit 1 is set to OFF, it will enable HMI communication.

#### ■ Enable / Disable Back Light

Control HMI back light. When Bit 1 is set to ON, it will turn off HMI back light. When Bit 1 is set to OFF, it will turn on HMI back light.

#### ■ Enable / Disable Buzzer

Control HMI buzzer. When Bit 2 is set to ON, it will turn off HMI buzzer. When Bit 1 is set to OFF, it will turn on HMI buzzer.

#### Clear Control Flag for Alarm Buffer

It is used to clear alarm buffer. Set Bit 3 to be ON to trigger this control flag. It clears alarm buffer when this flag is triggered to ON. This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Clear Control Flag for Alarm Counter

It is used to clear alarm counter. Set Bit 4 to be ON to trigger this control flag. It clears alarm buffer when this flag is triggered. This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Setting User Level

PLC can set the user level of using HMI from Bit 8, Bit 9 and Bit 10. The setting level is from level 0 to level 7. MSB: Bit 10 and LSB: Bit 8.

#### ■ Curve Control Register (CUCR)

| Bit Number            |                       | Function |           |    |
|-----------------------|-----------------------|----------|-----------|----|
| 7/2 <sup>3</sup> /2 0 | Curve sampling flag 1 | "Though  | "AKO".P"  |    |
| 1                     | Curve sampling flag 2 | "Office, | "Olling"  |    |
| 2                     | Curve sampling flag 3 | YOU'L    | Pane      |    |
| 3 ,,,,,,              | Curve sampling flag 4 | "Hay.    | "Inj.     | 20 |
| 4~7                   | Reserved              | 1/4      | 4.        | 4  |
| 8                     | Curve clear flag 1    |          | 20        |    |
| <sup>2</sup> 9        | Curve clear flag 2    | Nagle .  | Nagh.     |    |
| 10                    | Curve clear flag 3    | - Alifor | J. J. Co. |    |
| 11 ,,,,,,,,           | Curve clear flag 4    | 34/07    |           |    |
| 12~15                 | Reserved              | May .    | No.       | 77 |

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# ■ Curve Sampling Control Flag (1-4)

HMI curve (general curve or X-Y curve) sampling is controlled by PLC. When this control flag is triggered to ON (Bit  $0 \sim Bit 3$  is set to ON), HMI will sample ONCE by reading continuous data of curve on HMI screen and convert the data to graph and show on HMI screen. This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Curve Clear Control Flag (1-4)

Clear HMI curve (general curve or X-Y curve) when this control flag is triggered (Bit 8 ~ Bit 11 is set to ON). This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Register for Sampling History Buffer (HBSR)

For the settings of sampling history buffer, the users can refer to the description of "History Setup" in Chapter 2. HMI provides 12 records for tracking sampling register of history buffer. Besides, HMI time interval settings, sampling or clearing history buffer can be controlled via PLC.

| Bit Number | Function                                    | 6                     |
|------------|---|-----------------------|
| 0          | Control flag for Sampling History Buffer 1  | 77/kg.,               |
| 1          | Control flag for Sampling History Buffer 2  | KOLLIN                |
| 2 2        | Control flag for Sampling History Buffer 3  | 192                   |
| 3          | Control flag for Sampling History Buffer 4  | Haller.               |
| 4          | Control flag for Sampling History Buffer 5  |                       |
| 5          | Control flag for Sampling History Buffer 6  | 16.0                  |
| 6          | Control flag for Sampling History Buffer 7  | Willey.               |
| 7          | Control flag for Sampling History Buffer 8  | 10 Mills              |
| 8          | Control flag for Sampling History Buffer 9  | 1410                  |
| 9          | Control flag for Sampling History Buffer 10 | <i>u</i> , <i>u</i> , |
| 10         | Control flag for Sampling History Buffer 11 | , gi                  |
| 11         | Control flag for Sampling History Buffer 12 | 3194                  |
| 12~15      | Reserved                                    | "II <sub>O</sub> L    |

#### Control Flag Register for Sampling History Buffer

Controls sampling history buffer operation of HMI by the external controller, i.e. PLC. It will sample 1 time once the control flag is triggered to ON (Bit 1 ~ Bit 12 is set to ON). This flag needs be set to OFF and then ON if the users want to trigger again.

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# ■ Register for Clearing History Buffer (HBCR)

| Bit Number | 1900                            | Function                    | 1900   |     |
|------------|---------------------------------|-----------------------------|--------|-----|
| 0          | Clear flag of history buffer 1  | H <sub>H</sub> <sub>H</sub> | May.   | 74  |
| 1          | Clear flag of history buffer 2  |                             |        |     |
| 2          | Clear flag of history buffer 3  | 1/3/2                       | W2.5   | , , |
| 3          | Clear flag of history buffer 4  | Offige,                     | ALE.   |     |
| 4 100000   | Clear flag of history buffer 5  | 70g1g                       | 'SQUIL |     |
| 5          | Clear flag of history buffer 6  |                             | "Tayle | 2   |
| 6          | Clear flag of history buffer 7  | 20                          | 10     | 20  |
| 7          | Clear flag of history buffer 8  | , g                         | 200    | `   |
| 8          | Clear flag of history buffer 9  | Z. H.                       | Sept.  |     |
| 9          | Clear flag of history buffer 10 | "Ilon                       | "IIO"  |     |
| 10         | Clear flag of history buffer 11 | "1'(Q).                     | "I'Q   |     |
| 11         | Clear flag of history buffer 12 | 11/4                        | Ny.    | 37  |
| 12~15      | Reserved                        | 8                           | 8      |     |

#### Clear flag of history buffer

HMI history buffer can be cleared by the external controller, i.e. PLC. Once the control flag is triggered to ON (Bit 1 ~ Bit 12 is set to ON), it will clear HMI history buffer ONCE. This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Recipe Control Register (RECR)

| Bit Number | Walto.                     | Function          | ~alle   | 3.       |
|------------|----------------------------|-------------------|---------|----------|
| 0 7/10     | Change recipe group number | '41'0,            | '44'CD' |          |
| 141        | Read recipe (PLC → HMI)    | t <sub>to</sub> , | No.     | 22,      |
| 2          | Write recipe (HMI → PLC)   |                   | , ĝ     | 20       |
| 3~15       | Reserved                   | 750               | 140     | Sight of |

#### ■ Control flag for changing recipe group number

RCPNo is the internal system register used for designating recipe group number. RCPNo value can be changed by writing recipe group number (N) into Designated Recipe Group Number Register (RBIR) Dn+6 and trigger this control flag to ON (Bit 0 is set to ON). After setting, RCPNo will be changed to N automatically. This flag needs be set to OFF and then ON if the users want to trigger again.

#### ■ Control flag for reading recipe

Before reading a recipe from PLC, the users should designate the recipe group number (N) first (Please refer to the section "Control flag for changing recipe group number"). Then, trigger this control flag to ON (Bit 1 is set to ON). After setting, the recipe will be read from PLC and stored in designating area of HMI. This flag needs be set to OFF and then ON if the users want to trigger again.

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# Control flag for writing recipe

Before writing a recipe to PLC, the users should designate the recipe group number (N) first (Please refer to the section "Control flag for changing recipe group number"). Then, trigger this control flag to ON (Bit 2 is set to ON). After setting, the recipe will be written to PLC. This flag needs be set to OFF and then ON if the users want to trigger again.

#### Register for designating Recipe Group Number (RBIR)

| Word | Function                             |
|------|--------------------------------------|
| 0    | Designate receipt group number which |

By writing recipe group number (N) into Designated Recipe Group Number Register (RBIR), RCPNo value can be changed. The users can use the control flag for changing recipe group number of Recipe Control Register (RECR) to write recipe group number (N) into Designated Recipe Group Number Register (RBIR) and change RCPNo value.

#### ■ System Control Flag Register (SCFR)

| Bit Number   | 24°                                | Function           | 19 <sub>16</sub> |    |
|--------------|------------------------------------|--------------------|------------------|----|
| 0 (6         | Multi-language setting value Bit 0 | NOTE:              | , NOTE OF        |    |
| 1 1          | Multi-language setting value Bit 1 | . (B)              | 1900             |    |
| 2            | Multi-language setting value Bit 2 | la <sub>la</sub> , | AAA.             | 37 |
| 3            | Multi-language setting value Bit 3 |                    |                  |    |
| 4            | Multi-language setting value Bit 4 | 16.5               | 16.0             |    |
| <u>(1)</u> 5 | Multi-language setting value Bit 5 |                    | Way.             |    |
| 6            | Multi-language setting value Bit 6 | 109/100            | 100000           |    |
| 7            | Multi-language setting value Bit 7 | ANICO              | "Hylo            | ,  |
| 8            | Printer flag                       | 7                  | 19,              | 2  |
| 9            | Printer form feed flag             | 120                | gl               |    |
| 10~15        | Reserved                           |                    | 799/2            |    |

#### ■ Multi-language Setting Value

Store the designating multi-language setting value into this register and command HMI to switch to the designating language according to the settings in this register.

#### Printer Flag

When this flag is triggered to ON, the current display or editing screen can be printed out. When this flag is set to OFF, the printer function is disabled.

#### ■ Printer Form Feed Flag

When this flag is triggered to ON, the printer will retract the paper and align the paper for the next run automatically. When this flag is set to OFF, the printing form feed function is disabled.

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#### 5.2 Status Block

For two-way communication and display screen between DOP series and all brands' PLC, it needs to input starting address of response register in status block. The status block in DOP series is a continuous data block, such as Dm=D10 (length is 8 WORDs = D10-D17). When the control block size is set to 0, the control block function is disabled. If the control block function is disabled, the status block function is also disabled. When the status block function is enabled, the external controller, i.e. PLC can know the status of HMI by writing the setting in status block. The function and explanation of each WORD are listed below. (In the following table, we assume that the users use Delta PLC, so the available starting addresses in control block are Dm ~ Dm+7 (D10 ~ D17).)

| Word Number | Register   |      |       |
|-------------|--|------|-------|
| 0           | Status Register for General Control (GCSR)         | Dm   | (D10) |
| 1 رمان      | Status Register for Screen Number (SNSR)           | Dm+1 | (D11) |
| 2 4         | Status Register for Curve Control (CCSR)           | Dm+2 | (D12) |
| 3           | Status Register for Sampling History Buffer (HSSR) | Dm+3 | (D13) |
| <b>4</b>    | Status Register for Clearing History Buffer (HCSR) | Dm+4 | (D14) |
| 5           | Recipe Status Register (RESR)                      | Dm+5 | (D15) |
| 6           | Status Register for Recipe Number (RBSR)           | Dm+6 | (D16) |
| 7 800       | Status Register 2 for General Control (GCSR2)      | Dm+7 | (D17) |

#### Status Register for General Control (GCSR)

| Bit Number | 16 S.                | May S.    | Function             | 5,       | 7. Ko.S. |
|------------|----------------------|-----------|----------------------|----------|----------|
| 0          | Screen Switch Statu  | ıs        | all lat.             |          | (gr.)    |
| 1~2        | Reserved             | ~         | '',0 <sub>1011</sub> | 200      |          |
| 3          | Clear Status of Alar | m Buffer  | "May is              | "May I'm |          |
| 4          | Clear Status of Alar | m Counter | 10,                  | 20       | 4        |
| 5-7        | Reserved             | 20        | ي .                  | 3        | 23       |
| 8          | User Level (Bit0)    | Nagar.    | Very.                | a a      | Sight.   |
| 9          | User Level (Bit1)    | 0,        | "IIO"                | NICO.    |          |
| 10         | User Level (Bit2)    |           | 7/92                 | ***!Q2** |          |
| 11/1       | User Level (Bit3)    |           | 200                  | My       | 49       |
| 12~15      | Reserved             | 2         | 2                    |          |          |

#### Screen Switch Status

When the screen is switched, the Bit will be set to ON. After screen switch is completed, the Bit will be OFF.

#### ■ Clear Status of Alarm Buffer

When HMI clear the alarm buffer (clear status of alarm buffer function is enabled), the Bit will be set to ON. After this function is completed, the Bit will be OFF.

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#### ■ Clear Status of Alarm Counter

When HMI clear the alarm counter (clear status of alarm counter function is enabled), the Bit will be set to ON. After this function is completed, the Bit will be OFF.

#### ■ User Level Status

Bit 8 ~ Bit 11 are used to record the users level when HMI is in communication.

| Bit 8 | Bit 9                       | Bit 10   | Bit 11  |  |
|-------|-----------------------------|--|---|--|
| OFF   | OFF                         | OFF A  | OFF 🚀   |  |
| ON    | OFF                         | OFF  | OFF   |  |
| OFF   | ON                          | OFF  | OFF   |  |
| ON    | ON                          | OFF  | OFF   |  |
| OFF   | OFF A                       | ON   | OFF   |  |
| ON    | OFF                         | ON   | OFF   |  |
| OFF   | ON                          | ON   | OFF   |  |
| ON    | ON                          | ON   | OFF   |  |
| OFF   | OFF                         | OFF  | ON  |  |
|       | OFF ON OFF ON OFF ON OFF ON | OFF         OFF           ON         OFF           OFF         ON           ON         ON           OFF         OFF           ON         OFF           ON         ON           ON         ON | OFF         OFF         OFF           ON         OFF         OFF           OFF         ON         OFF           ON         ON         OFF           OFF         ON         ON           OFF         ON         ON           ON         ON         ON           ON         ON         ON |  |

# Status Register for Screen Number (SNSR)

| Word | Function                    |
|------|-----------------------------|
| 0    | The last open screen number |

# ■ The last open screen number

The register SNSR (Dm+1) is used to store the last screen number you opened. Every time the screen is switched, the last screen that the users open (including sub-screen) will be memorized and stored in this status register (D11).

# ■ Status Register of Curve Control (CCSR)

| Bit Number | "SITO"                     | Function                        | ~alico              |              |
|------------|----------------------------|---------------------------------|---------------------|--------------|
| 0          | Sampling status of curve 1 | "41'O.                          | "4 <sub>1</sub> 'O, |              |
| 14         | Sampling status of curve 2 | No.                             | M.                  | M.           |
| 2          | Sampling status of curve 3 | , ĉ                             | 3                   | 9            |
| 3          | Sampling status of curve 4 | <sup>2</sup> 2/ <sub>10</sub> . |                     | The state of |
| 8 (6       | Clear status of curve 1    | 10/1                            | 105                 | 100          |
| 9 💍        | Clear status of curve 2    | 1900                            | . 1000              |              |
| 10         | Clear status of curve 3    | 444                             | nn,                 | 7            |
| 11         | Clear status of curve 4    |                                 |                     |              |
| 4~7;12~15  | Reserved                   | Mg.                             | 5.                  | 743.S.       |

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# ■ Curve Sampling Status Flag

When sampling general curve or X-Y curve, the curve sampling status flag will be set to be ON (Bit 0  $\sim$  Bit 3 is set to ON). After sampling operation is completed, the curve sampling status flag will be OFF.

#### ■ Curve Clear Status Flag

When clearing general curve or X-Y curve, the curve clear status flag will be set to be ON (Bit 8 ~ Bit 11 is set to ON). After clear operation is completed, the curve clear status flag will be OFF.

#### Status Register for Sampling History Buffer (HSSR)

| Bit Number | 9                                   | Function   | , ĝ                 |
|------------|-------------------------------------|------------|---------------------|
| 0          | Sampling Status of History Buffer 1 | 337        | 13/4                |
| 1 3        | Sampling Status of History Buffer 2 | . Mor      | Tion.               |
| 2          | Sampling Status of History Buffer 3 | 1790       | 7792                |
| 3          | Sampling Status of History Buffer 4 | 7.         | an ai               |
| 4          | Sampling Status of History Buffer 5 | ;          | 2                   |
| 5          | Sampling Status of History Buffer 6 | Mo.x       |                     |
| 6          | Sampling Status of History Buffer 7 | , solution | *Olds.              |
| 7 1000     | Sampling Status of History Buffer 8 | 1000       | 'R <sub>20</sub> ', |
| 8          | Sampling Status of History Buffer 9 | 12/2       | Talah .             |
| 9          | Sampling Status of History Buffer 1 | 0          | 4.                  |
| 10         | Sampling Status of History Buffer 1 | 1 ,,,,?    | 1973                |
| 11         | Sampling Status of History Buffer 1 | 2          | Kgg,                |
| 12-15      | Reserved                            | ~ajic.     | "alito"             |

#### ■ Sampling History Buffer Flag

When sampling history buffer, the sampling history buffer flag will be set to be ON (Bit 0 ~ Bit 11 is set to ON). After sampling operation is completed, the sampling history buffer flag will be OFF.

# ■ Status Register for Clearing History Buffer (HCSR)

| Bit Number | "The                             | Function         | and the second |
|------------|----------------------------------|------------------|----------------|
| 0          | Clear Status of History Buffer 1 |                  |                |
| 1          | Clear Status of History Buffer 2 | 100              | 10 P           |
| 2          | Clear Status of History Buffer 3 | "Ugg,            | TUNE.          |
| 3          | Clear Status of History Buffer 4 | Zalito.          | Walle,         |
| 4          | Clear Status of History Buffer 5 | 74/0.            | 74/0.          |
| 5          | Clear Status of History Buffer 6 | 41,              | 72, 7          |
| 6          | Clear Status of History Buffer 7 | .6.              | . 8            |
| 7          | Clear Status of History Buffer 8 | " September 1981 | 17/4           |
| 8          | Clear Status of History Buffer 9 | JIOT.            | "Ifoli.        |

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| Bit Number | July Fur                          | nction |
|------------|-----------------------------------|--------|
| 9          | Clear Status of History Buffer 10 | "Bito" |
| 10         | Clear Status of History Buffer 11 | 7      |
| 11         | Clear Status of History Buffer 12 | n'i n' |
| 12~15      | Reserved                          | 8 8    |

# ■ Clear History Buffer Flag

When clearing history buffer, the clear history buffer flag will be set to be ON (Bit 0 ~ Bit 11 is set to ON). After sampling operation is completed, the clear history buffer flag will be OFF.

#### ■ Recipe Status Register (RESR)

| Bit Number | Function                        | Tigg,               |
|------------|---------------------------------|---------------------|
| 0 700      | Change Status of Recipe Number  | ~91 <sub>10</sub> . |
| 1 331,00   | Recipe Read Status (PLC → HMI)  | "TAY. CO.           |
| 2          | Recipe Write Status (HMI → PLC) | 11, 11,             |
| 3~15       | Reserved                        | , d) , d)           |

#### ■ Change Status of Recipe Number Flag

When change status of recipe number is controlled by PLC, the change status of recipe number flag (Bit 0) is set to ON. After HMI change the status of recipe number and update the RCPNo value, the change status of recipe number flag will be OFF.

#### ■ Recipe Read Status Flag

When HMI read one recipe data from PLC, the recipe read status flag (Bit 1) is set to ON. When the recipe data is read and saved in HMI completely, the recipe read status flag will be OFF.

# Recipe Write Status Flag

When HMI send one recipe data to PLC, the recipe write status flag (Bit 2) is set to ON. When the recipe data is sent and written to PLC completely, the recipe write status flag will be OFF.

## ■ Status Register for Recipe Number (RBSR)

| _    | Word | Function              |       |        |  |
|------|------|-----------------------|-------|--------|--|
| "HOY | 0    | Current recipe number | "Ho." | "Thory |  |

When recipe number register RCPNo is changed (no matter it is changed by PLC or HMI), the status register for recipe number (RBSR) (Dm+6) will be updated also. Monitoring this status register for recipe number (RBSR) can know the current recipe number.

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# ■ Status Register 2 for General Control (GCSR2)

| Bit Number                              | ,(500                             | Function           |        |
|---|-----------------------------------|--------------------|--------|
| 0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | Multi-language status value Bit 0 | 1474               | 444    |
| 1                                       | Multi-language status value Bit 1 |                    |        |
| 2                                       | Multi-language status value Bit 2 | 16.5.              | 14°25. |
| 3                                       | Multi-language status value Bit 3 | Mar.               | Mar.   |
| 4                                       | Multi-language status value Bit 4 | 90 <u>9</u> 111    | 1081JE |
| 5                                       | Multi-language status value Bit 5 | "T <sub>11</sub> " | "Tales |
| 6                                       | Multi-language status value Bit 6 |                    | 1, 1   |
| 7                                       | Multi-language status value Bit 7 | 200                | 19.00  |
| 8                                       | Printer status flag               | Neg Alle           | Vigh.  |
| 9                                       | Printer form feed status flag     | "IIC               | 110    |
| 10~15                                   | Reserved                          | "1'(g),            | "I'(I) |

#### ■ Multi-language Status Value

The users can know the current multi-language shown on HMI from the multi-language status value.

#### ■ Printer Status Flag

When this flag is triggered to ON, it indicates that the printer is printing current display or editing screen. When this flag is set to OFF, the printer function is disabled.

# Printer Form Feed Status Flag

When this flag is triggered to ON, it indicates that the printer is retracting the paper and aligning the paper for the next run automatically. When this flag is set to OFF, the printing form feed function is disabled.

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# Chapter 6 Internal Memory

#### ■ Internal Register (R/W): \$

Word access: \$n (n: 0~65535)

Bit access: \$n.b (n: 0~65535, b: 0~15)

Delta DOP series HMI provides 65536 16-bit internal registers (\$0 ~ \$65535).

#### Non-volatile Internal Register (R/W): \$M

Word access: \$Mn (n: 0~1023)

Bit access: \$Mn.b (n: 0~1023, b: 0~15)

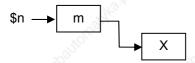
Delta DOP series HMI provides 1024 16-bit non-volatile internal registers (\$M0 ~ \$M1023).

# ■ Indirect Address Register (R/W): \*\$

Word access: \*\$n (n: 0~65535)

Indirect addressing register is the register stored in the range from the address to the internal register.

The users need to get the address from \$n and then get the value stored in this address.



For example, if n = m; m = X; then n = X. (the value of m cannot exceed 65535)

# ■ Receipt Number Register (R/W): RCPNO

It is 16-bit register that is used to designate the receipt group number. The minimum receipt group number should be 1 and the maximum group number is determined when editing the receipts.

PLC upload/download will read/write a group of recipe according to the setting of recipe number register. The length of each group of receipt is determined when editing the receipts.

Delta DOP series HMI provides a space of 64K Words max. for the users to store the receipts.

#### Receipt Register (R/W): RCP

The receipt length is L and the receipt group number is N.

Word access: RCPn (n: 0~NxL+(L-1))

Bit access: RCPn.b (n: 0~NxL+(L-1), b: 0~15)

The recipe register is used to save the recipe that download from HMI after finishing ScrEdit.

There are two methods to read/write these registers:

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#### Chapter 6 Internal Memory | ScrEdit Software User Manual

Assume that the users set the receipt length is L and the receipt group number is N:

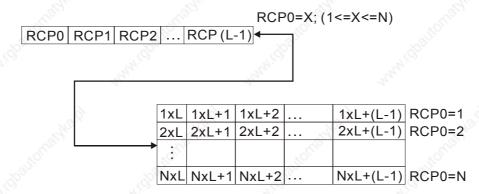
#### **Group Address Access:**

This method is accessed by RCPNO and RCP0~RCP (L-1).

For example: if RCPNO=3, HMI will read RCPNO 3 data out and save it in RCP0~RCP (L-1). Then PLC can read RCPNO 3 data from this area. RCP0~RCP (L-1) can be regarded as a common area.

#### **Absolute Address Access:**

This method is used to access the data that data address is greater than RCP (L-1). At this time, the starting address of 1st recipe is RCP (1XL), the starting address of 2nd recipe is RCP (2XL) and vise versa. Therefore, if the users want to access the mth word of nth recipe, the users can use the equation: RCP(nxL+m) to achieve the purpose.



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# Appendix A Specifications and Installation

# A.1 Specifications

| Model                             | A(E)57BSTD  | A(E)57GSTD  | A(E)57CSTD    | A75CSTD          | AE80THTD                             | A10TCTD /<br>AE10THTD                | Note  |
|-----------------------------------|-------------|---|---------------|------------------|--------------------------------------|--------------------------------------|-------|
| Display Type                      | STN         | FSTN  | STN           | STN              | ŢĔŤ                                  | -LCD                                 | - 3   |
| Display Color                     | 8 Grays     | 16 Grays  | 256 Colors    | 256 Colors       | -79                                  | Colors<br>65536 Colors)              | NATA. |
| Screen Pixels                     | <i>∂</i> 3  | 20 x 240 pixe   | ls 👌          | 6                | 40 x 480 pixe                        | ls 👌                                 |       |
| Back-light Life                   | About 50    | About 50 thousand hour at 25°C  |               |                  | About 30<br>thousand<br>hour at 25°C | About 30<br>thousand<br>hour at 25°C |       |
| Display Size                      | 5.7"        | 5.7" (118.2 x 89.4mm)   |               |                  | 8.0" (162.2<br>x121.7mm)             | 10.4" (215.2<br>x 162.4mm)           | ann!  |
| Operation System                  |             | Windows Base Real Time OS   |               |                  |                                      |                                      |       |
| MCU                               | 10.0,       | 32-bit  | RISC Micro-c  | controller / 202 | .8MHz                                | 13.5                                 |       |
| ROM                               | Card.       | 3M Bytes  | 29,           | Carlot.          | 7M Bytes                             | Tage,                                |       |
| Backup Memory<br>(SRAM)           | 25          | 256K Bytes (AE: 512K Bytes) (non-volatile internal memory)  |               |                  |                                      |                                      |       |
| EXT. Memory Card                  | Smar        | t Media Card  | / USB Host Ve | er 1.1 (AE seri  | es only excep                        | ot 5.7")                             | *     |
| USB for download                  |             | USB   | CLIENT Ver    | 1.1 & COM1, C    | COM2                                 |                                      |       |
| Serial<br>communication<br>(UART) | *Ollgipko's | COM1(RS-232),COM2&COM3(RS-232C/422/485)<br>(AE series: COM3 (RS-232C/422/485))  |               |                  |                                      |                                      |       |
| Function Keys                     | Us          | er-defined key  | /s*4          | User-defir       | ned keys*6                           | User-defined keys*7                  | al!   |
| RTC                               |             |   | Bu            | ilt-in           |                                      |                                      | E. C. |
| Lithium Battery                   | 9           |   | 3V Lithium    | CR2032 x 1       |                                      | 6                                    |       |
| Buzzer                            | Sept. S.    |   | 85            | idB              |                                      | 20 Ho.                               |       |
| Operation<br>Voltage              | ROLL .      | "Parious  | DC +24V (-    | 10%~+20%)        | 208                                  | io <sub>ttis</sub>                   |       |
| Power<br>Consumption              |             | 7.2W max  | uni           | 10W max          | 14W max                              | 15W max                              | Naga; |
| Cooling Method                    | 2           |   | Natural air   | circulation      |                                      | A                                    |       |
| Water Proof &<br>Agency Approval  | Ugights.)   | IP65 / NEMA4 & CE, UL, C-tick (except AE series)  |               |                  |                                      |                                      |       |
| Operating Temp.                   | 20.         | ~976  | 0°C to        | o 50°C           | ~B                                   | 20.                                  |       |
| Storage Temp.                     |             | '44'(Q',  | -20°C t       | o +60°C          | ''A''(Q''                            |                                      | al.   |
| Ambient Humidity                  |             | 10% ~ 90% R   | H (0°C~40°C)  | , 10%~55% RI     | H (41°C~50°C                         | 3)                                   | 274   |
| Vibration<br>Resistance           | 23          | 10% ~ 90% RH (0°C~40°C), 10%~55% RH (41°C~50°C)  IEC61131-2 compliant  When vibration is NOT continuous: 5Hz-9Hz 3.5mm, 9Hz-150Hz 1G  X, Y, Z directions for 10 times |               |                  |                                      |                                      |       |

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Appendix A Specifications and Installation | ScrEdit Software User Manual

| Model  | A(E)57BSTD | A(E)57GSTD             | A(E)57CSTD | A75CSTD  | AE80THTD   | A10TCTD /<br>AE10THTD                                | Note |
|--|------------|------------------------|------------|--|--|--|------|
| (W) x (H) x (D) mm<br>Dimensions / Panel<br>Cutout | 1841 1 9 1 | 44.1 x 47mm<br>132.4mm |            | 243.1 x178.1<br>x 47mm /<br>231.4 x<br>166.4mm | 243.1x 178.1<br>x 52.4mm /<br>231.4 x<br>166.4mm | 297.1 x<br>222.1 x<br>51.1mm /<br>285.2 x<br>210.2mm | nn.  |
| Weight   | 140.x      | 768g                   | 16.        | 942g   | 1147g  | 1721g  |      |

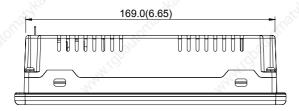
<sup>※</sup> Compatible with general Expansion Memory Card (4M~128M) on the market

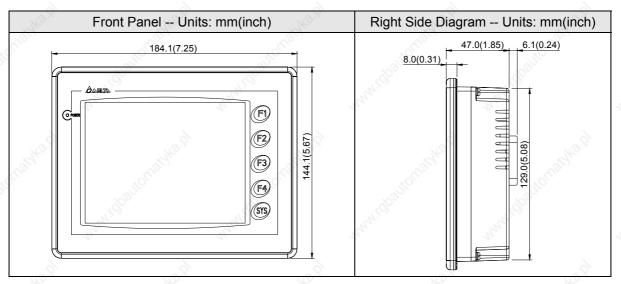
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# A.2 Dimensions

# ■ DOPA(E)57G(C)(B)STD

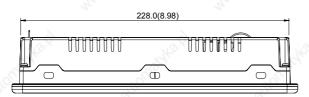
Vertical View -- Units: mm (inch)

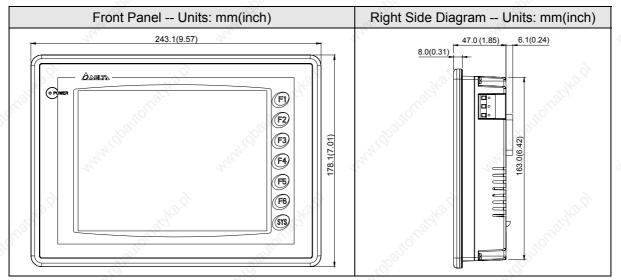




#### ■ DOPA75CSTD

Vertical View -- Units: mm (inch)

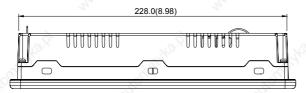


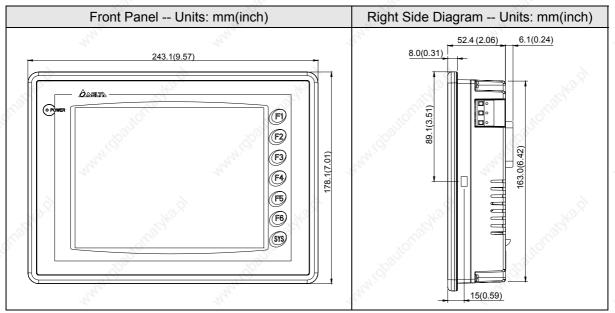


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# ■ DOP-AE80THTD

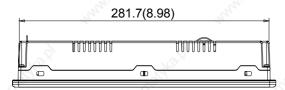
# Vertical View -- Units: mm (inch)

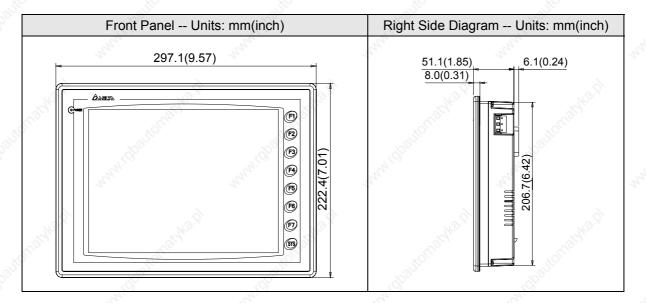




# ■ DOP-A10TCTD/DOP-AE10THTD

# Vertical View -- Units: mm (inch)



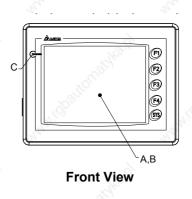


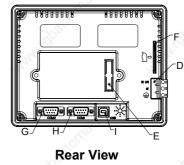
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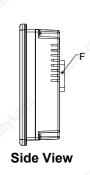
# A.3 Profile

# ■ DOPA(E)57G(C)(B)STD

|   | al al                       |
|---|-----------------------------|
| Α | Display area                |
| В | Touch screen                |
| С | Power LED state             |
|   | Dark LED: power is off.     |
| 6 | Green LED: normal operation |
| D | Power input terminal        |
| E | Expansion slot              |
| F | Memory card                 |
| G | COM 2                       |
| H | COM 1                       |
| I | USB                         |
|   |                             |

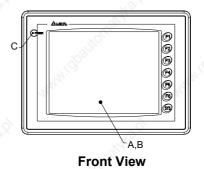


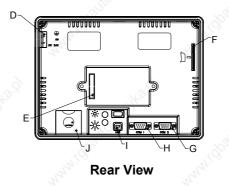


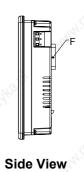


# ■ DOP-A75CSTD

| Α       | Display area                |
|---------|-----------------------------|
| В       | Touch screen                |
| С       | Power LED State             |
|         | Dark LED: power is off      |
| 29/5°5, | Green LED: normal operation |
| D       | Power input terminal        |
| Е       | Expansion slot              |
| F       | Memory card                 |
| G       | COM 2                       |
| Н       | COM 1                       |
| I       | USB                         |



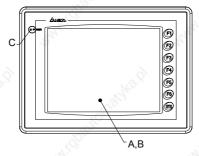




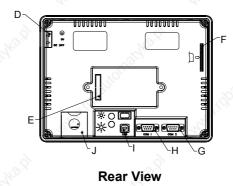
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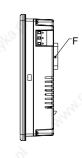
# ■ DOP-AE80THTD

| А       | Display area                |
|---------|-----------------------------|
| В       | Touch screen                |
| C o     | Power LED State             |
| Egg.    | Dark LED: power is off      |
|         | Green LED: normal operation |
| D       | Power input terminal        |
| E S     | Expansion slot              |
| F       | Memory card                 |
| G       | COM 2                       |
| Н       | COM 1                       |
| 21 0 th | USB                         |



**Front View** 

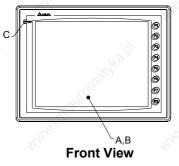


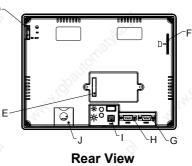


Side View

# ■ DOP-A10TCTD/DOP-AE10THTD

| А    | Display area                |
|------|-----------------------------|
| В    | Touch screen                |
| С    | Power LED State             |
|      | Dark LED: power is off.     |
|      | Green LED: normal operation |
| D.O  | Power input terminal        |
| E E  | Expansion slot              |
| F    | Memory card                 |
| G    | COM 2                       |
| H.S. | COM 1                       |
| il.  | USB                         |
| J    | Battery cover               |







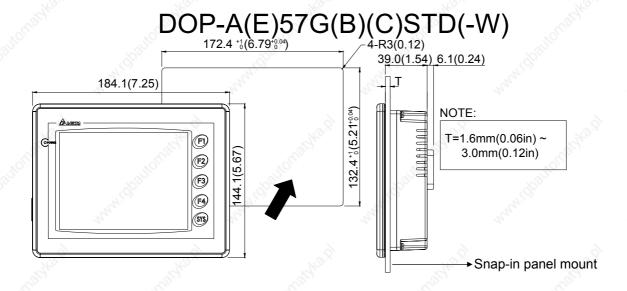
**Side View** 

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# A.4 Cutout Dimension

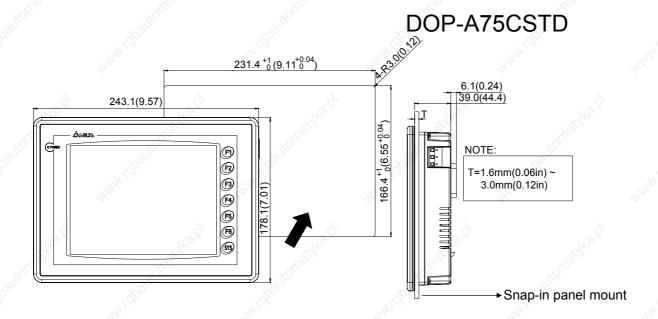
5.7": 172.4mm (6.79") +1mm (0.04") and 132.4mm (5.21")+1mm (0.04") Units: mm (inch)

Panel thickness: 1.6mm (0.06in)~3.0mm (0.12in)



7.5": 231.4mm (9.11")+1mm (0.04") and 166.4mm (6.55")+1mm (0.04") Units: mm (in.)

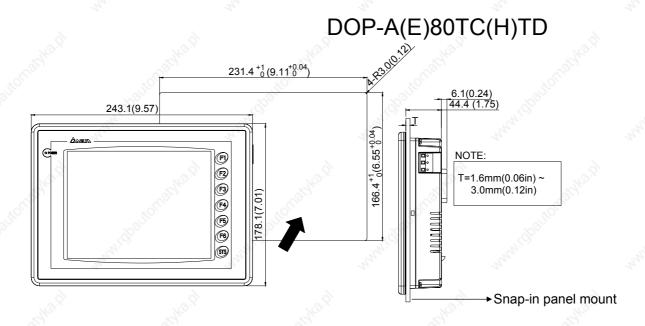
Panel thickness: 1.6mm (0.06in)~3.0mm (0.12in)



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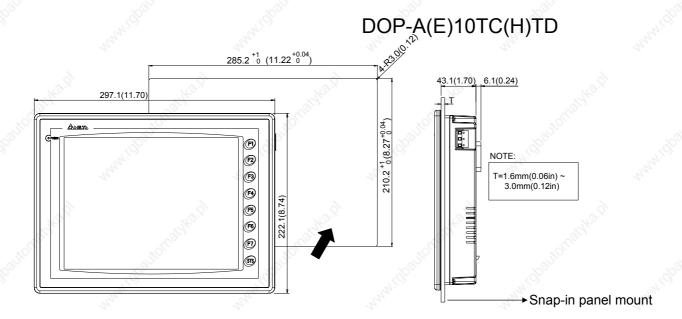
8.0": 231.4mm (9.11")+1mm (0.04") and 166.4mm (6.55")+1mm (0.04") Units: mm (in.)

Panel thickness: 1.6mm (0.06in)~3.0mm (0.12in)



10.4": 285.2mm (11.22")+1mm (0.04") and 210.2mm (8.27")+1mm (0.04") Units: mm (in.)

Panel thickness: 1.6mm (0.06in)~3.0mm (0.12in)



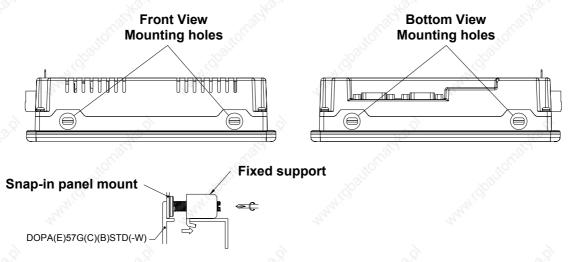
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# A.5 Installation

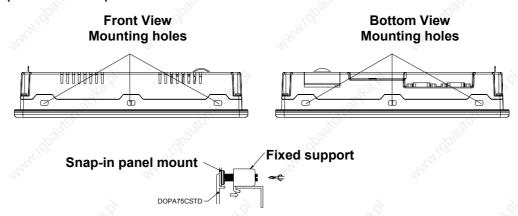


> If the users turn the screw exceeds torque: 0.5N.M, plastic box may be damaged.

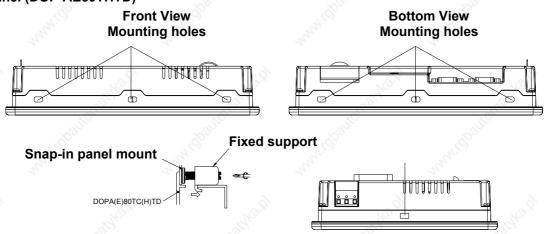
# 5.7" Panel (DOP-A(E)57GSTD, DOP-A(E)57CSTD, DOP-A(E)57BSTD)



#### 7.5" Panel (DOP-A75CSTD)

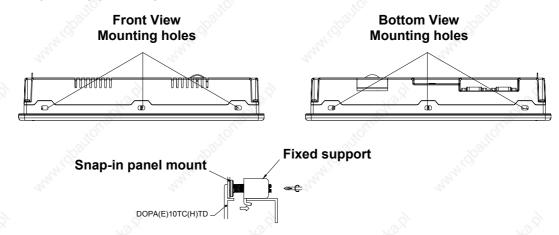


# 8.0" Panel (DOP-AE80THTD)



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# 10.4" Panel (DOP-A(E)10TCTD)

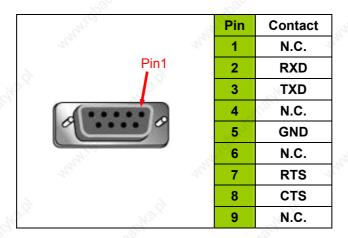


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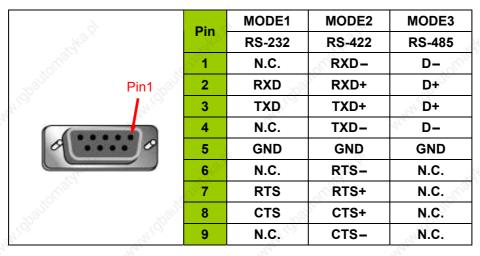
# Appendix B Communication

# **B.1** Pin Definition of Serial Communication

#### ■ COM1



#### ■ COM2





- 1) Mode 3 is for RS-485. Pin 2 & 3 are D+ and pin 1 & 4 are D-.
- 2) Well-grounded is highly recommended if RS-485 & RS-422 are used for long transmission.
- DO NOT connect Frame Ground (FGND) to GND. Please connect FGND to the outer covering of connector.

There are relations among transfer rate, distance and baud rate.

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## **B.2** Cable for Download

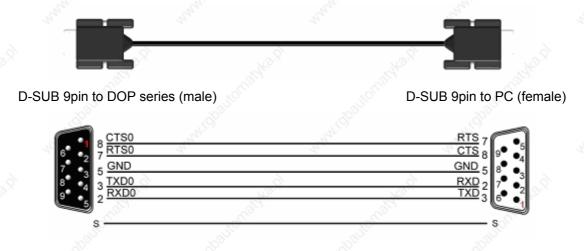
The cable header used to connect DOP series is 9-pin D-SUB male.



Refer to the following tables for the connection to each device.

## **RS-232 Connection**

| lighto is | DOP series<br>9 pin D-SUB male<br>(RS-232) | PC<br>9 pin D-SUB female<br>(RS-232) | PC<br>9 pin D-SUB female<br>(RS-232)   |
|-----------|--|--------------------------------------|--|
|           | RXD (2) ——                                 | (3) TXD                              | W12000   |
|           | TXD (3)                                    | (2) RXD                              | Pin1   |
| 13.0      | GND (5) ———                                | (5) GND                              | A CONTRACTOR OF THE PARTY OF TH |
| Calche    | RTS (7)                                    | (8) CTS                              |  |
|           | CTS (8) ——                                 | (7) RTS                              |  |



Grounding + Shielding Fig. RS-232 TO PC

#### **USB Connection**

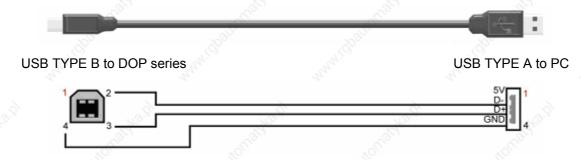


Fig. USB TO PC

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# B.3 Communication Settings and Connections between HMI and Connectable Controllers

The cable header used to connect DOP series is 9-pin D-SUB male.





| Brand                                  | Controller Name / Series Name  |  |   |
|--|--|--|---|
| Delta                                  | Delta Controller For Servo/AC drive/Temperature Controller/PLC (984 RTU mode / ASCII mode) | , dipoliphas   |   |
|  | Delta DVP PLC  |  |   |
| Allen Bradley                          | MicroLogix PLC   | 4  |   |
| Alleli brauley                         | SLC5 PLC   | " She  |   |
| Danfoss                                | VLT 2800 (FC Protocol)   | "Itoli"  |   |
| Facon                                  | Facon PLC  | "1' <sub>1</sub> 20.   |   |
| Festo                                  | Festo PLC  |  |   |
| GE Fanuc                               | 90 Series SNP PLC  | , gd   |   |
| Hust                                   | Hust CNC Controller  | The state of the s |   |
| Jetter                                 | Nano Series PLC  | 70 Miles   |   |
| Jeller                                 | JC Series PLC  | "4 <sub>7</sub> ',0  |   |
| Keyence                                | KV/KZ Series   |  |   |
| Koyo                                   | SU/DL Series   | 16 j   |   |
| KOYO                                   | K-Sequence   | "OLGAN   |   |
| Lenze                                  | LECOM-A/B Protocol   | Pagan  |   |
| Hay.                                   | Master K120S/200S  | May  | 1 |
| LG                                     | Glofa GM6 CNET   | 8  |   |
|  | Master-K CNET  | " in the   |   |
| LI YAN                                 | LYPLC EX   | 100 July 1   |   |
| ************************************** | M2i Master   | "hylog   |   |
| M2i                                    | M2i Slave  | 4.   | - |
| Matsushita                             | FP Series  | 7/6/2  |   |
| Mirle                                  | FAMA SC  | "Ollies.   |   |
| Mitsubishi                             | FX / FX2N  | 1020   |   |

| Brand        | Controller Name / Series Name            | "OLUGAL  |
|--------------|--|--|
| 'Span        | A Series/J71UC24                         | "Application of the state of th |
|              | Mitsubish A2A/A2AS/A2USH A1SH/A3N/A2AS   | H CPU Port   |
|              | Q Series CPU Port                        | 9  |
| MKS          | CT150                                    |  |
| - Mile       | Modbus (Master) 984 RTU / ASCII mode     | - State  |
| Modbus       | Hexadecimal Address (Master) RTU / ASCII | mode   |
| Wiodbus      | nW (Master) RTU / ASCII mode             | No. No.  |
| 12.01        | Modbus (Slave) RTU / ASCII mode          | ÿ, ", ", ", ",   |
| Modicon      | TSX Micro (Uni-Telway)                   | "Waga,   |
| Modicon      | TWIDO                                    | The state of the s |
| NIKKI DENSO  | NCS-FI/FS Series                         | and and  |
| Omron        | <u>C Series</u>                          |  |
| And Chillion | CJ1/CS1 Series                           |  |
| , die        | S7 200                                   | All Cittle   |
| Siemens      | S7-300 (with PC Adaptor)                 | , Maria Tali   |
|              | S7-300 (without PC Adaptor)              | <i>A</i>   |
| Taian        | TP02 PLC                                 | "Afferia   |
| Vigor        | M Series                                 | alion!   |
| Yokogawa     | ACE PLC                                  |  |
| -1-20        | 1/20                                     | (4)  |

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## Delta (Servo/AC Drive/PLC/Temperature) Controller

**DELTA** 

#### A. HMI factory setting

Baud rate: ASCII: 9600, 7, None, 2.

RTU: 9600, 8. None, 2

Controller station number: 1.
Control area/state area: None.



- This driver can support Delta all products, i.e. AC drive, PLC, Servo, Temperature Controller and Modbus standard connection. The users can easily set and communicate with these devices via using this driver.
- 2) For the people who are used to use Modbus standard connection:

Modbus / ASCII (Master), Modbus / 984 RTU (Master), Modbus / ASCII Hex Address (Master) and Modbus / RTU Hex Address (Master) can be compatible with the new Delta controller ASCII and Delta controller RTU. If desiring to change the driver settings, the users only need to change the "Controller" Option which is used to set the controller that the users use, and then the new driver can be used immediately.

#### B. Definition of controller Read/Write address

#### Registers

| De nieten Tong                 | F  | Read/Write range  |         | 5 ( ) (       |  |
|--------------------------------|--|-------------------|---------|---------------|--|
| Register Type                  | Format   | Word No.          | Bit No. | - Data length |  |
| Servo communication address    | SERVO-n  | n: 0 ~ 0700h      | N/A     | Word          |  |
| AC drive communication address | INVERTER-n   | n: 0 ~ 2299h      | N/A     | Word          |  |
| TCntrl communication address   | TEMP_CTRL-n  | n: 0 ~ 6000h      | N/A     | Word          |  |
| WORD_DEVICE_X                  | PLC_Xn   | n: 0 ~ 360(octal) | N/A     | Word          |  |
| WORD_DEVICE_Y                  | PLC_Yn   | n: 0 ~ 360(octal) | N/A     | Word          |  |
| WORD_DEVICE_M                  | PLC_Mn   | n: 0 ~ 1520,      | N/A     | Word          |  |
|                                | AL STATE OF THE ST | 1536 ~ 4080       | N/A     | Word          |  |
| WORD_DEVICE_S                  | PLC_Sn   | n: 0 ~ 1008       | N/A     | Word          |  |
| WORD_DEVICE_T                  | PLC_Tn   | n: 0 ~ 255        | N/A     | Word          |  |
| WORD_DEVICE_C                  | PLC_Cn   | n: 0 ~ 199        | N/A     | Word          |  |
| WORD_DEVICE_D                  | PLC_Dn   | n: 0 ~ 4095,      | N/A     | Word          |  |
|                                |  | 4096 ~ 9999       | N/A     | Word          |  |
| WORD_DEVICE_HC                 | PLC_HCn  | n: 200 ~ 255      | N/A     | Double Word   |  |

| Decistor Type                    | Farmet (8)  | Read/Write range |     | Data Janath |  |
|----------------------------------|-------------|------------------|-----|-------------|--|
| Register Type                    | Format      | Word No. Bit No. |     | Data length |  |
| PLC communication address Module | PLC_Modulen | n: 4000 ~ 4499h  | N/A | Word        |  |
| Output Registers                 | RW-n        | n: 0 ~ FFFFh     | N/A | Word        |  |
| Input Registers                  | R-n         | n: 0 ~ FFFFh     | N/A | Word        |  |
| Output Registers                 | Wn          | n: 40001 ~ 50000 | N/A | Word        |  |
| Input Registers                  | Wn          | n: 30001 ~ 40000 | N/A | Word        |  |



- 1) The above addresses of Servo, AC drive, TCNTRL (Temperature controller) and PLC Module are in hexadecimal format. PLC Word Device X and Y are in octal format. Other PLC Word Device M, S, T, C, D and HC are in decimal format.
- 2) WORD\_DEVICE\_X / WORD\_DEVICE\_Y / WORD\_DEVICE\_M / WORD\_DEVICE\_S: Address must be 0 or the multiple of 16.

#### **Contacts**

| Contact type                     | Format        | Read/Write range |                            |
|----------------------------------|---------------|------------------|----------------------------|
| Contact type                     | Folillat      | Word No.         | Bit No.                    |
| Servo communication address      | SERVO-n.b     | n: 0 ~ 0700h     | b: 0 ~ f                   |
| AC drive communication address   | INVERTER-n.b  | n: 0 ~ 2299h     | b: 0 ~ f                   |
| TCntrl communication address     | TEMP_CTRL-n.b | n: 0 ~ 6000h     | b: 0 ~ f                   |
| Servo Digital Input              | SERVO_DI-n    | N/A              | n: 1 ~ 8                   |
| Servo Digital Output             | SERVO_DO-n    | N/A              | n: 1 ~ 5                   |
| WORD_DEVICE_X                    | PLC_Xn        | N/A              | n: 0 ~ 377(octal)          |
| WORD_DEVICE_Y                    | PLC_Yn        | N/A              | n: 0 ~ 377(octal)          |
| WORD_DEVICE_M                    | PLC_Mn        | N/A              | n: 0 ~ 1535<br>1536 ~ 4095 |
| WORD_DEVICE_S                    | PLC_Sn        | N/A              | n: 0 ~ 1023                |
| WORD_DEVICE_T                    | PLC_Tn        | N/A              | n: 0 ~ 255                 |
| WORD_DEVICE_C                    | PLC_Cn        | N/A              | n: 0 ~ 255                 |
| TCntrl Bit communication address | TEMP_CTRLB-n  | N/A              | n: 800 ~ 8FFh              |
| Discrete Outputs                 | RWB-n         | N/A              | n: 0 ~ FFFFh               |
| Discrete Inputs                  | RB-n          | N/A              | n: 0 ~ FFFFh               |
| Discrete Outputs                 | Bn            | N/A              | n: 1 ~ 10000               |
| Discrete Inputs                  | Bn            | N/A              | n: 10001 ~ 20000           |



<sup>1)</sup> The above addresses of Servo, AC drive, TCNTRL (Temperature controller) and PLC Module are in hexadecimal format.

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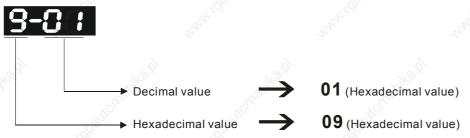
- 2) PLC Word Device X and Y are in octal format. Other PLC Word Device M, S, T, C, D and HC are in decimal format.
- 3) Servo Digital Input and Servo Digital Output are only for Servo.

## Pay close attention on the following important notes:

#### 4) For Delta AC drive:

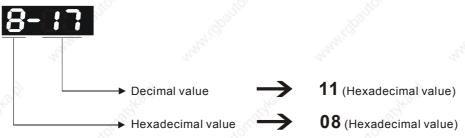
It needs to set communication address for HMI read/write address setting. (hexadecimal format for HMI) For detail information about communication address of Delta AC drive, please refer to Delta AC drive each series "User Manual".

Example 1: Parameter 9-01 of Delta VFD-S drive Transmission Speed needs set to INVERTER901 in HMI. (Decimal 9 is converted to 09 in hexadecimal and 01 is converted to 01 in hexadecimal. Therefore, setting INVERTER901 to HMI will discard the first 0)



The communication address of parameter 9-01 is 0901H.

Example 2: if set parameter 8-17 (Lower Bound of DC Braking Start-up Frequency) of Delta VFD-S drive is desired, user needs set INVERTER811 in HMI. (8 is converted to 08 in hexadecimal and 17 is converted to 11 in hexadecimal. Therefore, setting the INVERTER811 to HMI will discard the first 0)



The communication address of parameter 8-17 is 0811H.

- 5) For Delta Servo drive:
  - HMI Read/Write address setting needs to input the communication address listed in SERVO "User Manual".
  - Servo Digital Input and Servo Digital Output are only for Servo.
- 6) For Delta Temperature Controller (DTA series):

HMI can be set up to connect to several Delta A series temperature controllers on standard Modbus networks by using RTU transmission mode. However, the communication delay time may need to increase. Therefore, 5ms or longer is highly recommended.

# C. Connections (Connector Pinouts)

# **Delta Servo**

## **RS-232 Connection**

| DOP Series<br>9 pin D-SUB male (RS-232) | Controller CN3 cable connector (RS-232) | Controller CN3 cable connector (RS-232) |
|---|---|---|
| RXD (2)                                 | (2) TX                                  | 1 3 5                                   |
| TXD (3)                                 | (4) RX                                  | 1 3 5                                   |
| GND (5)———                              | ——(1) GND                               | Top View                                |

# RS-422 Connection

| DOP Series<br>9 pin D-SUB male (RS-422)      | Controller CN3 cable connector (RS-422) | Controller CN3 cable connector (RS-422) |
|--|---|---|
| RXD+ (2)———————————————————————————————————— | (O),                                    | 1 3 5<br>2 4 6<br>Top View              |

# RS-485 Connection

|  | OOP Series<br>SUB male (RS-485) | Controller CN3 cable connector (RS-485) | Controller CN3 cable connector (RS-485) |
|--|---------------------------------|---|---|
| The state of the s | RXD+ (2)—                       | (3) 485+                                | Why.                                    |
| 9  | TXD+ (3)—                       | <u>(5)</u> 485+                         | 1 3 5                                   |
| rayko.   | RXD- (1)—                       | (4) 485-                                | 2 4 6                                   |
|  | TXD- (4)                        | (6) 485-                                | Top View                                |
|  | (g)                             | <u>S.</u> _S.                           | (A)                                     |

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## **Delta AC drive**

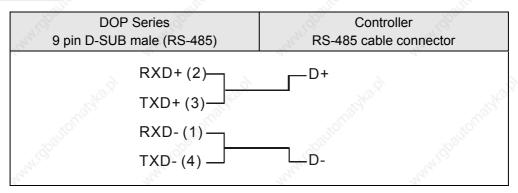
## **RS-485 Connection**

| DOP Series<br>9 pin D-SUB male<br>(RS-485)              | Controller RJ-11 cable connector (RS-485) | Controller RJ-11 cable connector (RS-485)  |
|---|---|--|
| RXD+ (2)<br>TXD+ (3)<br>RXD- (1)<br>TXD- (4)<br>GND (5) | (4) SG+<br>(3) SG-<br>(2) GND             | 2: GND 3: SG- 4: SG+ 1→6 Top View  DO NOT use Pin 1, 5 and 6 while using RS-485 communication. |

When connecting to Delta VFD-M series AC drives, please connect Pin 5 (GND) of a Delta HMI and Pin 2 (GND) of a Delta VFD-M AC drive.

# **Temperature Controller**

#### **RS-485 Connection**



Delta DVP PLC DELTA

# A. HMI factory settings

Baud rate: 9600, 7, Even, 2. Controller station number: 1.

Control area/state area: D0 / D10.

# B. Definition of controller Read/Write address

## Registers

| Degister Type | Format | Read/Write Range         |         |
|---------------|--------|--------------------------|---------|
| Register Type | Format | Word No.                 | Bit No. |
| X_Data        | Xn     | n: 0 ~ 360(octal)        | N/A     |
| Y_Data        | Yn     | n: 0 ~ 360(octal)        | N/A     |
| M_Data        | Mn     | n: 0 ~ 1520, 1536 ~ 4080 | N/A     |
| S_Data        | Sn     | n: 0 ~ 1008              | N/A     |
| T_Register    | Tn     | n: 0 ~ 255               | N/A     |
| C_Register    | Cn     | n: 0 ~ 199               | N/A     |
| D_Register    | Dn     | n: 0 ~ 4095, 4096 ~ 9999 | N/A     |
| HC_Register   | Cn     | n: 200 ~ 255             | N/A     |



- 1) (W) is "Word".
- 2) (DW) is "Double Word".
- 3) X\_Data / Y\_Data / M\_Data / S\_Data: Address must be 0 or the multiple of 16.

## **Contacts**

| Contact type | Format   | Read/Write Range |                   |  |
|--------------|----------|------------------|-------------------|--|
| Contact type | Foililat | Word No.         | Bit No.           |  |
| X_Data       | Xn       | N/A              | n: 0 ~ 377(octal) |  |
| Y_Data       | Yn       | N/A              | n: 0 ~ 377(octal) |  |
| M_Data       | Mn       | N/A              | n: 0 ~ 1520,      |  |
| CL TOUR      | , NOTO   | 1000             | 1536 ~ 4080       |  |
| S_Data       | Sn       | N/A              | n: 0 ~ 1023       |  |
| T_Coil       | Tn       | N/A              | n: 0 ~ 255        |  |
| C_Coil       | Cn       | N/A              | n: 0 ~ 255        |  |

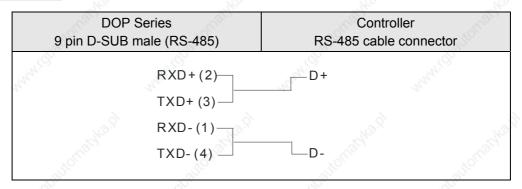
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## C. Connections (Connector Pinouts)

# RS-232 Connection

| F7.                       | - 7%                         | 177                          |
|---------------------------|------------------------------|------------------------------|
| DOP Series                | Controller                   | Controller                   |
| 9 pin D-SUB male (RS-232) | 8 pin Mini DIN male (RS-232) | 8 pin Mini DIN male (RS-232) |
| 740 x                     |                              |                              |
| RXD (2)——                 | ———(5) TXD                   |                              |
| TXD (3)——                 | ——(4) RXD                    | 8                            |
| GND (5)—                  | (8) GND                      |                              |
| Mr. Mr.                   | No.                          | Top View                     |

# RS-485 Connection



# AllenBradley MicroLogix PLC

**DELTA** 

## A. HMI factory setting

Baud rate: 19200, 8, None, 1.

PLC station number: 1.

Control area/state area: B3:0/B3:10.

#### B. Definition of controller Read/Write address

#### Registers

| 240 x                     | "Arg.    | F          | Read/Write Rang | e Alexandra           |
|---------------------------|----------|------------|-----------------|-----------------------|
| Register Type             | Format   | 10/10      | В               | <u>it No.</u>         |
| register Type             | Tomat    | Word No.   | Low Byte        | High Byte<br>File No. |
| Output file               | O:n      | n: 0 ~ 3   | N/A             | 0                     |
| Input file                | I:n      | n: 0 ~ 3   | N/A             | 1                     |
| Status file               | S2:n     | n: 0 ~ 65  | N/A             | 2                     |
| Bit file                  | B3:n     | n: 0 ~ 255 | N/A             | 3                     |
| Timer flag                | T4:n     | n: 0 ~ 255 | N/A             | 4                     |
| Timer Preset Value        | T4:n.PRE | n: 0 ~ 255 | N/A             | 4                     |
| Timer Accumulator Value   | T4:n.ACC | n: 0 ~ 255 | N/A             | 4                     |
| Counter flag              | C5:n     | n: 0 ~ 255 | N/A             | 5                     |
| Counter Preset Value      | C5:n.PRE | n: 0 ~ 255 | N/A             | 5                     |
| Counter Accumulator Value | C5:n.ACC | n: 0 ~ 255 | N/A             | 5                     |
| Control file              | R6:n     | n: 0 ~ 255 | N/A             | 6                     |
| Control Size of Bit Array | R6:n.LEN | n: 0 ~ 255 | N/A             | 6                     |
| Control Reserved file     | R6:n.POS | n: 0 ~ 255 | N/A             | 6                     |
| Integer file              | N7:n     | n: 0 ~ 255 | N/A             | 7                     |

- > Bit No: Low byte is not used, so the value is 0. High byte stores file number.
- Data Size : Word.
- > T4, C5 and R6 only read 1 Word once.
- > If reading multiple Words once, the communication speed of PLC will be slow.



 If last communication data has been memorized by PLC (PLC will send 0x10 0x05 consecutively), communication may be fail. At this time, power off and power up HMI or power off and power up PLC once.

## **Contacts**

| 'Sp <sub>20</sub> .       | 1900       | R          | ead/Write Range | e                |
|---------------------------|------------|------------|-----------------|------------------|
| Out the LT                | " and a s  | "Talay,    | <u>Bi</u>       | t No.            |
| Contact Type              | Format     | Word No.   | Low Byte        | High Byte        |
|                           |            | 34         | Bits            | File No.         |
| Output                    | O:n/b      | n: 0 ~ 3   | b: 0 ~ 15       | 0                |
| Input                     | I:n/b      | n: 0 ~ 3   | b: 0 ~ 15       | 1                |
| Status                    | S2:n/b     | n: 0 ~ 65  | b: 0 ~ 15       | 2                |
| Bit                       | B3:n/b     | n: 0 ~ 255 | b: 0 ~ 15       | 3                |
| Timer                     | T4:n/b     | n: 0 ~ 255 | b: 0 ~ 15       | 4                |
|                           | T4:n/EN    | n: 0 ~ 255 | 15              | 290 Ag.          |
|                           | T4:n/TT    | n: 0 ~ 255 | 14              | DE.              |
|                           | T4:n/DN    | n: 0 ~ 255 | 13              |                  |
| Timer Preset Value        | T4:n.PRE/b | n: 0 ~ 255 | b: 0 ~ 15       | 4                |
| Timer Accumulator Value   | T4:n.ACC/b | n: 0 ~ 255 | b: 0 ~ 15       | 4                |
| Counter flag              | C5:n/b     | n: 0 ~ 255 | b: 0 ~ 15       | 5                |
|                           | C5:n/CU    | n: 0 ~ 255 | 15              | Ollier,          |
|                           | C5:n/CD    | n: 0 ~ 255 | 14              |                  |
|                           | C5:n/DN    | n: 0 ~ 255 | 13              | in in the second |
|                           | C5:n/OV    | n: 0 ~ 255 | 12              | 7                |
|                           | C5:n/UN    | n: 0 ~ 255 | 11              | 12/2             |
|                           | C5:n/UA    | n: 0 ~ 255 | 10              | Wight.           |
| Counter Preset Value      | C5:n.PRE/b | n: 0 ~ 255 | b: 0 ~ 15       | 5                |
| Counter Accumulator Value | C5:n.ACC/b | n: 0 ~ 255 | b: 0 ~ 15       | 5                |
| Control                   | R6:n/b     | n: 0 ~ 255 | b: 0 ~ 15       | 6                |
|                           | R6:n/EN    | n: 0 ~ 255 | 15              | 9                |
|                           | R6:n/DN    | n: 0 ~ 255 | 13              | " SAG.           |
|                           | R6:n/ER    | n: 0 ~ 255 | 11              | Pille            |
|                           | R6:n/UL    | n: 0 ~ 255 | 10              |                  |
|                           | R6:n/IN    | n: 0 ~ 255 | 9 444           | nri              |
|                           | R6:n/FD    | n: 0 ~ 255 | 8               |                  |
| Control Size of Bit Array | R6:n.LEN/b | n: 0 ~ 255 | b: 0 ~ 15       | 6                |
| Control Reserved          | R6:n.POS/b | n: 0 ~ 255 | b: 0 ~ 15       | 6                |
| Integer                   | N7:n/b     | n: 0 ~ 255 | b: 0 ~ 15       | 7                |

<sup>&</sup>gt; Bit No : Low byte stores Bit address. High byte stores file number.

# C. Connections (Connector Pinouts)

# RS-232 Connection

|         | - 19             | - 19                | - FF - F |
|---------|------------------|---------------------|--|
|         | DOP Series       | Controller          | Controller                             |
| 6       | 9 pin D-SUB male | 8 pin Mini DIN male | 8 pin Mini DIN male                    |
| To.     | (RS-232)         | (RS-232)            | (RS-232)                               |
| C.C.    | RXD (2)———       | (7) TXD             |  |
|         | TXD (3)          | ——(4) RXD           | 2 1 4 3                                |
|         | GND (5)          | (2) GND             | 7, 6,                                  |
| -143.Q1 |                  | (3) RTS             | Top View                               |
|         | "OUT"            | (6) CTS             | "Palestay"                             |

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## AllenBradley SLC5 PLC

**DELTA** 

# A. HMI factory setting

Baud rate: 19200, 8, None, 1.

PLC station number: 1.

Control area/state area: B3:0/B3:10.



1) Error Check uses CRC (Cyclical Redundancy Check).

# B. Definition of controller Read/Write address

# Registers

| Nature.                 | Nage.        | n <sub>n</sub> n, | Read/W   | rite Range  |
|-------------------------|--------------|-------------------|----------|---|
| Decister Tune           | Farmet       | Word No.          |          | Bit No.   |
| Register Type           | Format       | Clament No.       | Low Byte | High Byte   |
| Care Care               | artio)       | Element No.       | all at   | Slot or File No.  |
| Output file             | O:n<br>O:s.n | n: 0 ~ 30         | N/A      | Slot No. s = 0<br>s: 0 ~ 255<br>File No. = 0                      |
| Input file              | I:n<br>I:s.n | n: 0 ~ 30         | N/A      | Slot No. s = 0<br>s: 0 ~ 255<br>File No. = 1                      |
| Status file             | S2:n         | n: 0 ~ 255        | N/A      | File No. = 2  |
| Bit file                | Bf:n         | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 3. |
| Timer flag              | Tf:n         | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |
| Timer Preset Value      | Tf:n.PRE     | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |
| Timer Accumulator Value | Tf:n.ACC     | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |
| Counter flag            | Cf:n         | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 5. |
| Counter Preset Value    | Cf:n.PRE     | n: 0 ~ 255        | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 5. |

| Tight Tight               | E. E.    | 5            | Read/W   | rite Range  |
|---------------------------|----------|--------------|----------|---|
| Dogistor Type             | Format   | Word No.     | 70,      | Bit No.   |
| Register Type             | Format   | Flamount Nie | Low Byte | High Byte   |
|                           | nu"      | Element No.  |          | Slot or File No.  |
| Counter Accumulator Value | Cf:n.ACC | n: 0 ~ 255   | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 5. |
| Control file              | Rf:n     | n: 0 ~ 255   | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 6. |
| Control Size of Bit Array | Rf:n.LEN | n: 0 ~ 255   | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 6. |
| Control Reserved file     | Rf:n.POS | n: 0 ~ 255   | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 6. |
| Integer file              | Nf:n     | n: 0 ~ 255   | N/A      | f: 10 ~ 255  If f is ignored, file no. will be default setting 7. |

<sup>&</sup>lt;u>Bit No</u>: Low byte is not used, so the value is 0. High byte stores file number.

# Contacts

| Tay.               | The state of the s | 72,4   | Read/W                      | rite Range  |
|--------------------|--|--|-----------------------------|---|
| Contact Type       | Format   | Word No.   | 6                           | Bit No.   |
| Contact Type       | Format   | Element No.  | Low Byte                    | High Byte   |
| EL, TOU            | , to the   | Element No.  | Bits                        | Slot or File No.  |
| Output             | O:n/b<br>O:s.n/b   | n: 0 ~ 30  | b: 0 ~ 15                   | Slot No. s = 0<br>s: 0 ~ 255<br>File No. = 0                      |
| Input              | I:n/b<br>I:s.n/b   | n: 0 ~ 30  | b: 0 ~ 15                   | Slot No.<br>s = 0<br>s: 0 ~ 255<br>File No. = 1                   |
| Status             | S2:n/b   | n: 0 ~ 31  | b: 0 ~ 15                   | 2 ,,,,,   |
| Bit                | Bf:n/b   | n: 0 ~ 255   | b: 0 ~ 15                   | f: 10 ~ 255  If f is ignored, file no. will be default setting 3. |
| Timer              | Tf:n/b Tf:n/EN Tf:n/TT Tf:n/DN   | n: 0 ~ 255<br>n: 0 ~ 255<br>n: 0 ~ 255<br>n: 0 ~ 255 | b: 0 ~ 15<br>15<br>14<br>13 | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |
| Timer Preset Value | Tf:n.PRE/b   | n: 0 ~ 255   | b: 0 ~ 15                   | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |

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| -1000                     | 8          | 1              | Read/W    | /rite Range   |
|---------------------------|------------|----------------|-----------|---|
| Thomas Thomas             | _ JJOTTIL  | Word No.       | No.       | Bit No.   |
| Contact Type              | Format     | (0)            | Low Byte  | High Byte   |
|                           | Trans.     | Element No.    | Bits      | Slot or File No.  |
| Timer Accumulator Value   | Tf:n.ACC/b | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255  If f is ignored, file no. will be default setting 4. |
| Counter flag              | Cf:n/b     | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
|                           | Cf:n/CU    | n: 0 ~ 255     | 15        | If f is ignored, file no. will be                                 |
|                           | Cf:n/CD    | n: 0 ~ 255     | 14        | default setting 5.  |
|                           | Cf:n/DN    | n: 0 ~ 255     | 13        | 8   |
|                           | Cf:n/OV    | n: 0 ~ 255     | 12        | 12/40.7   |
|                           | Cf:n/UN    | n: 0 ~ 255     | 11        | "OLLIO"   |
|                           | Cf:n/UA    | n: 0 ~ 255     | 10        | Region  |
| Counter Preset Value      | Cf:n.PRE/b | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255  If f is ignored, file no. will be default setting 5. |
| Counter Accumulator Value | Cf:n.ACC/b | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
|                           | ralitomo   |                | House,    | If f is ignored, file no. will be default setting 5.              |
| Control                   | Rf:n/b     | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
|                           | Rf:n/EN    | n: 0 ~ 255     | 15        | If f is ignored, file no. will be                                 |
|                           | Rf:n/DN    | n: 0 ~ 255     | 13        | default setting 6.  |
|                           | Rf:n/ER    | n: 0 ~ 255     | 11        | 13/4°.  |
|                           | Rf:n/UL    | n: 0 ~ 255     | 10        | , NOTES   |
|                           | Rf:n/IN    | n: 0 ~ 255     | 9         | , 180° .  |
|                           | Rf:n/FD    | n: 0 ~ 255     | 8         | unu, nuu,   |
| Control Size of Bit Array | Rf:n.LEN/b | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
|                           | , iii      | foig,          | 29/2/2.21 | If f is ignored, file no. will be default setting 6.              |
| Control Reserved          | Rf:n.POS/b | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
| WHI CHICA                 | "M" 1920.  | and the second | O.        | If f is ignored, file no. will be default setting 6.              |
| Integer                   | Nf:n/b     | n: 0 ~ 255     | b: 0 ~ 15 | f: 10 ~ 255   |
| 140 j.j. 140 j.j.         |            | 40.19)         |           | If f is ignored, file no. will be default setting 7.              |

<sup>&</sup>gt; Bit No: Low byte stores Bit address. High byte stores file number.



<sup>1)</sup> Device O and I need to assign Slot No. (s). If not assign Slot No., it will use default setting 0.

# C. Connections (Connector Pinouts)

# RS-232 Connection

| 160    | DOP series<br>9 pin D-SUB male<br>(RS-232) | Controller 9 pin D-SUB female (RS-232) | Controller 9 pin D-SUB female (RS-232)   |
|--------|--|--|--|
| Carlo  | RXD (2)                                    | (3) TXD                                | Pin1   |
|        | TXD (3)                                    | (2) RXD                                | - The state of the |
|        | GND (5)                                    | ——(5) SG                               | 0  |
| 6      |  | (7) RTS                                |  |
| 20/2 x |  | (8) CTS                                | Top View   |

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#### **Danfoss VLT 2800 (FC Protocol)**

**DELTA** 

#### A. HMI factory setting

Baud rate: 9600, 8, Even, 1, RS-485.

PLC station number: 1.

Control area/state area: None / None.



1) Delta HMI can be connected to for VLT-2800, 5000, 6000, 7000 controllers.

2) Each data length format of Danfoss AC drive parameter is not fixed, therefore, "Multiple Duplicate" function is not provided.

3) Max. supported alarm number is 16. If the alarm number is over 16, a fault will occur.

4) Not support "optimum read/write" characteristic.

5) If the selected element is a string, the minimum data length should be more than 2.

#### B. Definition of controller Read/Write address

#### Registers

|                 |        | Read/Write Range    |          |           |
|-----------------|--------|---------------------|----------|-----------|
| 16 2 1 1 2 16 g | Format | 8                   | Bit No.  |           |
| Register Type   |        | Word No.            | Low Byte | High Byte |
| , 20110,        |        | iller in the second |          | Index No. |
| Parameter       | Pn:I   | n: 0 ~ 999          | 0        | I: 0 ~ 31 |
| Control Word    | CTRWD  | 0                   | N/A      | N/A       |
| Status Word     | STAWD  | 0                   | N/A      | N/A       |

- ➤ Index No : If the index No. is not used, its default setting will be 0. The default setting of index No. for parameter P606 ~ P617 is 1.
- Please notice that it is necessary to input the index No. when using some parameters of Danfoss controllers. At this time, please pay close attention on the setting range of index number. If the setting range is not started from 0, the parameter read & write failure will occur. For example, the index No. setting range of the parameter P615 is from 1 to 20, if the users do not input the index No., the system will assume the index number is 0 (default setting) and the a fault will occur when the users read or write the parameter.
- > CTRWD: Write-only. (Can not be used on the devices which can display the value or input value. It is recommended to be used on the setting value/setting constant (button), or marco function.)
- STAWD: Read-only.
- Control & Status Word: Please refer to the explanation on the next page (page B-20).

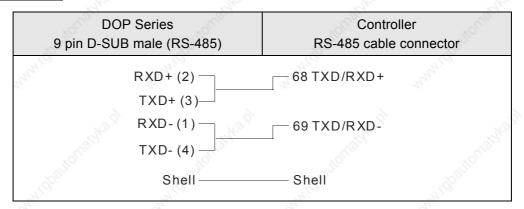
## **Contacts**

| . Apar                                  | 1900            | . 3500      | Read/Wr   | ite Range |
|---|-----------------|-------------|-----------|-----------|
| Contact Type                            | Format          | Word No.    |           | Bit No.   |
| Contact Type                            | Format          | Element No. | Low Byte  | High Byte |
| 150 150 150 150 150 150 150 150 150 150 | <sub>1</sub> 23 | Element No. | Bits      | Index No. |
| Parameter                               | Pn:l.b          | n: 0 ~ 999  | b: 0 ~ 31 | I: 0 ~ 31 |

➤ Bit No : Low byte stores Bit address. High byte stores index number.

# C. Connections (Connector Pinouts)

# RS-485 Connection



# **Explanation of Control Word & Status Word**

# **Control Word**

| Bit | Bit = 0                     | Bit = 1            |  |  |  |
|-----|-----------------------------|--------------------|--|--|--|
| 15  | No Function                 | Reversing          |  |  |  |
| 14  | Choice of Setup 2 (m        | nsb)               |  |  |  |
| 13  | Choice of Setup 1 (Is       | sb)                |  |  |  |
| 12  | No Function                 | Relay 04 activated |  |  |  |
| 11  | No Function                 | Relay 01 activated |  |  |  |
| 10  | Data Not Vaild              | Vaild              |  |  |  |
| 9   | Ramp 1                      | Ramp2              |  |  |  |
| 8   | Jog 1 OFF                   | ON                 |  |  |  |
| 7   | No Function                 | Reset              |  |  |  |
| 6   | Ramp Stop                   | Start              |  |  |  |
| 5   | Hold                        | Ramp Enable        |  |  |  |
| 4   | Quick-Stop                  | Ramp               |  |  |  |
| 3   | Coasting                    | Enable             |  |  |  |
| 2   | DC Brake Ramp               |                    |  |  |  |
| 1,0 | Preset reference choice msb |                    |  |  |  |
| 0   | Preset reference cho        | pice msb           |  |  |  |

When Bit 10 = 1 (Data Valid), the Control Word is valid.

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# Status Word

| Bit              | Bit = 0           | Bit = 1                       |  |  |
|------------------|-------------------|-------------------------------|--|--|
| 15               | Timer OK          | Above limit                   |  |  |
| 14               | Torque OK         | Above limit                   |  |  |
| 13               | Voltage OK        | Above limit                   |  |  |
| 12               | Temperature OK    | Over-Temp, auto-start pending |  |  |
| 11               | Not Running       | Running                       |  |  |
| 10               | Out of Range      | Frequency OK                  |  |  |
| 9                | Local Control     | Bus Control                   |  |  |
| 8                | Speed ≠ reference | Speed = reference             |  |  |
| 7                | No Warning        | Warning                       |  |  |
| 6                | Reserved          | , JROS JROS                   |  |  |
| 5                | Reserved          | 1/100,                        |  |  |
| 4                | Reserved          | May May                       |  |  |
| 3                | No Fault          | Trip                          |  |  |
| 2                | Coasting          | Enabled                       |  |  |
| S <sup>®</sup> 1 | VLT not ready     | Ready                         |  |  |
| 0                | Control not ready | Ready                         |  |  |

Facon FB Series PLC DELTA

# A. HMI factory settings

Baud rate: 9600, 7, Even, 1.
Controller Station number: 1.

Control area/state area: R0 / R10.

## B. Definition of controller Read/Write address

# Registers

| Degister Type         | Format | Read/V       | Data longth |             |  |
|-----------------------|--------|--------------|-------------|-------------|--|
| Register Type         | Format | Word No.     | Bit No.     | Data length |  |
| Input Relay           | WXn    | n: 0 ~ 9992  | N/A         | Byte        |  |
| Output Relay          | WYn    | n: 0 ~ 9992  | N/A         | Byte        |  |
| Internal Relay        | WMn    | n: 0 ~ 9992  | N/A         | Byte        |  |
| Step Relay            | WSn    | n: 0 ~ 9992  | N/A         | Byte        |  |
| Data Register         | Rn     | n: 0 ~ 65534 | N/A         | Word        |  |
| Data Register         | Dn     | n: 0 ~ 65534 | N/A         | Word        |  |
| Timer Present Value   | RTn    | n: 0 ~ 9999  | N/A         | Word        |  |
| Counter Present Value | RCn    | n: 0 ~ 9999  | N/A         | Word        |  |
| Data Register         | DRCn   | n: 200 ~ 255 | N/A         | Double Word |  |

<sup>&</sup>gt; Input Relay / Output Relay / Internal Relay / Special Relay: Address must be the multiple of 8.

## **Contacts**

| Contact type   | Format | Read/Write range |             |  |
|----------------|--------|------------------|-------------|--|
| Contact type   | Format | Word No.         | Bit No.     |  |
| Input Relay    | Xn     | N/A              | n: 0 ~ 9999 |  |
| Output Relay   | Yn     | N/A              | n: 0 ~ 9999 |  |
| Internal Relay | Mn     | N/A              | n: 0 ~ 9999 |  |
| Step Relay     | Sn     | N/A              | n: 0 ~ 9999 |  |
| Timer Flag     | Tn     | N/A              | n: 0 ~ 9999 |  |
| Counter Flag   | Cn     | N/A              | n: 0 ~ 9999 |  |

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# C. Connections (Connector Pinouts)

# **RS-232**

|         | DOP Series                              | Controller |            | Controller           |
|---------|---|------------|------------|----------------------|
| - 3     | 9 pin D-SUB male (RS-232)               | 15 pin mai | e (RS-232) | 15 pin male (RS-232) |
| Sigher. | RXD (2)———                              | ——(2) TXD  |            | Lay Age .            |
|         | TXD (3)                                 | (1) RXD    |            | 1,12,73,4.1.6.       |
|         | GND (5)                                 | ——(6) SG   |            | * \ •••••            |
|         |   | (3) RTS    |            | Top View             |
| 20/25   | 11 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | └_(4) CTS  | 21/42 ET   | 17 No. 17            |

# RS-232

# Connecting to CB (Communication Board) or CM (Communication Module)

# FBs Series Port 1

| r <sub>igg</sub> , | DOP Series Controller 9 pin D-SUB male 9 pin D-SUB male (RS-232) (RS-232) |             | Controller<br>9 pin D-SUB male (RS-232) |
|--------------------|---|-------------|---|
|                    | RXD (2)   | (2) TXD     | Man, Man,                               |
| 6                  | TXD (3)   | ——— (3) RXD | Pin1.                                   |
| Coldro.            | GND (5)———  | ——— (5) GND | Ø                                       |
|                    |   | (8) RTS     |   |
|                    |   | └_(7) CTS   | "May 10"                                |

# RS-232

# FBs Series Port 0

|         | DOP Series<br>9 pin D-SUB male<br>(RS-232) | HAN GO | Controller<br>4 pin Mini DIN<br>(RS-232) | Controller<br>4 pin Mini DIN male<br>(RS-232) | nn <sup>i</sup> |
|---------|--|--------|--|---|-----------------|
| 24ka.91 | RXD (2) —                                  |        | —— (4) TXD                               |   |                 |
| Co.     | TXD (3)—                                   |        | (2) RXD                                  |   |                 |
|         | GND (5) —                                  | -4196  | ——(1) GND                                | 4 3   | J1.             |
|         |  |        | (3) +5V                                  | Top View                                      | Try,            |
| 6       |  |        |  | 9   |                 |

Festo PLC DELTA

# A. HMI factory settings

Baud rate: 9600, 8, None, 1.

Controller Station number: 0. (no PLC station number in protocol)

Control area/state area: R0 / R10.



1) Connectable PLC: FEC-FC Model

#### B. Definition of controller Read/Write address

## Registers

| Register Type  | Format | Word No.    | Bit No. | Data Size |
|----------------|--------|-------------|---------|-----------|
| WORD_DEVICE_IW | Iwn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_OW | Own    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_FW | FWn    | n: 0 ~ 9999 | N/A     | Word      |
| WORD_DEVICE_TW | TWn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_CW | CWn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_R  | Rn     | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_TP | TPn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_CP | CPn    | n: 0 ~ 255  | N/A     | Word      |

#### **Contacts**

| Register Type   | Format | Word No.    | Bit No.    |
|-----------------|--------|-------------|------------|
| BIT_DEVICE_I    | In.b   | n: 0 ~ 255  | b: 0 ~ 15  |
| BIT_DEVICE_O    | On.b   | n: 0 ~ 255  | b: 0 ~ 15  |
| BIT_DEVICE_F    | Fn.b   | n: 0 ~ 9999 | b: 0 ~ 15  |
| BIT_DEVICE_T    | Tn     | N/A         | n: 0 ~ 255 |
| BIT_DEVICE_C    | Cn     | N/A         | n: 0 ~ 255 |
| BIT_DEVICE_TON  | TONn   | N/A         | n: 0 ~ 255 |
| BIT_DEVICE_TOFF | TOFFn  | N/A         | n: 0 ~ 255 |

➤ BIT\_DEVICE\_T / BIT\_DEVICE\_C / BIT\_DEVICE\_TON / BIT\_DEVICE\_TOFF: Only 1 Bit can be transferred for each communication.

Only 1 Bit or 1 Word can be transferred for each write command.

## C. Connections



- 1) Communication port of PLC: COM port
- 2) It needs to use the dedicated cable for FESTO controllers → Cable for transferring TTL to RS-232 and it is 6 pin RJ-12 connector at PLC side.

#### **GE Fanuc 90 Series SNP PLC**

**DELTA** 

## A. HMI factory settings

Baud rate: 19200, 8, ODD, 1.

Controller Station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: %R1 / %R10.



1) Please notice that no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC) communication is allowed.

2) If the PLC enabled "Check Password" function, the user needs to set the password by clicking Option > Configuration > Communication. The user can find Controller Settings and set PLC password on Communication Tab in the Configuration dialog box. Please enter a 4-digit password (If entering a password that exceeds 4-digit number, only the first 4-digit number is valid).

#### B. Definition of controller Read/Write address

#### Registers

| 4                    | 100    |                  | 100     | 4                             |
|----------------------|--------|------------------|---------|-------------------------------|
| Degister Type        | Format | Read/Write range |         | Data langth                   |
| Register Type        | Format | Word No.         | Bit No. | - Data length                 |
| Discrete Inputs      | %In    | n: 1 ~ 12288     | N/A     | Word (the multiple of 16 + 1) |
| Discrete Outputs     | %Qn    | n: 1 ~ 12288     | N/A     | Word (the multiple of 16 + 1) |
| Discrete Temporaries | %Tn    | n: 1 ~ 256       | N/A     | Word (the multiple of 16 + 1) |
| Discrete Internals   | %Mn    | n: 1 ~ 12288     | N/A     | Word (the multiple of 16 + 1) |
| %SA Discretes        | %SAn   | n: 1 ~ 128       | N/A     | Word (the multiple of 16 + 1) |
| %SB Discretes        | %SBn   | n: 1 ~ 128       | N/A     | Word (the multiple of 16 + 1) |
| %SC Discretes        | %SCn   | n: 1 ~ 128       | N/A     | Word (the multiple of 16 + 1) |
| %S Discretes         | %S-n   | n: 1 ~ 128       | N/A     | Word (the multiple of 16 + 1) |
| Genius Global Data   | %Gn    | n: 1 ~ 7680      | N/A     | Word (the multiple of 16 + 1) |
| Registers            | %Rn    | n: 1 ~ 16384     | N/A     | Word                          |
| Analog Inputs        | %Aln   | n: 1 ~ 8192      | N/A     | Word                          |
| Analog Outputs       | %AQn   | n: 1 ~ 8192      | N/A     | Word                          |

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## **Contacts**

| Contact Type         | Format | Read/Write range |              |  |  |
|----------------------|--------|------------------|--------------|--|--|
| Contact Type         | Format | Word No.         | Bit No.      |  |  |
| Discrete Inputs      | %In    | N/A              | n: 1 ~ 12288 |  |  |
| Discrete Outputs     | %Qn    | N/A              | n: 1 ~ 12288 |  |  |
| Discrete Temporaries | %Tn    | N/A              | n: 1 ~ 256   |  |  |
| Discrete Internals   | %Mn    | N/A              | n: 1 ~ 12288 |  |  |
| %SA Discretes        | %SAn   | N/A              | n: 1 ~ 128   |  |  |
| %SB Discretes        | %SBn   | N/A              | n: 1 ~ 128   |  |  |
| %SC Discretes        | %SCn   | N/A              | n: 1 ~ 128   |  |  |
| %S Discretes         | %-Sn   | N/A              | n: 1 ~ 128   |  |  |
| Genius Global Data   | %Gn    | N/A              | n: 1 ~ 7680  |  |  |

# C. Connections (Connector Pinouts)

# RS-232

| Cathon    | DOP<br>9 pin D-SUB male<br>(RS-232) | Controller RJ-45 cable connector (RS-232) | Controller<br>RJ-45 cable connector<br>(RS-232) |
|-----------|-------------------------------------|---|---|
|           | RXD (2)                             | . ,                                       | Hilling Carlo                                   |
| Calcha St | TXD (3) ————<br>GND (5) ———         | ——— (6) RXD<br>——— (4) GND                | <br>1 → 8<br>Top View                           |
| 300       | , itom                              | , to the                                  | Top view  |

HUST CNC Controller DELTA

# A. HMI factory settings

Baud rate: 9600, 7, EVEN, 2. Controller station number: 0.

Control area/state area: W0 / W10.

## B. Definition of controller Read/Write address

## Registers

| Register Type        | Format | Read/Write   | Range   | Data Length |
|----------------------|--------|--------------|---------|-------------|
| register Type        | 1 omat | Word No.     | Bit No. |             |
| Word Register        | Wn     | n: 0 ~ 13500 | N/A     | Word        |
| Double Word Register | Dn     | n: 0 ~ 13500 | N/A     | Double Word |



<sup>1)</sup> The unit for Hust CNC controller is D Word and Wn is the low word of Dn.

#### **Contacts**

| Contact Type | े Format   | Read/Write range |                     |  |
|--------------|--|------------------|---------------------|--|
| Contact Type | Folillat   | Word No.         | Bit No.             |  |
| BIT_DEVICE_B | Bm.n   | m: 0 ~ 13500     | n: 0 ~ 31           |  |
| BIT_DEVICE_I | In Note of the last of the las | N/A              | n: 0 ~ 255 (8 DW)   |  |
| BIT_DEVICE_O | On   | N/A              | n: 0 ~ 255 (8 DW)   |  |
| BIT_DEVICE_C | Cn   | N/A              | n: 0 ~ 255 (8 DW)   |  |
| BIT_DEVICE_S | Sn   | N/A              | n: 0 ~ 255 (8 DW)   |  |
| BIT_DEVICE_A | An   | N/A              | n: 0 ~ 1023 (32 DW) |  |

# C. Connections (Connector Pinouts)

# RS-232

| DOP Series<br>9 pin D-SUB male<br>(RS-232) | Controller 9 pin D-SUB male (RS-232) | Controller<br>9 pin D-SUB male<br>(RS-232) |
|--|--------------------------------------|--|
| RXD (2)—                                   | (2) TXD                              | Pin1₽                                      |
| TXD (3)                                    | (3) RXD                              |  |
| GND (5)——                                  | (5) SG                               | 9  |
| 2740 x                                     | (8) RTS                              | Top View                                   |
| altorn's                                   | (7) CTS                              | automa                                     |

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Jetter Nano Series PLC DELTA

## A. HMI factory settings

Baud rate: 9600, 8, EVEN, 1 (RS-232).

Controller station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: WR0 / WR10.



1) Please notice that no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC) communication is allowed.

- 2) Only 1 Bit or 1 Word can be transferred for each communication.
- 3) In general, each register occupies max. 24 Bits. However, some registers occupies 8 Bits only.
- 4) Because the initial time of this controller is longer, it is recommended to set HMI startup delay time (Recommended time is 10 seconds).
- 5) When the register R is used for Double Word device, please set its format as signed format. (The default format in Screen Editor is signed format)

#### B. Definition of controller Read/Write address

## Registers

| Register Type    | Format | Read/Write Range | Data    |         |
|------------------|--------|------------------|---------|---------|
|                  |        | Word No.         | Bit No. | Length  |
| 16 Bits Register | WRn    | n: 0 ~ 32767     | N/A     | 16 Bits |
| 32 Bits Register | Rn     | n: 0 ~ 32767     | N/A     | 24 Bits |

Only the first 16 bits are used for WRn registers.

Only the first 24 bits are used for Rn registers, the highest 8 bits (Bit  $24 \sim 31$ ) are set to 0 by default setting. (24-bit Integer : If in decimal format, the range is  $-8388608 \sim +8388607$ . If in hexadecimal format, the range is  $0x0000000 \sim 0xFFFFFFF$ .)



- 1) The difference between WRn and Rn:
  - When using devices that the data length is in Word, only Bit 0 ~ 15 are valid for both of WRn and Rn registers.
  - When using devices that the data length is in Double Word,
     if the read/write address format is set to WRn, the Bit 0 ~ 15 of WRn register is the low word of a read/write value, the Bit 0 ~ 15 of WRn+1 register is the high word of a read/write value.

if the read/write address format is set to Rn, only Bit 0 ~ 23 are valid for Rn registers.

(Notice: As the Jetter controller is a 24-bit format controller, the valid setting range is 24 Bits. If exceeds this range, HMI will stop read/write operation and show "···..Value is Incorrect" on the screen. So, please do not set any bit on Bit24 ~ Bit31 (Bit24 ~ Bit31 cannot be written).

• When using devices that the data length is in m Words, if the read/write address format is set to WRn, the Bit 0 ~ 15 of WRn register is the lowest word of a read/write value and the Bit 0 ~ 15 of WRn+m-1 register is the highest word of a read/write value. if the read/write address format is set to Rn, the Bit 0 ~ 23 of Rn register is the lowest word of a read/write value and the Bit 0 ~ 23 of Rn+1 register is the highest word of a read/write value. Each register is regards as a "Double Word". The value of Bit24 ~ Bit31 is 0.

#### Contacts

| Contact time | Farmet | ,O``      | Read/Write Range |                |     |
|--------------|--------|-----------|------------------|----------------|-----|
| Contact type | Format | Word No.  | 11/100           | <u>Bit No.</u> | . 1 |
| Input Relay  | Inbb   | n: 1 ~ 32 | bb:              | 01 ~ 08        | 274 |
| Output Relay | Onbb   | n: 1 ~ 32 | bb:              | 01 ~ 08        |     |
| Flag Relay   | Fn     | N/A       | n:               | 0 ~ 32767      | <   |

## C. Connections (Connector Pinouts)

#### RS-232

| osho.bl     | DOP Series<br>9 pin D-SUB male<br>(RS-232)  | Controller<br>9 pin D-SUB male<br>(RS-232) | Controller 9 pin D-SUB male (RS-232) |
|-------------|---|--|--------------------------------------|
|             | RXD (2)——                                   | (2) TXD                                    | Pin1+                                |
|             | TXD (3) ——————————————————————————————————— | (3) RXD (7) GND                            | Ø 33350 B                            |
| 2 d 1/2 (2) | SIND (3).                                   | (1) (10)                                   | Top View                             |

The pin definition of the cable of Jetter controller is different than the general cable. Please pay close attention on it and do not mistake.

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Jetter JC Series PLC DELTA

## A. HMI factory settings

Baud rate: 9600, 8, EVEN, 1 (RS-232).

Controller station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: WR0 / WR10.



1) Please notice that no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC) communication is allowed.

2) Only 1 Bit or 1 Word / 2 Words can be transferred for each read and write command.

#### B. Definition of controller Read/Write address

# Registers

| Degister Type    | Format | Read/Write Range | Data    |
|------------------|--------|------------------|---------|
| Register Type    | Format | Word No. Bit No. | Length  |
| 16 Bits Register | WRn    | n: 0 ~ 32767 N/A | 16 Bits |
| 32 Bits Register | Rn     | n: 0 ~ 32767 N/A | 24 Bits |

The characteristics of WRn and Rn of JC series are the same as the Nano series. Please refer to page B-29 and B-30.

#### **Contacts**

| Contact type | Format | Read/Write Range |              |  |
|--------------|--------|------------------|--------------|--|
| Contact type | Format | Word No.         | Bit No.      |  |
| Input Relay  | Inbb   | n: 1 ~ 32        | bb: 01 ~ 16  |  |
| Output Relay | Onbb   | n: 1 ~ 32        | bb: 01 ~ 16  |  |
| Flag Relay   | Fn     | N/A              | n: 0 ~ 32767 |  |

# C. Connections (Connector Pinouts)

# RS-232

| DOP Series<br>9 pin D-SUB male (RS-232)      | Controller<br>8 pin Mini DIN male (RS-232) | Controller<br>8 pin Mini DIN male (RS-232) |
|--|--|--|
| alaha isa da a sa a sa a sa a sa a sa a sa a |  |  |
| RXD (2)                                      | (8) TXD                                    | Top View                                   |
| TXD (3)——                                    | ——— (4) RXD                                | Jetter JC-246                              |
| GND (5)——                                    | ———— (2) GND                               | GND TX                                     |
| X X  |  | Controller side (Comm. Port)               |

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Keyence KV/KZ Series DELTA

## A. HMI factory settings

Baud rate: 9600, 8, EVEN, 1 (RS-232).

Controller station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: DM-0 / DM-10.



1) Please notice that no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC) communication is allowed.

2) Only 1 Bit or 1 Word can be transferred for each communication. (Communication speed is slow.)

#### B. Definition of controller Read/Write address

# Registers

| Dominton Tuno                 | Format  | " PLO | Read/Write Ra | Data Langth |             |
|-------------------------------|---------|-------|---------------|-------------|-------------|
| Register Type                 | Format  |       | Word No.      | Bit No.     | Data Length |
| Timer                         | T-nnn   | nnn:  | 0 ~ 199       | N/A         | Word        |
| Counter                       | C-nnn   | nnn:  | 0 ~ 199       | N/A         | Word        |
| High-speed counter            | CTH-n   | n: 🎺  | 0 ~ 1         | N/A         | Word        |
| High-speed counter comparator | CTC-n   | n:    | 0~3           | N/A         | Word        |
| Data memory                   | DM-nnnn | nnnn: | 0 ~ 1999      | N/A         | Word        |
| Temporary data memory         | TM-nn   | nn:   | 0 ~ 31        | N/A         | Word        |
| Timer preset value            | PT-nnn  | nnn:  | 0 ~ 199       | N/A         | Word        |
| Counter preset value          | PC-nnn  | nnn:  | 0 ~ 199       | N/A         | Word        |
| CTC preset value              | PCTC-n  | n:    | 0~3           | N/A         | Word        |

## **Contacts**

| Contact type                  | Formet  | Read/Write Range |      |         |
|-------------------------------|---------|------------------|------|---------|
| Contact type                  | Format  | Word No.         | 120  | Bit No. |
| Relay                         | R-nnnbb | nnn: 0 ~ 69      | bb:  | 00 ~ 15 |
| Timer                         | T-nnn   | N/A              | nnn: | 0 ~ 199 |
| Counter                       | C-nnn   | N/A              | nnn: | 0 ~ 199 |
| High-speed counter comparator | CTC-n   | N/A              | n:   | 0~3     |



When using the protocol format of KV series and connecting to KZ-80T PLC, some errors occur. Please refer to the following description:

- Readable Timer address is not continuous. For example, T-0 ~ T-9 can be read, T10 cannot be read,
   T11 ~ T20 can be read, T21 ~ T50 cannot be read, ...etc.
- 2) Counter cannot be read. For example,

Registers: C- (Counter), CTH- (High-speed counter), CTC- (High-speed counter comparator),

PC- (Counter preset value), PCTC- (CTC preset value) they all cannot be read.

Contacts: C- (Counter), CTC- (High-speed counter comparator) they all cannot be read also.

## C. Connections (Connector Pinouts)

#### RS-232

#### **KV Series**

| 20th     | DOP              | Controller            | Controller            |
|----------|------------------|-----------------------|-----------------------|
|          | 9 pin D-SUB male | RJ-11 cable connector | RJ-11 cable connector |
|          | (RS-232)         | (RS-232)              | (RS-232)              |
|          |                  |                       |                       |
|          | RXD (2) —        | (3) SD                | (((((                 |
|          | TXD (3)—         | (5) RD                | 6 - 1                 |
| Sight.   | 170(3)           | (5) ND                | Top View              |
| C        | GND (5) —        | (4) SG                | , in the second       |
|          |                  |                       |                       |
|          |                  |                       |                       |
|          |                  |                       |                       |
| 6        |                  |                       | 1 2 3 4 5 6           |
| Sich So. |                  |                       | PLC side (Comm. Port) |

#### **KZ Series**

|        | 10                 | 700                             | 201                      |
|--------|--------------------|---------------------------------|--------------------------|
|        | DOP                | Controller                      | Controller               |
|        | 9 pin D-SUB male   | RJ-11 cable connector           | RJ-11 cable connector    |
|        | (RS-232)           | (RS-232)                        | (RS-232)                 |
| My Car | athan.             | <sup>17</sup> / <sub>10</sub> , | [                        |
| 70     | RXD (2)            | (5) SD                          | <u>  ((((((</u><br>6 - 1 |
|        | TXD (3)            | (3) RD                          | Top View                 |
|        | GND (5)            | ———(4) SG                       |                          |
| M2.01  |                    |                                 |                          |
| Carlo  |                    |                                 | 1 2 3 4 5 6              |
|        | , 19 <sup>20</sup> |                                 | PLC side (Comm. Port)    |

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1) Communication Cable: The pins of SD and RD of KZ-80T and KV Series are reverse.

Koyo SU/DL Series DELTA

# A. HMI factory settings

Baud rate: 9600, 8, ODD, 1 (RS-232).

Controller station number: 1.

Control area/state area: V1400 / V1410.

# B. Definition of controller Read/Write address

# Registers

| Register Type       | Format | Read/Write Ran           | Data    |        |
|---------------------|--------|--------------------------|---------|--------|
|                     |        | Word No.                 | Bit No. | Length |
| Timer Accumulated   |        | n: 0 ~ 177 (octal)       | N/A     | Word   |
| Counter Accumulated | Vn     | n: 1000 ~ 1177 (octal)   | N/A     | Word   |
| V Memory            | Vn     | n: 1400 ~ 7777 (octal)   | N/A     | Word   |
| Linker Relays       | Vn     | n: 40000 ~ 40037 (octal) | N/A     | Word   |
| Input Status        | Vn     | n: 40400 ~ 40423 (octal) | N/A     | Word   |
| Output Status       | Vn     | n: 40500 ~ 40523 (octal) | N/A     | Word   |
| Control Relays      | Vn     | n: 40600 ~ 40635 (octal) | N/A     | Word   |
| Stage               | Vn     | n: 41000 ~ 41027 (octal) | N/A     | Word   |
| Timer Status        | Vn     | n: 41100 ~ 41107 (octal) | N/A     | Word   |
| Counter Status      | Vn     | n: 41140 ~ 41147 (octal) | N/A     | Word   |
| Spec. Relay 1       | Vn     | n: 41200 ~ 41205 (octal) | N/A     | Word   |
| Spec. Relay 2       | Vn     | n: 41216 ~ 41230 (octal) | N/A     | Word   |

## Contacts

| Contact type   | Format | Read/Write Range |                      |  |
|----------------|--------|------------------|----------------------|--|
|                |        | Word No.         | Bit No.              |  |
| Linker Relays  | GXn    | N/A              | n: 0 ~ 777 (octal)   |  |
| Input Status   | Xn     | N/A              | n: 0 ~ 477 (octal)   |  |
| Output Status  | Yn     | N/A              | n: 0 ~ 477 (octal)   |  |
| Control Relays | Cn     | N/A              | n: 0 ~ 737 (octal)   |  |
| Stage          | Sn     | N/A              | n: 0 ~ 577 (octal)   |  |
| Timer Status   | Tn     | N/A              | n: 0 ~ 177 (octal)   |  |
| Counter Status | CTn    | N/A              | n: 0 ~ 177 (octal)   |  |
| Spec. Relay 1  | SPn    | N/A              | n: 0 ~ 137 (octal)   |  |
| Spec. Relay 2  | SPn    | N/A              | n: 320 ~ 617 (octal) |  |

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# C. Connections (Connector Pinouts)

# RS-232

| DOP              | Controller            | Controller            |  |
|------------------|-----------------------|-----------------------|--|
| 9 pin D-SUB male | RJ-11 cable connector | RJ-11 cable connector |  |
| (RS-232)         | (RS-232)              | (RS-232)              |  |
| RXD(2) ———       | ——— (4)TXD            |                       |  |
| TXD(3) ———       | (3)RXD                |                       |  |
| GND(5) —         | 1 - 6                 |                       |  |
| 4                | └ (6)GND              | Top View              |  |

Koyo K-Sequence DELTA

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 1 (RS-232).

Controller station number: 1.

Control area/state area: R1400 / R1420.



1) If read / write the address that exceeds the valid range, HMI will stop read/write operation and show "····Error 6..... Command Can Not be Executed...." on the screen.

### B. Definition of controller Read/Write address

### Registers

| Register Type   | Cormot. |          | Data              |         |        |  |
|-----------------|---------|----------|-------------------|---------|--------|--|
| Register Type   | Format  | Word No. |                   | Bit No. | Length |  |
| Input Status    | Xnnnn   | nnnn:    | 0 ~ 1760 (octal)  | N/A     | Word   |  |
| Output Status   | Ynnnn   | nnnn:    | 0 ~ 1760 (octal)  | N/A     | Word   |  |
| Link Relays     | GXnnnn  | nnnn:    | 0 ~ 3760 (octal)  | N/A     | Word   |  |
| Relays          | GQnnnn  | nnnn:    | 0 ~ 3760 (octal)  | N/A     | Word   |  |
| Relays          | Mnnnn   | nnnn:    | 0 ~ 3760 (octal)  | N/A     | Word   |  |
| Stage           | Snnnn   | nnnn:    | 0 ~ 1760 (octal)  | N/A     | Word   |  |
| Timer Status    | Tnnn    | nnn:     | 0 ~ 360 (octal)   | N/A     | Word   |  |
| Control Relays  | Cnnn    | nnn:     | 0 ~ 360 (octal)   | N/A     | Word   |  |
| Special Relay 1 | SPnnn   | nnn:     | 0 ~ 760 (octal)   | N/A     | Word   |  |
| Register        | Rnnnnn  | nnnnn:   | 0 ~ 41237 (octal) | N/A     | Word   |  |
| Register        | Pnnnnn  | nnnnn:   | 0 ~ 37777 (octal) | N/A     | Word   |  |

<sup>&</sup>gt; nnnn: It is in octal format and it must be the multiple of 16 except for R and P.

#### **Contacts**

| Contact type   | Format | Read/Write Range |                        |  |
|----------------|--------|------------------|------------------------|--|
| Contact type   | Format | Word No.         | Bit No.                |  |
| Input Status   | Xnnnn  | N/A              | nnnn: 0 ~ 1777 (octal) |  |
| Output Status  | Ynnnn  | N/A              | nnnn: 0 ~ 1777 (octal) |  |
| Linker Relays  | GXnnnn | N/A              | nnnn: 0 ~ 3777 (octal) |  |
| Relays         | GQnnnn | N/A              | nnnn: 0 ~ 3777 (octal) |  |
| Control Relays | Mnnnn  | N/A              | nnnn: 0 ~ 3777 (octal) |  |
| Stage          | Snnnn  | N/A              | nnnn: 0 ~ 1777 (octal) |  |
| Timer Status   | Tnnn   | N/A              | nnn: 0 ~ 377 (octal)   |  |

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| Contact tune   | Form of         | Catch. | Read/Write Range     |
|----------------|-----------------|--------|----------------------|
| Contact type   | Format Word No. |        | Bit No.              |
| Counter Status | Cnnn            | N/A    | nnn: 0 ~ 377 (octal) |
| Spec. Relay 1  | SPnnn           | N/A    | nnn: 0 ~ 777 (octal) |

### C. Connections (Connector Pinouts)

### **RS-232**

### Port 0 Communication Cable

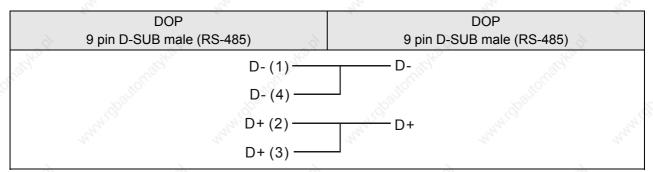
| 13/20 A | DOP<br>9 pin D-SUB male<br>(RS-232) | Controller RJ-11 cable connector (RS-232) | Controller RJ-11 cable connector (RS-232) |
|---------|-------------------------------------|---|---|
| Ç.      | RXD(2)                              | —— (4)TXD                                 | 10000                                     |
|         | TXD(3) —                            | (3)RXD                                    |   |
|         | GND(5) —                            | (1)GND                                    | 1 - 6                                     |
| 13.0    | 10 th                               | (6)GND (Note 1)                           | Top View                                  |

▶ If pin 6 is not grounded, a communication error may occur when connecting to a CKD SM 24R controller. Ensure that pin 6 is well grounded. There is no problem when connecting to SN32DRA controller no matter pin6 is grounded or not.

| DOP Series 9 pin D-SUB male (RS-232) | Controller<br>9 pin D-SUB male<br>(RS-232) | Controller<br>9 pin D-SUB male<br>(RS-232) |
|--------------------------------------|--|--|
| RXD (2) ——                           | (3) TXD                                    | Pin1∉                                      |
| TXD (3)                              | (2) RXD                                    |  |
| GND (5) ——                           | (5) SG                                     |  |
| 16 X X X                             | Mo x                                       | Top View                                   |

### RS-485

### **Port 1 Communication Cable**



### The corresponding registers of CCM2 and K-Sequence

# Address Corresponding Relationship:

| CCM2             | K sequence        | SN32DRA              |
|------------------|-------------------|----------------------|
| V                | R                 | R                    |
| X                | X                 | I 79.5               |
| Y                | Y                 | Q                    |
| C                | М                 | M                    |
| S                | , OS              | √G S                 |
| M <sub>1</sub> ⊥ | A <sup>th</sup> T | 2/2 <sup>2/2</sup> T |
| СТ               | С                 | С                    |
| SP               | SP 🚜              | SP SP                |

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### Lenze LECOM-A/B Protocol DELTA

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1 (Baudrate: 1200/2400/4800/9600/19200).

Controller station number: 1 (1~99).

Control area/state area: None / None.



1) Please pay close attention to each pin definition of cable connectors.

- 2) Ensure not to use the general RS-232 5-pin cable. This is because if pin 2, 3, 5, 7, 8 are all connected to the drive, the drive can not recognize the communication signal and can not identify what kind of communication it is.
- 3) For more detailed information of pin definition of cable connectors, please refer to the <u>C. Connections</u> (Connector Pinouts) in page B-26 and B-27.
- 4) Ensure the HMI communication data format (The communication data written into the drive) is correct.

  The Word "m" in the following table is used to specify the HMI communication data format.
- 5) Ensure the HMI display data format (Property table/Setting value...etc.) is correct.
- 6) When using broadcast function, please check if the using device is available. This is because the broadcast function can be activated only when the user choose "write only" device for broadcast station number (only choose setting value/setting constant (button) and then the broadcast function can be used). If choosing other devices, the system will ask you to read back the drive setting value, so please ensure to choose the correct device. If choosing the incorrect devices, a "Controller Station Number Error..." fault message will display on HMI screen.
- 7) Support 82XX frequency AC drives and 93XX servo drives.

#### B. Definition of controller Read/Write address

### Registers (n, m, y are in decimal)

|                           |                 | Rea          |             |                  |               |
|---------------------------|-----------------|--------------|-------------|------------------|---------------|
| Pogistor Typo             | Format <u>V</u> | Word No.     | No. Bit No. |                  | Data Longth   |
| Register Type             |                 | Co.,         | LowByte     | HighByte subcode | - Data Length |
| Parameter without subcode | CWn             | n: 1 ~ 10000 | N/A         | N/A              | Word          |
| 2,                        | CWn.m           | n: 1 ~ 10000 | m: 0 ~ 23   | N/A              | Word          |
| Parameter with subcode    | CWn/y           | n: 1 ~ 10000 | N/A         | y:1 ~ 255        | Word          |
| Ville Ville               | CWn/y.m         | n: 1 ~ 10000 | m: 0 ~ 23   | y:1 ~ 255        | Word          |

| Tight Tight                   |         | Rea          | d/Write Rang | е                | Sept.         |
|-------------------------------|---------|--------------|--------------|------------------|---------------|
| Degister Type                 | Format  | Word No.     | Bit No.      |                  | Data Lawyii   |
| Register Type                 | Format  | Many         | LowByte      | HighByte subcode | - Data Length |
| Parameter without subcode     | CDn     | n: 1 ~ 10000 | N/A          | N/A              | DoubleWord    |
| 29/2×                         | CDn.m   | n: 1 ~ 10000 | m: 0 ~ 23    | N/A              | DoubleWord    |
| Parameter with subcode        | CDn/y   | n: 1 ~ 10000 | N/A          | y:1 ~ 255        | DoubleWord    |
| <sup>(</sup> Ip <sub>D)</sub> | CDn/y.m | n: 1 ~ 10000 | m: 0 ~ 23    | y:1 ~ 255        | DoubleWord    |



1) m: HMI communication data format

2) The value of m represents the different communication data format:

• If m value is undefined: ASCII hexadecimal format (VH). (4 or 8 numbers.)

• m >= 23 : ASCII hexadecimal format (VH). (4 or 8 numbers.)

•  $m = 0 \sim 10$  : unsigned, ASCII decimal format (VD).

m represents decimal place, For example:

m=0 → no decimal place

 $m=1 \rightarrow$  one decimal place (tenth)

m=2 → two decimal place (hundredth)

m = 11 ~20 : signed, ASCII decimal format (VD).

m represents decimal place, For example:

 $m=11 \rightarrow$  one decimal place (tenth)

m=12 → two decimal place (hundredth)

• m = 21 : signed, ASCII decimal format (VD).

without decimal place

• m = 22 : ASCII hexadecimal format (VH). 2 numbers.

when using this format, the write value will be limited within the range of 0~0xFF

(low byte).

For example: when entering 0x1234 during communication, the actual write value

is 0x34, not 0x1234.

### Contacts (n, b, y are in decimal)

| Docietas Tuno             | 317     | \$           | Read/Write Range | e "li <sup>to"</sup> |
|---------------------------|---------|--------------|------------------|----------------------|
|                           | Format  | Word No.     | Word No. Bit No. |                      |
| Register Type             | Format  |              | LowByte HighByte |                      |
|                           |         | 8            | 8                | subcode              |
| Parameter without subcode | CBn.b   | n: 1 ~ 10000 | b: 0 ~ 31        | N/A                  |
| Parameter with subcode    | CBn/y.b | n: 1 ~ 10000 | b: 0 ~ 31        | 1 ~ 255              |

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Only VH type parameter can provide Bit read/write function (it is convenient for the user to read/write Bit No. of parameters).

CBn.b, CWn (CWn.m), CDn (CDn.m): read/write address is the same (address n)



- 1) Since the data format of this controller is complicated (a. VS (String format), b. VO (Octet string format data blocks), c. VH (ASCII hexadecimal format)(1, 2, 4 bytes), d. VD (ASCII decimal format)(positive, negative, decimal,..)) and the communication format is not compatible, therefore, it is needed to ensure the HMI communication data format is correct, or the error may occur.
- 2) Registers: only can read/write the data of ASCII hexadecimal format (VH), ASCII decimal format (VD) (i.e. Either VH or VD data format can be set via communication.)

Contacts: only can read/write the data of ASCII hexadecimal format (VH)

HMI display data format (Property table/Setting value...etc.) should also be correct.

#### Explanation:

- Registers: only can read/write the data of VH, VD. HMI needs to set communication data format
  (please refer to 4), 5) and 6)). String format (VS), and Octet string format for data blocks (VO) can
  not be used. If the controller returns the data in VS or VO format, HMI will show "......Value Is
  Incorrect" on the screen.
- Contacts: only can read/write the data of ASCII hexadecimal format (VH). Only VH type parameter can provide Bit read/write function. If the controller returns the data in other format, HMI will show ".....Value Is Incorrect" on the screen.
- Do not write the inexistent Bit address, or HMI will show "....Write .... Command Can Not be Executed" on the screen.
  - For example: CW470/1. The valid value of CW470/1 is within the range of 0 ~ 0xFF. Therefore, Bit 8 ~31 is not existed. Although HMI will show the value of Bit 8 ~31 is 0, the user can not write or set the value.
- The settings of ASCII hexadecimal format (VH) and ASCII decimal format (VD) should be correct. If the VD data is set in VH format in HMI (m value is undefined, or m=22 or 23) or the VH data is set in VD format in HMI (m=0 ~ 21), when HMI write the data, HMI will show "....Write .... Command Can Not be Executed" on the screen or tell the user the write value is incorrect.
- The decimal place of ASCII decimal format (VD) should be set correctly, or the write value will not be correct. The decimal place displayed on HMI should also be correct, or the display value will be incorrect.
- ASCII hexadecimal format (VH), 2 numbers (m = 22). The value is limited to 2 numbers. Using this
  format the write value will be limited within the range of 0 ~ 0xFF (low byte) automatically.
- 3) Station Number and Broadcast
  - The valid station number is from 0 to 99. If exceeds this range, HMI will stop read/write operation and show "Controller Station Number Error ..." on the screen.

- 00 indicates the global broadcasting number (1~99).
- 10, 20, 30, 40, 50, 60, 70, 80, 90 are local broadcasting number.

  The affected ranges are: 11~19, 21~29, 31~39, 41~49, 51~59, 61~69, 71~79, 81~89 and 91~99 respectively. Only choose setting value/setting constant (button), and then the broadcast function can be used. If choosing other devices, the system will be confused while reading back the drive setting value via broadcast function, so please ensure to choose the correct device. If choosing the incorrect devices, a "Controller Station Number Error..." fault message will display on HMI screen.
- Use in LECOM-A/B protocol. 82XX frequency AC drives and 93XX servo drives all use this protocol.
- 4) Explanation of communication error address
  - Registers: display CW n, CWy n, CD n, CDy n in order
  - Contacts: display CB n, CByn in order (n: address value)
- 5) HMI data format explanation
  - Some controller parameters are in Word and some are in Double Word. Therefore, there are two kinds of data format: Word ( CWn (CWn.m), CWn/y(CWn/y.m) ) and Double Word ( CDn (CDn.m), CDn/y(CDn/y.m) ).
  - Furthermore, regarding to Bit No., HMI only read/write 32Bit (Bit0 ~ Bit31) of parameters in VH format
  - CWn(CWn.m), CDn(CDn.m), or CBn.b: read/write address is the same (address n), but
    When symbol is set to CW, read/write value is the low word of parameters (n) only,
    When symbol is set to CD, read/write value is the Double Word of whole parameters (n),
    When symbol is set to CB, read/write value is the Bit (b) No. of parameters (n).
    (m: HMI communication data format)
  - (CWn/y(CWn/y.m), CDn/y(CDn/y.m), CBn/y.b: read/write address, which y subcode is the same(address n), but
     When symbol is set to CW, read/write value is the low word of parameters (n) only,

When symbol is set to CD, read/write value is the Double Word of whole parameters (n), When symbol is set to CB, read/write value is the Bit (b) No. of parameters (n).

(m: HMI communication data format)

- Actually when using HMI,
  - i) When using devices that the unit is in Word (e.g. numeric devices (numeric value display, numeric value input...)...), the read/write value will be the same no matter the read/write address format is set to CWn or CDn as read/write value is the low word of parameters (n) only.
  - ii) When using devices that the unit is in Double Word (e.g. numeric devices (numeric value display, numeric value input...)...), if the read/write address format is set to CWn, read/write value is coming from the low word of CWn and CWn+1 these two addresses.

    (The low word of CWn is regarded as "low word" and the low word of CWn+1 is regarded as "high word", and then combining "low word" and "high word" to a Double Word.)

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- If the read/write address format is set to CDn, read/write value is the whole Double Word of CDn (1 address).
- iii) When using character device (e.g. character display, character input...), if the read/write address format is set to CWn, the read/write value is coming from the low word of CWn, CWn+1, CWn+2, ...every address.
  - If the read/write address format is set to CDn, read/write value is the whole Double Word of CDn, CDn+1, CDn+2,...every address.
- iv) When using "Multiple Duplicate" function, if the Word and Bit addresses exceed the valid range, the Word and Bit addresses will be set to 0 automatically. Sometime error will occur to remind the user when compiling.
- v) CBn.b, CBn/y.b are added for the user to read and write Bit No. of parameters in VH format more easily.
- vi) Only can read or write 1 parameter for each communication.

#### C. Connections (Connector Pinouts)

Pin 2, 3, 5 are for RS-232 communication. Pin 7, 8 are for RS-485 communication.

#### RS-232

|       | DOP<br>9 pin D-SUB male<br>(RS-232) | Controller 9 pin D-SUB male (RS-232) | Controller 9 pin D-SUB male (RS-232) |
|-------|-------------------------------------|--------------------------------------|--------------------------------------|
| 16.61 | RXD (2)                             | (3) TXD                              | Pin1                                 |
| Caro. | TXD (3)                             | (2) RXD                              | 9                                    |
|       | GND (5)——                           | (5) GND                              | Top View                             |

#### RS-485

| Septer. | DOP              | Controller        | Controller            |
|---------|------------------|-------------------|-----------------------|
|         | 9 pin D-SUB male | 9 pin D-SUB male  | 9 pin D-SUB male      |
|         | (RS-485)         | (RS-485)          | (RS-485)              |
|         | D- (1)           | (7) T/R (A)       | Pin1+                 |
|         | D- (4)           | 120               | Common and the second |
|         | D+ (2) ———       | (8) T/R (B)       |                       |
|         | D+ (3) ———       | ionately ionately | Top View              |

LG Master K120S/200S DELTA

### A. HMI factory settings

Baud rate: 38400, 8, None, 1. (RS-232)

Controller station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: DW0 / DW10.

### B. Definition of controller Read/Write address

### Registers

| Register Type  | Format | Word No.    | Bit No. | Data Size |
|----------------|--------|-------------|---------|-----------|
| WORD_DEVICE_PW | PWn    | n: 0 ~ 15   | N/A     | Word      |
| WORD_DEVICE_MW | MWn    | n: 0 ~ 191  | N/A     | Word      |
| WORD_DEVICE_KW | KWn    | n: 0 ~ 31   | N/A     | Word      |
| WORD_DEVICE_LW | LWn    | n: 0 ~ 63   | N/A     | Word      |
| WORD_DEVICE_FW | FWn    | n: 0 ~ 63   | N/A     | Word      |
| WORD_DEVICE_TW | TWn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_CW | CWn    | n: 0 ~ 255  | N/A     | Word      |
| WORD_DEVICE_DW | DWn    | n: 0 ~ 9999 | N/A     | Word      |

### **Contacts**

| Contact type | Format | Word No.   | Bit No.    |
|--------------|--------|------------|------------|
| BIT_DEVICE_P | Pnb    | n: 0 ~ 15  | b: 0 ~ f   |
| BIT_DEVICE_M | Mnb    | n: 0 ~ 191 | b: 0 ~ f   |
| BIT_DEVICE_K | Knb    | n: 0 ~ 31  | b: 0 ~ f   |
| BIT_DEVICE_L | Lnb    | n: 0 ~ 63  | b: 0 ~ f   |
| BIT_DEVICE_F | Fnb    | n: 0 ~ 63  | b: 0 ~ f   |
| BIT_DEVICE_T | Tn     | N/A        | n: 0 ~ 255 |
| BIT_DEVICE_C | Cn     | N/A        | n: 0 ~ 255 |

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### C. Connections (Connector Pinouts)

### **RS-232**

| 10 j  | DOP<br>9 pin D-SUB male<br>(RS-232) | •         | n D-SUB male<br>G K120S/200S) | Controller 9 pin D-SUB male (RS-232 for LG K120S/200S) |
|-------|-------------------------------------|-----------|-------------------------------|--|
| Care. | RXD (2)———                          | (3) TXD   | - Billoftalo                  | Pin1.  |
|       | TXD (3)                             | (2) RXD   |                               |  |
| 9     | GND (5)———                          | ——(5) GND |                               | Top View   |



1) If connecting to Pin 4 (RXD), Pin 7 (TXD) and Pin5 (SG), it indicates that CNet protocol is used (Please refer to the section "LG Master-K CNET" on page B-50. 120S/200S protocol and CNet protocol cannot be used simultaneously. The users only can select either 120S/200S protocol or CNet protocol.

LG Glofa GM6 CNET

### A. HMI factory settings

Baud rate: 19200, 8, None, 1. (RS-232)

Controller station number: 0.

Control area/state area: %MW0 / %MW10.



1) HMI default setting is predefined for CPU Port. If the user want to connect to CNET communication module, the baud rate should be changed to 38400, 8, None, 1. (RS-422 / RS-485).

### B. Definition of controller Read/Write address

### Registers

| Register Type   | Format  | Word No.                        | Bit No.        | Data Size |
|-----------------|---------|---------------------------------|----------------|-----------|
| Input Image     | IWb.s.w | w(word):0 ~ 3<br>s(slot): 0 ~ 7 | b(base): 0 ~ 1 | Word      |
| Input Image     | IDb.s.w | w(word):0 ~ 1<br>s(slot): 0 ~ 7 | b(base): 0 ~ 1 | DWord     |
| Output Image    | QWb.s.w | w(word):0 ~ 3<br>s(slot): 0 ~ 7 | b(base): 0 ~ 1 | Word      |
| Output Image    | QDb.s.w | w(word):0 ~ 1<br>s(slot): 0 ~ 7 | b(base): 0 ~ 1 | DWord     |
| Internal Memory | MWn     | n: 0 ~ 4095                     | N/A            | Word      |
| Internal Memory | MDn     | n: 0 ~ 2047                     | N/A            | DWord     |

### **Contacts**

| Contact type    | Format  | Word No.       | Bit No.                          |
|-----------------|---------|----------------|----------------------------------|
| Input Image     | IXb.s.n | s(slot): 0 ~ 7 | n(bit): 0 ~ 63<br>b(base): 0 ~ 1 |
| Output Image    | QXb.s.n | s(slot): 0 ~ 7 | n(bit): 0 ~ 63<br>b(base): 0 ~ 1 |
| Internal Memory | MXn     | N/A            | n: 0 ~ 65535                     |

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# C. Connections (Connector Pinouts)

# **RS-232**

### via CPU Port

| lathra. A | DOP<br>9 pin D-SUB male<br>(RS-232)         | Controller 9 pin D-SUB male (RS-232) | Controller 9 pin D-SUB male (RS-232) |
|-----------|---|--------------------------------------|--------------------------------------|
| 200       | RXD (2) ——————————————————————————————————— | (7) TXD (4) RXD (5) GND              | Pinl                                 |
| Carth.    |   |                                      | Top View                             |

# **RS-422**

# via G6L-CUEC CNET communication module

| adkadi. | DOP<br>9 pin D-SUB male (RS-422) |   | Controller<br>Cable Connector (RS-422) |      |
|---------|----------------------------------|---|--|------|
|         |                                  | RXD+ (2) ——   | SDA                                    |      |
|         |                                  | RXD-(1) —   | SDB                                    | and! |
|         |                                  | TXD- (4) ——   | ——— RDA                                |      |
| 12.0    |                                  | TXD+(3)   | ——— RDB                                |      |
| Caral.  |                                  | GND (5) ——  | sg                                     |      |
|         | 28/100                           | State |  |      |

LG Master-K CNET DELTA

### A. HMI factory settings

Baud rate: 38400, 8, None, 1. (RS-422)

Controller station number: 0.

Control area/state area: DW0 / DW10.



1) HMI default setting is predefined for G6L-CUEC CNET communication module.

### B. Definition of controller Read/Write address

### Registers

| Register Type         | Format | Word No.    | Bit No. | Data Size        |
|-----------------------|--------|-------------|---------|------------------|
| I/O relay             | PWn    | n: 0 ~ 31   | N/A     | Word             |
| Auxiliary relay       | MWn    | n: 0 ~ 191  | N/A     | Word             |
| Keep relay            | KWn    | n: 0 ~ 31   | N/A     | Word             |
| Link relay            | LWn    | n: 0 ~ 63   | N/A     | Word             |
| Special relay         | FWn    | n: 0 ~ 63   | N/A     | Word (Read Only) |
| Timer elapsed value   | TWn    | n: 0 ~ 255  | N/A     | Word             |
| Counter elapsed value | CWn    | n: 0 ~ 255  | N/A     | Word             |
| Data register         | DWn    | n: 0 ~ 9999 | N/A     | Word             |

### Contacts

| -4/2                  | - 0,0  | - M2       | - 14 <sup>2</sup> |
|-----------------------|--------|------------|-------------------|
| Contact type          | Format | Word No.   | Bit No.           |
| I/O relay             | PXnb   | n: 0 ~ 31  | b: 0 ~ F          |
| Auxiliary relay       | MXnb   | n: 0 ~ 191 | b: 0 ~ F          |
| Keep relay            | KXnb   | n: 0 ~ 31  | b: 0 ~ F          |
| Link relay            | LXnb   | n: 0 ~ 63  | b: 0 ~ F          |
| Special relay         | FXnb   | n: 0 ~ 63  | b: 0 ~ F          |
| Timer contact relay   | TXb    | N/A        | b: 0 ~ 255        |
| Counter contact relay | CXb    | N/A        | b: 0 ~ 255        |

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# C. Connections (Connector Pinouts)

# RS-422

# via G6L-CUEC CNET communication module

| ojelka ? | DOP<br>9 pin D-SUB male | (RS-422)   | С  | Control<br>Cable Connecto |       |
|----------|-------------------------|------------|----|---------------------------|-------|
|          |                         | RXD+ (2) — | S  | DA                        |       |
|          |                         | RXD-(1) —  | SI | DB                        | Andy) |
| <i>A</i> |                         | TXD- (4)   | R  | DA                        |       |
| THO!     |                         | TXD+ (3)   | R  | DB                        |       |
| Co.      |                         | GND (5) —  | s  | G                         |       |
|          |                         |            |    |                           |       |

# **RS-232**

### via LG-120S PLC (Master K)

| (p)  | DOP<br>9 pin D-SUB male<br>(RS-232)         | Controller 9 pin D-SUB male (RS-232) | Controller 9 pin D-SUB male (RS-232) |
|------|---|--------------------------------------|--------------------------------------|
| *6.  | RXD (2) ——————————————————————————————————— | (7) TXD (4) RXD                      | Pin1                                 |
| Sep. | GND (5)———                                  | (5) GND                              | Top View                             |

LIYAN LYPLC EX DELTA

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1. Controller station number: 0.

Control area/state area: D0 / D10.

### B. Definition of controller Read/Write address

### Registers

| Degister Type           | Format | Read/Write        | Data langth |               |
|-------------------------|--------|-------------------|-------------|---------------|
| Register Type           | Format | Word No.          | Bit No.     | - Data length |
| Auxiliary Relay         | Mn     | n: 0 ~ 3064       | N/A         | Byte          |
| Special Auxiliary Relay | Mn     | n: 8000 ~ 8248    | N/A         | Byte          |
| Status Relay            | Sn     | n: 0 ~ 992        | N/A         | Byte          |
| Input Relay             | Xn     | n: 0 ~ 360(octal) | N/A         | Byte          |
| Output Relay            | Yn     | n: 0 ~ 360(octal) | N/A         | Byte          |
| Timer PV                | Tn     | n: 0 ~ 255        | N/A         | Word          |
| 16-bit Counter PV       | Cn     | n: 0 ~ 199        | N/A         | Word          |
| 32-bit Counter PV       | Cn     | n: 200 ~ 255      | N/A         | Double Word   |
| Data Register           | Dn     | n: 0 ~ 7999       | N/A         | Word          |
| Special Data Register   | Dn     | n: 8000 ~ 8255    | N/A         | Word          |

Auxiliary Relay / Special Auxiliary Relay / Status Relay / Input Relay / Output Relay: Address must be the multiple of 8.

### **Contacts**

| Contact type            | Format | Read/Write Range |                   |  |
|-------------------------|--------|------------------|-------------------|--|
| Contact type            | Format | Word No.         | Bit No.           |  |
| Auxiliary Relay         | Mn     | N/A              | n: 0 ~ 3071       |  |
| Special Auxiliary Relay | Mn     | N/A              | n: 8000 ~ 8255    |  |
| Status Relay            | Sn     | N/A              | n: 0 ~ 999        |  |
| Input Relay             | Xn     | N/A              | n: 0 ~ 377(octal) |  |
| Output Relay            | Yn     | N/A              | n: 0 ~ 377(octal) |  |
| Timer Flag              | Tn N   | N/A              | n: 0 ~ 255        |  |
| Counter Flag            | Cn     | N/A              | n: 0 ~ 255        |  |

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# C. Connections (Connector Pinouts)

# RS-232

| DOP                       | Controller                              | Controller                   |
|---------------------------|---|------------------------------|
| 9 pin D-SUB male (RS-232) | 8 pin Mini DIN male (RS-232)            | 8 pin Mini DIN male (RS-232) |
| 162                       | Mr. | 760.7                        |
| RXD (2)———                | ——— (2) TXD                             | 2                            |
| TXD (3)                   | (7) RXD                                 |                              |
| GND (5)———                | (3) GND                                 |                              |
| 4.                        | └_ (6) GND                              | 4.                           |
| , d                       | 4,0                                     | Top View                     |

M2i Master DELTA

### A. HMI factory settings

Baud rate: 38400, 8, None, 1.
Controller station number: 1.

Control area/state area: SB0 / SB10.

### B. Definition of controller Read/Write address

# Registers

| Pagintar Type | Format | Read/Write Range |         | Data langth |
|---------------|--------|------------------|---------|-------------|
| Register Type | Format | Word No.         | Bit No. | Data length |
| Word Address  | SBn    | n: 0000 ~ FFFF   | N/A     | Word        |

### Contacts

| Contact type | Format | Read/Write Range |          |  |
|--------------|--------|------------------|----------|--|
| Contact type | Tomat  | Word No.         | Bit No.  |  |
| Bit Address  | SBn.b  | n: 0000 ~ FFFF   | b: 0 ~ F |  |

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M2i Slave DELTA

### A. HMI factory settings

Baud rate: 38400, 8, None, 1.

Controller station number: 1 (no function)

Control area/state area: SB0 / SB10.



1) HMI station number is Slave station number. (default setting is 0)

2) The relation between M2i communication address and HMI internal registers.

|    | Modbus address  | à             | Data definition in HMI |
|----|-----------------|---------------|------------------------|
|    | SB0000 ~ SB7FFF | $\rightarrow$ | \$0 ~ \$32767          |
|    | SB8000 ~ SB83FF | $\rightarrow$ | \$M0 ~ \$M1023         |
| S) | SB8400          | $\rightarrow$ | RCPNO                  |
|    | SB8500 ~ SBFFFF | $\rightarrow$ | RCP0 ~ RCP31487        |

#### B. Definition of controller Read/Write address

### Registers

| Register Type | Format | Word No.       | Bit No. | Data Size |
|---------------|--------|----------------|---------|-----------|
| Word Address  | SBn    | n: 0000 ~ FFFF | N/A     | Word      |

#### Contacts

| Contact type | Read/Write Range |               | nd/Write Range |
|--------------|------------------|---------------|----------------|
| Contact type | Format           | Word No.      | Bit No.        |
| Bit Address  | SBn.b            | n:0000 ~ FFFF | b: 0 ~ F       |

### C. Connections (Connector Pinouts):

Please refer to B-1 Pin Definition of Serial Communication for detail.

Matsushita FP PLC DELTA

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 1.

Controller station number: 238.

Control area/state area: DT0 / DT10.

### B. Definition of controller Read/Write address

### Registers

| Pogistor Type          | Format  | Read/Write Range |         | Data length |
|------------------------|---------|------------------|---------|-------------|
| Register Type          | Format  | Word No.         | Bit No. | Data length |
| Internal Relay         | WRn     | n: 0 ~ 886,      | N/A     | Word        |
| Special Internal Relay | Thuy,   | 900 ~ 910        | " Tary; | "thing"     |
| Link Relay             | WLn     | n: 0 ~ 639       | N/A     | Word        |
| External Input Relay   | WXn     | n: 0 ~ 511       | N/A     | Word        |
| External Output Relay  | WYn     | n: 0 ~ 511       | N/A     | Word        |
| Timer/Counter P.V.     | EVn     | n: 0 ~ 3071      | N/A     | Word        |
| Timer/Counter S.V.     | SVn     | n: 0 ~ 3071      | N/A     | Word        |
| Data Register          | DTn     | n: 0 ~ 32764     | N/A     | Word        |
| Link Data Register     | LDn     | n: 0 ~ 8447      | N/A     | Word        |
| File Register          | FLn FLn | n: 0 ~ 32764     | N/A     | Word        |
| Special Data Register  | DT9_n   | n: 0 ~ 511       | N/A     | Word        |

- ▶ DT9\_0 ~ DT9\_511 are applicable for FP0 T32C, FP2, FP2SH, FP10SH controllers. (Special data registers are all within the range of DT90000 ~ DT9XXXX).
- ➤ The actual transmitted address of DT9\_n is 90000 + n (for DT). For example, the actual transmitted address of DT9\_1 is 90001 (for DT), the actual transmitted address of DT9\_2 is 90002 (for DT) and vise versa.

### **Contacts**

| 47.                    | 100    | - 47             | - th        |  |
|------------------------|--------|------------------|-------------|--|
| Contact type           | Format | Read/Write Range |             |  |
| Contact type           |        | Word No.         | Bit No.     |  |
| Internal Relay         | Rnb    | n: 0 ~ 886       | b: 0 ~ f    |  |
| Special Internal Relay | ~and   | n: 900 ~ 910     | b: 0 ~ f    |  |
| Link Relay             | Lnb    | n: 0 ~ 639       | b: 0 ~ f    |  |
| External Input Relay   | Xnb    | n: 0 ~ 511       | b: 0 ~ f    |  |
| External Output Relay  | Ynb    | n: 0 ~ 511       | b: 0 ~ f    |  |
| Timer Flag Contact     | Tn N   | N/A              | n: 0 ~ 3071 |  |
| Counter Flag Contact   | Cn     | N/A              | n: 0 ~ 3071 |  |

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> Increase the range of read / write address (for FP2SH / FP10SH controllers).

### C. Connections (Connector Pinouts)

### **RS-232**

| Cathaig     | DOP Series<br>9 pin D-SUB male<br>(RS-232)  | Controller 5 pin Mini DIN male (RS-232 for FP0) | Controller 5 pin Mini DIN male (RS-232 for FP0) |
|-------------|---|---|---|
| 1.58 A.C. Q | RXD (2)———————————————————————————————————— | (2) TXD<br>(3) RXD<br>(1) SG                    | Top View  |

# RS-232

| 28/40 E   | DOP Series<br>9 pin D-SUB male<br>(RS-232)  | Controller 9 pin D-SUB male (RS-232 for FP1)        | Controller 9 pin D-SUB male (RS-232 for FP1) |
|-----------|---|---|--|
| 1911/K 21 | RXD (2)———————————————————————————————————— | (2) TXD<br>(3) RXD<br>(7) GND<br>(4) RTS<br>(5) CTS | Pin1 Top View                                |

Mirle FAMA SC DELTA

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1.
Controller station number: 0.

Control area/state area: 40100 / 40200.

### B. Definition of controller Read/Write address

### Registers

| Register Type    | Format | Read/Write Range |         | Data Langth   |
|------------------|--------|------------------|---------|---------------|
|                  | Format | Word No.         | Bit No. | - Data Length |
| Output Registers | Wn     | n: 40001 ~ 50000 | N/A     | Word          |
| Input Registers  | Wn     | n: 30001 ~ 40000 | N/A     | Word          |

<sup>&</sup>gt; Input Registers is "read only".

### Contacts

| Contact type     | Format | Read/Write Range |                  |  |
|------------------|--------|------------------|------------------|--|
| Contact type     |        | Word No.         | Bit No.          |  |
| Discrete Outputs | Bn     | N/A              | n: 1 ~ 10000     |  |
| Discrete Inputs  | Bn     | N/A              | n: 10001 ~ 20000 |  |

Discrete Inputs is "read only".

### C. Connections (Connector Pinouts)

### **RS-232**

| egg/ko.p | DOP Series<br>9 pin D-SUB male | Controller 9 pin D-SUB male | Controller<br>9 pin D-SUB male |
|----------|--------------------------------|-----------------------------|--------------------------------|
|          | (RS-232)                       | (RS-232)                    | (RS-232)                       |
|          | RXD (2)                        | (3) TXD                     | Pin1₽                          |
| 2        | TXD (3)                        | ——(2) RXD                   | (g) (3333) g                   |
| Cold No. | GND (5)———                     | ——(5) SG                    |                                |
|          |                                | (40)                        | Top View                       |

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Mitsubish FX/FX2N PLC DELTA

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1.

Controller Station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: D0 / D10



1) If connecting to Mitsubishi FXxN series PLC, the user can use FX2N and FX series both communication protocol.

- 2) If connecting to Mitsubishi FX series PLC, the user can only use FX series communication protocol.
- 3) Some registers of Mitsubishi PLCs are "read only", however, when you write these "read only" registers, PLCs will not report any communication error to HMI and this will cause that HMI may misjudge. Please aware of this when editing PLC program (this kind of case easily occurs when the user use FX series protocol when connecting to a FXxN series PLC).
- 4) If connecting to Mitsubishi FXxN series PLC, it is recommended for the user to use FX2N protocol.

#### B. Definition of controller Read/Write address

### Registers

| Decistor Type           | Farmat | Read/Wri          | Data langth |             |  |
|-------------------------|--------|-------------------|-------------|-------------|--|
| Register Type           | Format | Word No.          | Bit No.     | Data length |  |
| Auxiliary Relay         | Mn     | n: 0 ~ 3064       | N/A         | Byte        |  |
| Special Auxiliary Relay | Mn     | n: 8000 ~ 8248    | N/A         | Byte        |  |
| Status Relay            | Sn     | n: 0 ~ 992        | N/A         | Byte        |  |
| Input Relay             | Xn     | n: 0 ~ 360(octal) | N/A         | Byte        |  |
| Output Relay            | Yn N   | n: 0 ~ 360(octal) | N/A         | Byte        |  |
| Timer PV                | Tn was | n: 0 ~ 255        | N/A         | Word        |  |
| 16-bit Counter PV       | Cn     | n: 0 ~ 199        | N/A         | Word        |  |
| 32-bit Counter PV       | Cn     | n: 200 ~ 255      | N/A         | Double Word |  |
| Data Register           | Dn     | n: 0 ~ 7999       | N/A         | Word        |  |
| Special Data Register   | Dn     | n: 8000 ~ 8255    | N/A         | Word        |  |

Auxiliary Relay/ Special Auxiliary Relay/ Status Relay/ Input Relay /Output Relay: Address must be the multiple of 8.

### Contacts

| Contact time            | (j)             | Read/Write Range |                   |  |
|-------------------------|-----------------|------------------|-------------------|--|
| Contact type            | Format          | Word No.         | Bit No.           |  |
| Auxiliary Relay         | Mn              | N/A              | n: 0 ~ 3071       |  |
| Special Auxiliary Relay | Mn              | N/A              | n: 8000 ~ 8255    |  |
| Status Relay            | Sn              | N/A              | n: 0 ~ 999        |  |
| Input Relay             | Xn              | N/A              | n: 0 ~ 377(octal) |  |
| Output Relay            | Yn              | N/A              | n: 0 ~ 377(octal) |  |
| Timer Flag              | Tn <sup>1</sup> | N/A              | n: 0 ~ 255        |  |
| Counter Flag            | Cn              | N/A              | n: 0 ~ 255        |  |

# C. Connections (Connector Pinouts)

### **RS-422**

| ******  | DOP Series<br>9 pin D-SUB male<br>(RS-422) | Controller<br>8pin Mini DIN male<br>(RS-422) | Controller<br>8pin Mini DIN male<br>(RS-422) |
|---------|--|--|--|
| Carlo.  | RXD+ (2)—                                  | (7) TXD+                                     | ,dhat  |
|         | RXD- (1)                                   | (4) TXD-                                     | 2 1 4 3                                      |
|         | TXD+ (3)                                   | (2) RXD+                                     | 7  |
| 2       | TXD- (4)                                   | (1) RXD-                                     | Top View                                     |
| "Aghory | GND (5)                                    | ———(3) SG                                    | Top view                                     |

# RS-422

|       | DOP<br>9 pin D-SUB male (RS-422) | Controller<br>25 pin D-SUB male (RS-422) | hay. |
|-------|----------------------------------|--|------|
| W3.91 | Pin 2 (RXD+)                     | —— Pin3 (TXD+)                           |      |
| Caro. | Pin 1 (RXD-)                     | ——— Pin16 (TXD-)                         |      |
|       | Pin 4 (TXD-) ————                | —— Pin 15 (RXD-)                         |      |
|       | Pin 3 (TXD+) ———                 | ——— Pin 2 (RXD+)                         | War. |

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### Mitsubishi A Series AJ71UC24 Communication Module

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 1.

Controller Station number: 0.

Control area/state area: D0 / D10.



1) This driver use CheckSum.

2) Please set "PLC Mode" switch to position 5.

3) If some OUTPUT Replay (Y) and Special Data Relay (SM) are set to 1, PLC will stop communication and the communication will not recover automatically. At this time, it is needed to reset PLC.

### B. Definition of controller Read/Write address

### Registers

| Decistor Turk          |         | Read/Write Range |         | Data langeth                 |
|------------------------|---------|------------------|---------|------------------------------|
| Register Type          | Format  | Word No.         | Bit No. | - Data length                |
| Input                  | Xn      | n: 0 ~ 7FF       | N/A     | Word (multiple of 16)        |
| Output                 | Yn      | n: 0 ~ 7FF       | N/A     | Word (multiple of 16)        |
| Link Relay             | Bn      | n: 0 ~ FFF       | N/A     | Word (multiple of 16)        |
| Internal Relay         | Mn      | n: 0 ~ 8191      | N/A     | Word (multiple of 16)        |
| Special Internal Relay | SMn     | n: 9000 ~ 9255   | N/A     | Word (9000 + multiple of 16) |
| Latch Relay            | Ln Mari | n: 0 ~ 2047      | N/A     | Word (multiple of 16)        |
| Annunciator            | Fn      | n: 0 ~ 2047      | N/A     | Word (multiple of 16)        |
| Timer Value            | TNn     | n: 0 ~ 999       | N/A     | Word                         |
| Counter Value          | CNn     | n: 0 ~ 999       | N/A     | Word                         |
| Data Register          | Dn      | n: 0 ~ 8191      | N/A     | Word                         |
| Special Data Register  | SDn     | n: 9000 ~ 9255   | N/A     | Word                         |
| File Register          | Rn      | n: 0 ~ 8191      | N/A     | Word                         |
| Link Register          | Wn      | n: 0 ~ FFF       | N/A     | Word                         |

### Contacts

| Contact tune           | Farmet | Read/Write Range |                |  |
|------------------------|--------|------------------|----------------|--|
| Contact type           | Format | Word No.         | Bit No.        |  |
| Input                  | Xn     | N/A              | n: 0 ~ 7FF     |  |
| Output                 | Yn     | N/A              | n: 0 ~ 7FF     |  |
| Link Relay             | Bn     | N/A              | n: 0 ~ FFF     |  |
| Internal Relay         | Mn     | N/A              | n: 0 ~ 8191    |  |
| Special Internal Relay | SMn    | N/A              | n: 9000 ~ 9255 |  |
| Latch Relay            | Ln     | N/A              | n: 0 ~ 2047    |  |
| Annunciator            | Fn     | N/A              | n: 0 ~ 2047    |  |
| Timer Contact          | TSn    | N/A              | n: 0 ~ 999     |  |
| Timer Coil             | TCn    | N/A              | n: 0 ~ 999     |  |
| Counter Contact        | CSn    | N/A              | n: 0 ~ 999     |  |
| Counter Coil           | CCn    | N/A              | n: 0 ~ 999     |  |

# C. Connections (Connector Pinouts)

### **RS-422**

|        | DOP<br>9 pin D-SUB male ( | RS-422)    | Controller<br>Cable Connector (RS | i-422) |
|--------|---------------------------|------------|-----------------------------------|--------|
| 6      |                           | RXD+ (2)   | ——— SDA                           |        |
| "agho" |                           | RXD- (1)   | ——— SDB                           |        |
|        |                           | TXD+ (3) — | RDA                               |        |
|        |                           | TXD- (4) — | RDB                               |        |

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### Mitsubishi A2A/A2AS/A2USH A1SH/A3N/A2ASH (CPU-S1) CPU Port

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 1.

Controller Station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: D0 / D10



- 1) This driver support all Mitsubishi A series CPU port. Mitsubishi A series CPU port can be divided into the following five categories according the used CPU code (used during communication):
  - A0J2...
  - A1N...
  - A1S ( / A2S / A2N ...)
  - A3N ( / A1SH / A2SH ...)
  - A2A ( / A2AS / A2USH ...)

Delta HMI can support A2USH CPU port (same as A2A, A2AS CPU port.) and A1SH CPU port (same as A3N, A2ASH CPU port.).

- 2) L and M: The communication address of L is the same as communication address of M.
- 3) PX and X:

In Mitsubishi A2A PLC, the communication address of PX and X are the same.

In other Mitsubishi A series PLCs, X is from odd address and PX is from even address. That is one place where PX and X differ.

4) X, Y, B, M, SM, L, F, PX ----(Word),

When PLC station number is set to 255, only the value of even addresses will be read/written.

When PLC station number is set to other number (not 255), all value of all addresses will be read/written.

5) R address: R address will be different according to the size of File Register responded from PLC.

For example, A2USH: 1K: 3800 ~ 4000H

2K: 3000 ~ 4000H

3K: 2800 ~ 4000H

4K: 2000 ~ 4000H

5K: 4000 ~ 6800H(cy)

6K: 4000 ~ 7000H(cy)

File Register: PLC must be started correctly or the read / write value will be incorrect.

6) Max. read/write registers & relays for communication once

128 Words (256 bytes) Registers 64 Words (128 bytes) Relays

### B. Definition of controller Read/Write address

# Registers

| Decision Torre         | F-william. | Read/Write Range |         | Data lawath                  |
|------------------------|------------|------------------|---------|------------------------------|
| Register Type          | Format     | Word No.         | Bit No. | - Data length                |
| Input                  | Xn         | n: 0 ~ 7FF       | N/A     | Word (multiple of 16)        |
| Output                 | Yn         | n: 0 ~ 7FF       | N/A     | Word (multiple of 16)        |
| Link Relay             | Bn         | n: 0 ~ FFF       | N/A     | Word (multiple of 16)        |
| Internal Relay         | Mn         | n: 0 ~ 8191      | N/A     | Word (multiple of 16)        |
| Special Internal Relay | SMn        | n: 9000 ~ 9255   | N/A     | Word (9000 + multiple of 16) |
| Latch Relay            | Ln         | n: 0 ~ 8191      | N/A     | Word (multiple of 16)        |
| Annunciator            | Fn         | n: 0 ~ 2047      | N/A     | Word (multiple of 16)        |
| Timer Value            | TNn        | n: 0 ~ 2047      | N/A     | Word                         |
| Counter Value          | CNn        | n: 0 ~ 1023      | N/A     | Word                         |
| Data Register          | Dn 🐠       | n: 0 ~ 8191      | N/A     | Word                         |
| Special Data Register  | SDn        | n: 9000 ~ 9255   | N/A     | Word                         |
| File Register          | Rn         | n: 0 ~ 8191      | N/A     | Word                         |
| Link Register          | Wn         | n: 0 ~ FFF       | N/A     | Word                         |
| Input Card Register    | PXn        | n: 0 ~ 7FF       | N/A     | Word (multiple of 16)        |

### Contacts

| Comboot him o          | Farmet (  | Read/Write Range |                |  |
|------------------------|-----------|------------------|----------------|--|
| Contact type           | Format    | Word No.         | Bit No.        |  |
| Input                  | Xn        | N/A              | n: 0 ~ 7FF     |  |
| Output                 | Yn        | N/A              | n: 0 ~ 7FF     |  |
| Link Relay             | Bn        | N/A              | n: 0 ~ FFF     |  |
| Internal Relay         | Mn        | N/A              | n: 0 ~ 8191    |  |
| Special Internal Relay | SMn       | N/A              | n: 9000 ~ 9255 |  |
| Latch Relay            | Ln xollio | N/A              | n: 0 ~ 2047    |  |
| Annunciator            | Fn John   | N/A              | n: 0 ~ 2047    |  |
| Timer Contact          | TSn       | N/A              | n: 0 ~ 2047    |  |
| Timer Coil             | TCn       | N/A              | n: 0 ~ 2047    |  |
| Counter Contact        | CSn       | N/A              | n: 0 ~ 1023    |  |
| Counter Coil           | CCn       | N/A              | n: 0 ~ 1023    |  |
| Input Card Register    | PXn       | N/A              | n: 0 ~ 7FF     |  |

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### C. Connections (Connector Pinouts)

#### RS-422

| DOP Series<br>9 pin D-SUB male (RS-422) | Controller<br>25 pin D-SUB male(RS-422) | Controller<br>25 pin D-SUB male(RS-422) |
|---|---|---|
| Pin 2 (RXD+)                            | — Pin 3 SDB (TXD+)                      | 2 3 4 5                                 |
| Pin1 (RXD-)                             | Pin 16 SDA (TXD-)                       | 16 18<br>15 17                          |
| Pin 4 (TXD-)                            | — Pin 15 RDA (RXD-)                     | .H41.[0]                                |
| Pin 3 (TXD+)                            | — Pin 2 RDB (RXD+)                      | 7, 7,                                   |
| Pin 7 (RTS+)                            | — Pin 4 CTS+                            | , <sub>6</sub> ,                        |
| Pin 8 (CTS+)                            | — Pin 5 RTS+                            | "OLINEA,                                |
| Pin 6 (RTS-)                            | Pin 17 CTS-                             | 'Spanie                                 |
| Pin 9 (CTS-)                            | — Pin 18 RTS-                           | Waley. When                             |

### Explanation

How to set File Register (R) for Mitsubishi A serial PLC:

- 1. Startup MELSOFT series GX Developer.
- 2. Open "Project Data List" windows. ("View" Option)
- 3. Double click Parameter \ PLC Parameter, and open "Setting" window.
- 4. Set Memory Capacity \ File Register (0 ~8).
- 5. Press "End" button on the bottom and complete the setting.
- 6. Execute OnLine\Write to PLC.
- 7. Enable the "Parameter \ PLC/Network" and "File register \ Main" option (check the check box next to "Parameter \ PLC/Network" and "File register \ Main").
- 8. Press "Execute" button.
- 9. Complete

### Mitsubishi Q Series CPU Port

**DELTA** 

### A. HMI factory settings

Baud rate: 19200, 8, ODD, 1.

Controller Station number: 0. (no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC)

communication is allowed.)

Control area/state area: D-0 / D-10.



1) Please notice that no PLC station number in protocol, therefore, only 1(HMI) to 1 (PLC) communication is allowed.

- If communication baud rate is not correct, HMI will set PLC baud rate as HMI baud rate automatically.
   Therefore, do not worry if the baud rate is set incorrectly.
- 3) This driver support Mitsubishi Q00 and Q00J series with password protection models.

### B. Definition of controller Read/Write address

### Registers

| Decister Type          | Format | Read/Write Range |         | Doto longth           |
|------------------------|--------|------------------|---------|-----------------------|
| Register Type          | Format | Word No.         | Bit No. | - Data length         |
| Input                  | X-n    | n: 0 ~ 1FFF      | N/A     | Word (multiple of 16) |
| Output                 | Y-n    | n: 0 ~ 1FFF      | N/A     | Word (multiple of 16) |
| Direct Input           | DX-n   | n: 0 ~ 1FFF      | N/A     | Word (multiple of 16) |
| Direct Output          | DY-n   | n: 0 ~ 15        | N/A     | Word (multiple of 16) |
| Latch Relay            | L-n    | n: 0 ~ 8191      | N/A     | Word (multiple of 16) |
| Annunciator            | F-n    | n: 0 ~ 2047      | N/A     | Word (multiple of 16) |
| Edge Relay             | V-n    | n: 0 ~ 2047      | N/A     | Word (multiple of 16) |
| Step Relay             | S-n    | n: 0 ~ 8191      | N/A     | Word (multiple of 16) |
| Link Relay             | B-n    | n: 0 ~ 1FFF      | N/A     | Word (multiple of 16) |
| Special Link Relay     | SB-n   | n: 0 ~ 7FF       | N/A     | Word (multiple of 16) |
| Internal Relay         | M-n    | n: 0 ~ 8191      | N/A     | Word (multiple of 16) |
| Special Internal Relay | SM-n   | n: 0 ~ 2047      | N/A     | Word (multiple of 16) |
| Timer Value            | TN-n   | n: 0 ~ 2047      | N/A     | Word                  |
| Retentive Timer Value  | SN-n   | n: 0 ~ 2047      | N/A     | Word                  |
| Counter Value          | CN-n   | n: 0 ~ 1023      | N/A     | Word                  |
| Data Register          | D-n    | n: 0 ~ 12287     | N/A     | Word                  |
| Special Data Register  | SD-n   | n: 0 ~ 2047      | N/A     | Word                  |
| Index Register         | Z-n    | n: 0 ~ 15        | N/A     | Word                  |
| File Register          | R-n    | n: 0 ~ 32767     | N/A     | Word                  |

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| Dogistor Type         | Format | Read/Write   | Range   | - Data length |  |
|-----------------------|--------|--------------|---------|---------------|--|
| Register Type         | Format | Word No.     | Bit No. |               |  |
| File Register         | ZR-n   | n: 0 ~ 32767 | N/A     | Word          |  |
| Link Register         | W-n    | n: 0 ~ 1FFF  | N/A     | Word          |  |
| Special Link Register | SW-n   | n: 0 ~ 7FF   | N/A     | Word          |  |

<sup>&</sup>gt; Xn, Yn, DXn, Bn, SBn, Wn, SWn : n is in hexadecimal.

### **Contacts**

| Contact type            | Format | Read/Write Range |             |  |
|-------------------------|--------|------------------|-------------|--|
| Contact type            | Format | Word No.         | Bit No.     |  |
| Input                   | X-n    | N/A              | n: 0 ~ 1FFF |  |
| Output                  | Y-n    | N/A              | n: 0 ~ 1FFF |  |
| Direct input            | DX-n   | N/A              | n: 0 ~ 1FFF |  |
| Direct output           | DY-n   | N/A              | n: 0 ~ 15   |  |
| Latch Relay             | L-n    | N/A              | n: 0 ~ 8191 |  |
| Annunciator             | F-n    | N/A              | n: 0 ~ 2047 |  |
| Edge Relay              | V-n    | N/A              | n: 0 ~ 2047 |  |
| Step Relay              | S-n    | N/A              | n: 0 ~ 8191 |  |
| Link Relay              | B-n    | N/A              | n: 0 ~ 1FFF |  |
| Special Link Relay      | SB-n   | N/A              | n: 0 ~ 7FF  |  |
| Internal Relay          | M-n    | N/A              | n: 0 ~ 8191 |  |
| Special Internal Relay  | SM-n   | N/A              | n: 0 ~ 2047 |  |
| Timer Contact           | TS-n   | N/A              | n: 0 ~ 2047 |  |
| Timer Coil              | TC-n   | N/A              | n: 0 ~ 2047 |  |
| Retentive timer Contact | SS-n   | N/A              | n: 0 ~ 2047 |  |
| Retentive timer Coil    | SC-n   | N/A              | n: 0 ~ 2047 |  |
| Counter Contact         | CS-n   | N/A              | n: 0 ~ 1023 |  |
| Counter Coil            | CC-n   | N/A n: 0 ~ 1023  |             |  |

<sup>&</sup>gt; Xn, Yn, DXn, Bn, SBn : n is in hexadecimal.

### C. Connections (Connector Pinouts)

# RS-232

| 40g       | DOP<br>9 pin D-SUB male<br>(RS-232) | Controller 6 pin Mini DIN male (RS-232) | Controller<br>6 pin Mini DIN male<br>(RS-232) |
|-----------|-------------------------------------|---|---|
| Carlo.    | RXD (2) ———                         | (2) SD (TXD)                            | $\sqrt{2}$                                    |
|           | TXD (3)                             | (1) RD (RXD)                            |   |
|           | GND (5)                             | (3) GND                                 | 6 - 5   |
| 6         |                                     | (5) DSR (DR)                            | Top View                                      |
| "ALL NO " |                                     | (6) DTR (ER)                            | atther.                                       |
|           | , Nitoria                           | altoti.                                 | altorr  |

B-68 Revision 05/30/2006, EH00

MKS CT150 DELTA

### A. HMI factory settings

Baud rate: 9600, 7, E, 1. (RS-232)

Controller Station number: 11.

Control area/state area: None / None.

### B. Definition of controller Read/Write address

### Registers

| Dogistor Type         | -7/0×       | Read/Write Range                 |         |  |
|-----------------------|-------------|----------------------------------|---------|--|
| Register Type         | Format      | Word No.                         | Bit No. |  |
| Data In Register      | Cn          | n: 0 ~ 25                        | N/A     |  |
| Setup Register        | Cn          | n: 40 ~ 43<br>45 ~ 50<br>90 ~ 97 | N/A     |  |
| Error Count           | Err_CNT     | 0                                | N/A     |  |
| LV Value              | LV_VAL      | 0                                | N/A     |  |
| Printmark Error       | PRTMARK_ERR | 0                                | N/A     |  |
| Batch Counter         | BAT_CNT     | 0                                | N/A     |  |
| Waste Counter         | WASTE_CNT   | 0                                | N/A     |  |
| Line Speed            | LINE_SPD    | 0                                | N/A     |  |
| Actual Cutting Length | ACT_CUT_LEN | 0                                | N/A     |  |

### **Contacts**

| Contact type       | Format      | Read/Write Range |           |  |
|--------------------|-------------|------------------|-----------|--|
| Contact type       | Format      | Word No.         | Bit No.   |  |
| Maga, Maga,        | Cn.b        | n: 0 ~ 50        | B: 0 ~ 15 |  |
| Reset              | RST         | N/A              | 0         |  |
| Jog Trim+          | JOGTRIM_INC | N/A              | 0         |  |
| Jog Trim-          | JOGTRIM_DEC | N/A              | 0         |  |
| Read PI            | READ_PI     | N/A              | 0         |  |
| Activate Data      | ACT_DATA    | N/A              | 0         |  |
| Store Eeprom       | STR_EEPROM  | N/A              | 0 0       |  |
| Start/Stop         | START_STOP  | N/A              | 0         |  |
| Reset Mark Counter | RSTMARK_CNT | N/A              | 0         |  |

### C. Connections (Connector Pinouts)

# RS-232

| - 17                      | -74                       | - 174                     |
|---------------------------|---------------------------|---------------------------|
| DOP                       | Controller                | Controller                |
| 9 pin D-SUB male (RS-232) | 9 pin D-SUB male (RS-232) | 9 pin D-SUB male (RS-232) |
| RXD (2) —                 | (3) TXD                   | Pin1.                     |
| TXD (3)                   | (2) RXD                   | 8                         |
| GND (5)                   | —— (5) SG                 | and and                   |
| 4.                        |                           | Top View                  |
| 3                         |                           | 8                         |

B-70 Revision 05/30/2006, EH00

### Modbus(Master) --- 984 RTU / ASCII mode

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1. (ASCII)

9600, 8, EVEN, 1. (RTU)

Controller station number: 0.

Control area/state area: W40100 / W40200.

### B. Definition of controller Read/Write address

### Registers

| Register Type    | Format | Read/Write       | Data length |             |
|------------------|--------|------------------|-------------|-------------|
| Register Type    | Format | Word No.         | Bit No.     | Data length |
| Output Registers | Wn     | n: 40001 ~ 50000 | N/A         | Word        |
| Input Registers  | Wn     | n: 30001 ~ 40000 | N/A         | Word        |

<sup>&</sup>gt; Input Registers is "read only".

### Contacts

| Contact type     | Format | R               | Read/Write Range |  |
|------------------|--------|-----------------|------------------|--|
| Contact type     | Format | Format Word No. | Bit No.          |  |
| Discrete Outputs | Bn     | N/A             | n: 1 ~ 10000     |  |
| Discrete Inputs  | Bn     | N/A             | n: 10001 ~ 20000 |  |

Discrete Inputs is "read only".

### C. Connections (Connector Pinouts)

Please refer to B-1 Pin Definition of Serial Communication for detail.

### Modbus Hexadecimal Address (Master) --- RTU / ASCII mode

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1. (ASCII)

9600, 8, EVEN, 1. (RTU)

Controller station number: 0.

Control area/state area: RW-0 / RW-10.



1) The valid communication address starts from 0 and the format is hexadecimal system. So the settable range are 0 to 65535 (i.e. 0 ~ FFFF in hexadecimal format).

2) The difference than "Standard Modbus" communication: (Protocol is the same)

The usage of setting communication address is different.

The range of communication address is different

The "Standard Modbus" communication is in decimal format. The start addresses are 40001, 30001, 1, 10001 and contains 10000 addresses respectively (40001 ~ 50000, 30001 ~ 40000, 1 ~ 10000, 10001 ~ 20000).

The Modbus Hexadecimal Address (Master) is in hexadecimal format. The starting addresses are all from 0 and there is 65536 addressing space (from 0 to FFFF) in each PDU (protocol data unit).

#### B. Definition of controller Read/Write address

### Registers

| Pogistor Typo    | Format | Read/Write Range |         | Data longth   |
|------------------|--------|------------------|---------|---------------|
| Register Type    | Format | Word No.         | Bit No. | - Data length |
| Output Registers | RW-n   | n: 0 ~ FFFF      | N/A     | Word          |
| Input Registers  | R-n    | n: 0 ~ FFFF      | N/A     | Word          |

RW-: can Read and Write.

Converting the address to decimal format and plus 40001, it will immediately become the corresponding "Standard Modbus" communication address.

R- (Input Registers) : Read only.

Converting the address to decimal format and plus 30001, it will immediately become the corresponding "Standard Modbus" communication address.

#### **Contacts**

B-72

| Contact type     | Format | Read/Write Range |             |  |
|------------------|--------|------------------|-------------|--|
|                  | Format | Word No.         | Bit No.     |  |
| Discrete Outputs | RWB-n  | N/A              | n: 0 ~ FFFF |  |
| Discrete Inputs  | RB-n   | N/A              | n: 0 ~ FFFF |  |

RWB- : can Read and Write.

Converting the address to decimal format and plus 1, it will immediately become the corresponding "Standard Modbus" communication address.

RB- (Discrete Inputs) : Read only.

Converting the address to decimal format and plus 10001, it will immediately become the corresponding "Standard Modbus" communication address.



1) Only first 10000 addresses can be converted to "Standard Modbus" communication address.

### Modbus nW (Master) --- RTU / ASCII mode

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1. (ASCII)

9600, 8, EVEN, 1. (RTU)

Controller station number: 1.

Control area/state area: W40100 / W40200.



This driver can read consecutive communication address on the screen via one Modbus command. For example, if there are 6 devices on the screen, and read the data of the addresses W40140, W40141, W40142, W40145, W40146, W40150, it will read three times. It will read W40140 3 Words at the first time, read W40145 2 Words at the second time and read W40150 1 Word at the third time.

2) Ensure to check the check box next to "Optimize" (Optimization for reading) selection in "Communication" tab in the "Configuration" dialog box in "Options" menu (Options → Configuration → Communication). If "Optimize" selection is unchecked, do not select "Data Length Limit".

#### B. Definition of controller Read/Write address

#### Registers

| Pagintar Type    | Format | Read/Write Range |         | Data longth |  |
|------------------|--------|------------------|---------|-------------|--|
| Register Type    | Format | Word No.         | Bit No. | Data length |  |
| Output Registers | Wn     | n: 40001 ~ 50000 | N/A     | Word        |  |
| Input Registers  | Wn     | n: 30001 ~ 40000 | N/A     | Word        |  |

Input Registers is "read only".

### **Contacts**

| Contact type     | Format |          | Read/Write Range |  |
|------------------|--------|----------|------------------|--|
| Contact type     | Format | Word No. | Bit No.          |  |
| Discrete Outputs | Bn     | N/A      | n: 1 ~ 10000     |  |
| Discrete Inputs  | Bn     | N/A      | n: 10001 ~ 20000 |  |

Discrete Inputs is "read only".

## C. Connections (Connector Pinouts)

Please refer to B-1 Pin Definition of Serial Communication for detail.

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### Modbus(Slave) --- 984 RTU / ASCII mode

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 1. (ASCII)

9600, 8, EVEN, 1. (RTU)

Controller station number: 0. (Station number is not used in the protocol.)

Control area/state area: W40100 / 40200.



1) HMI station number is Slave station number. (default setting is 0)

2) The relation between Modbus address and HMI internal registers.

| Modbus address  |                           | Data                 | a definition in HMI                  |
|-----------------|---------------------------|----------------------|--------------------------------------|
| W40001 ~ W41024 | $\rightarrow_{i_{I_{A}}}$ | \$0 ~ \$1023         | Internal register                    |
| W42001 ~ W43024 | $\leftrightarrow$         | \$M0 ~ \$M1023       | Non-volatile internal register       |
| W44001          | $\rightarrow$             | RCPNO                | Receipt number register              |
| W45001 ~        | $\rightarrow$             | RCP0 ~ RCPn          | Receipt register                     |
| B00001 ~ B01024 | $\rightarrow$             | \$2000.0 ~ \$2063.15 | Internal register (Bit)              |
| B01025 ~ B02048 | $\rightarrow$             | \$M200.0 ~ \$M263.15 | Non-volatile internal register (Bit) |

### B. Definition of controller Read/Write address

### Registers

| Register Type    | Format | Read/Write       | Data langth |               |  |
|------------------|--------|------------------|-------------|---------------|--|
| Register Type    | Format | Word No. Bit No. |             | - Data length |  |
| Output Registers | Wn     | n: 40001 ~ 50000 | N/A         | Word          |  |

### Contacts

| Contact type I   | Format | , A <sup>LO</sup> F | Read/Write Range | S |
|------------------|--------|---------------------|------------------|---|
| Contact type     | Tomat  | Word No.            | Bit No.          | n |
| Discrete Outputs | Bn     | N/A                 | n: 1 ~ 2048      |   |

### C. Connections (Connector Pinouts)

Please refer to B-1 Pin Definition of Serial Communication for detail.

## CrossReference Table (Inter Memoryof Delta HMI and Modbus Reference Address)

| , KO), ,                     |   | 10                            | . 10   |
|------------------------------|---|-------------------------------|--|
| Inter Memory<br>of Delta HMI | Modbus Reference<br>Address                   | Supporting Modbus<br>Function | Address of Function  |
| \$0                          | 40001   | 03H, 06H, 10H                 | 0000H  |
| \$1                          | 40002   | 03H, 06H, 10H                 | 0001H  |
|                              | , idantomain                                  | , toponitotion                | (dbaltemat)  |
| \$1023                       | 41024   | 03H, 06H, 10H                 | 03FFH  |
| \$M0                         | 42001   | 03H, 06H, 10H                 | 07D0H  |
| \$M1                         | 42002   | 03H, 06H, 10H                 | 07D1H  |
| Whitelip gr.                 | Why I I Day                                   | Mahi iligas                   | And The State of t |
| \$M1023                      | 43024   | 03H, 06H, 10H                 | 0BCFH  |
| 710 y                        | 9 <sub>16.1</sub> "9 <sub>16.1</sub>          | *A/2*                         | - 1910 M   |
| RCPNO                        | 44001   | 03H, 06H                      | 0FA0H  |
| , (d)                        | . 1800  | , (3) <sup>6</sup>            | B  |
| RCP0                         | 45001   | 03H, 06H, 10H                 | 1388H  |
| RCP1                         | 45002   | 03H, 06H, 10H                 | 1389H  |
| Aro is                       | No. 13  | "HOUGHANGE                    | 16U9AK0 S.   |
| 7/1/2/20                     | 779   | 77.60                         | 11/1/20  |
| \$2000.0                     | 00001   | 01H, 05H, 0FH                 | 0000H  |
| \$2000.1                     | 00002   | 01H, 05H, 0FH                 | 0001H  |
| NACO.                        | Hro.  | HOUSTHON,                     | Altomatyka.  |
| \$2000.15                    | 00016   | 01H, 05H, 0FH                 | 000FH  |
| \$2001.0                     | 00017   | 01H, 05H, 0FH                 | 0010H  |
| 340 ty                       | ka di   | "Official to it               | Majaka di  |
| \$2063.0                     | 01009   | 01H, 05H, 0FH                 | 03F0H  |
| Waley Island                 | Man Man San San San San San San San San San S | Market 1                      | A. A.  |
| \$2063.15                    | 01024   | 01H, 05H, 0FH                 | 03FFH  |
| ~40 <sup>CC</sup>            |   | , NOVI                        | NOU.   |
| \$M200.0                     | 01025   | 01H, 05H, 0FH                 | 0400H  |
|                              |   |                               |  |

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| Inter Memory<br>of Delta HMI | Modbus Reference<br>Address | Supporting Modbus<br>Function | Address of Function  |
|------------------------------|-----------------------------|-------------------------------|--|
| \$M200.1                     | 01026                       | 01H, 05H, 0FH                 | 0401H  |
| n <sup>n</sup>               |                             | 74 <sup>1</sup> 2             |  |
| \$M200.15                    | 01040                       | 01H, 05H, 0FH                 | 040FH  |
| \$M201.0                     | 01041                       | 01H, 05H, 0FH                 | 0410H  |
| May 1. S                     | Market S.                   | Man 1                         | The state of the s |
| \$M263.0                     | 02033                       | 01H, 05H, 0FH                 | 07F0H  |
| unithipalicus.               | whidoatton.                 | ww.idbaltoric                 | W. J. Dallone  |
| \$M263.15                    | 02048                       | 01H, 05H, 0FH                 | 07FFH  |

### For example:

1. Read internal memory **\$100** of Delta HMI (HMI station number: 1)

: 01 **03 00 64** 00 01 97 CR LF

Write the value of **1000** into internal memory **\$100** of Delta HMI (HMI station number: 1)

: 01 06 00 64 03 E8 AA CR LF

2. Read internal memory \$\frac{\\$M100}{}\] of Delta HMI (HMI station number: 1)

: 01 03 08 34 00 01 BF CR LF

Write the value of <u>888</u> into internal memory <u>\$M100</u> of Delta HMI (HMI station number: 1)

: 01 06 08 34 03 78 42 CR LF

3. Read internal memory **\$2000.15** of Delta HMI (HMI station number: 1)

: 01 01 00 0F 00 01 EE CR LF

Set internal memory \$2000.15 of Delta HMI to ON (HMI station number: 1)

: 01 **05 <u>00 0F</u>** FF <u>00</u> EC CR LF

Set internal memory **\$2000.15** of Delta HMI to **OFF** (HMI station number: 1)

: 01 **05 <u>00 0F</u>** <u>00 00</u> EB CR LF

4. Read internal memory **\$M201.0** of Delta HMI (HMI station number: 1)

: 01 **01 <u>04 10</u>** 00 01 E9 CR LF

Set internal memory **\$M201.0** of Delta HMI to **ON** (HMI station number: 1)

: 01 **05 <u>04 10</u>** FF 00 E7 CR LF

Set internal memory \$\frac{\\$M201.0}{\} of Delta HMI to \$\frac{\}{\}OFF (HMI station number: 1)

: 01 **05 04 10** 00 00 E6 CR LF

### Modicon TSX Micro (Uni-Telway)

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 1. Controller station number: 2.

Control area/state area: %MW0 / %MW10.



1) HMI station needs to be adjusted to  $1 \sim 8$ .

2) PLC station and HMI station can be the same.

3) The internal memory and relative parameters in PLC should be set properly first. Otherwise, it cannot communicate except %S.

#### B. Definition of controller Read/Write address

### Registers

| Register Type         | Format | Word No.     | Bit No. | Data Size |
|-----------------------|--------|--------------|---------|-----------|
| WORD_DEVICE_ Internal | %MWn   | n: 0 ~ 65534 | N/A     | Word      |
| WORD_DEVICE_ System   | %SWn   | n: 0 ~ 127   | N/A     | Word      |
| WORD_DEVICE_ Input    | %KWn   | n: 0 ~ 65534 | N/A     | Word      |

%KWn is "read only".

### Contacts

| Contact type          | Format | Word No.    | Bit No.     |
|-----------------------|--------|-------------|-------------|
| BIT_DEVICE_ Internal  | %Mn:b  | n:0 ~ 65534 | b:0 ~ 15    |
| BIT_DEVICE_ System    | %Sn    | - 6.        | n:0 ~ 127   |
| BIT_DEVICE_ Internal1 | %Mn    | - 1000      | n:0 ~ 65534 |

- > %Mn: b is Bit address that corresponds to WORD\_DEVICE\_Internal (%MWn).
- > %Mn is PLC internal relay address.
- The read/write range of WORD\_DEVICE\_ Internal / BIT\_DEVICE\_ Internal depends on PLC used memory.

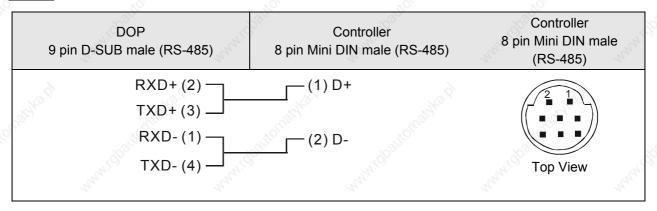
### C. Connections (Connector Pinouts)

### RS-232

It needs to use specific cable of Modicon Uni-Telway. (RS-232) --- TSX PCX 1031

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## RS-485



Modicon TWIDO DELTA

Its function is the same as **Modbus (Master) --- 984 RTU** on page B-71.

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#### **NIKKI DENSO NCS-FI/FS Series**

<u>DELTA</u>

### A. HMI factory settings

Baud rate: 9600, 8, ODD, 2.

Controller station number: 1. (valid station number: 0 ~ 99)

Control area/state area: None.



1) The valid station number is in the range of 0 to 99. If the station number is out of this range, it will be subtracted 100 from itself automatically until the station number is in the valid range.

#### B. Definition of controller Read/Write address

#### Registers

| Register Type          | Format | Word No.       | Bit No. | Data Size   |
|------------------------|--------|----------------|---------|-------------|
| WORD_DEVICE_ RRegister | RW-n   | n: 0 ~ 3999    | N/A     | Word        |
| WORD_DEVICE_ RRegister | RW-n   | n: 8000 ~ 9999 | N/A     | Word        |
| WORD_DEVICE_ DStatus   | XW-n   | n: 0 ~ 8       | N/A     | Word        |
| WORD_DEVICE_ DStatus   | DW-n   | n: 0 ~ 129     | N/A     | Word        |
| WORD_DEVICE_ RRegister | RD-n   | n: 0-3999      | N/A     | Double Word |
| WORD_DEVICE_ RRegister | RD-n   | n: 8000-9999   | N/A     | Double Word |
| WORD_DEVICE_ DStatus   | DD-n   | n: 0-129       | N/A     | Double Word |



In order to let DOP series HMI be compatible with this controller, DOP series HMI provides various types of data. Please refer to the following description:

 RW-n, RD-n, RB-nb all have corresponding relation (just the data format is different). They all refer to the same address n.

DW-n, DD-n both have corresponding relation (just the data format is different). They all refer to the same address n.

XW-n, XB-nb both have corresponding relation (just the data format is different). They all refer to the same address n.

(In the above format name, the second alphabet represents the data format, W represents Word, D represents Double Word and B represents Bit)

2) The data size of RW-n, DW-n is defined as Word in DOP series HMI and each data address is regarded as an individual Word address. The data order use "Little Endian" architecture which means that the low word of the number is stored in memory at the lowest address, and the high word at the highest address. (such as Intel processors (those used in PC's) use "Little Endian" byte order)

For example, if set the starting address as RW900 and the data size is Double Word, the read/write value will be a Double Word which contains RW900(low word) and RW901(high word).

In actual application case, if the users set the data size of RW-n, DW-n as Word, there is no data order reverse problem. However, if the users set the data size of RW-n, DW-n as Double Word, as this controller use "Big Endian" architecture which means that the high word of the number is stored in memory at the lowest address, and the low word at the highest address (such as Motorola processors (those used in Mac's) use "Big Endian" byte order), a data order reverse problem will occur.

3) The data size of RD-n, DD-n is defined as Double Word in DOP series HMI and every two data addresses is regarded as an individual Double Word address. The data order use "Big Endian" architecture (see the meaning above).

For example, if set the starting address as RD900 and the data size is Double Word, the read/write value will be a Double Word which contains RW900(high word) and RW901(low word).

In actual application case, if the users set the data size of RD-n, DD-n as Double Word, there is no data order reverse problem and the data display on HMI and the controller will be the same. However, if the users set the data size of RD-n, DD-n as Word, only the low word will display and the high word will be set to 0 automatically. For example, if set the starting address as RD900 and the data size is Word, only the value of RD901(low word) will display. If the write value is 100 at this time, DOP series HMI will set the value of RD901(high word) to 0 and write the value 100 into RD901(low word).

4) X-nb and DW-n both have corresponding relation ------ Read DW-n, Write X-nb

| DW-0   |                  | X-0b, (b=0~F) |
|--------|------------------|---------------|
| DW-1   | <del>_</del> @?` | X-1b, (b=0~F) |
| DW-2   | 100.             | X-2b, (b=0~F) |
| DW-4   | 0, —             | X-3b, (b=0~F) |
| DW-104 | _                | X-4b, (b=0~F) |
| DW-105 | _                | X-5b, (b=0~F) |
| DW-106 | _                | X-6b, (b=0~F) |
| DW-107 | - 3              | X-7b, (b=0~F) |
| DW-108 | - The            | X-8b, (b=0~F) |

5) DW-n, DD-n are "read only". If the users write any value into them, HMI will show error message "Command Can Not be Executed...." on the screen.

#### Contacts

| Contact type           | Format | Word No.       | <u>Bit No.</u> |
|------------------------|--------|----------------|----------------|
| BIT_DEVICE_ RRegister  | RB-nb  | n: 0 ~ 3999    | b:0 ~ F        |
| BIT_DEVICE_ RRegister  | RB-nb  | n: 8000 ~ 9999 | b:0 ~ F        |
| BIT_DEVICE_ BitControl | XB-nb  | n:0 ~ 8        | b:0 ~ F        |

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## C. Connections (Connector Pinouts)

## RS-422

| DOP  | Controller                   | Controller                                    |
|--|------------------------------|---|
| 9 pin D-SUB male (RS-422)  | 14 pin special male (RS-422) | 14 pin special male (RS-422)                  |
| RXD- (1)   | (9) TXD (B)                  | Cable (PLC side (J1), male).                  |
| RXD+ (2) —   | (2) TXD (A)                  | <u> </u>                                      |
| TXD+ (3) ———   | (4) RXD (A)                  | $\begin{bmatrix} 7 & 5 & 3 & 1 \end{bmatrix}$ |
| TXD- (4) ———   | (11) RXD (B)                 | 13 11 9                                       |
| GND (5)  | (14) GND                     | 14 12 10 18                                   |
| Rails Lough  |                              | Top View                                      |
| The state of the s | 'Que                         | "Apa <sub>ne</sub> "                          |

Omron C Series PLC DELTA

## A. HMI factory settings

Baud rate: 9600, 7, EVEN, 2. Controller station number: 0.

Control area/state area: DM0 / DM10.

### B. Definition of controller Read/Write address

### Registers

| Pagistor Type | Format  | Read/Write F | Data langth |             |
|---------------|---------|--------------|-------------|-------------|
| Register Type | Format  | Word No.     | Bit No.     | Data length |
| IR area       | IRn (N) | n: 0 ~ 511   | N/A         | Word        |
| HR area       | HRn     | n: 0 ~ 99    | N/A         | Word        |
| AR area       | ARn     | n: 0 ~ 27    | N/A         | Word        |
| LR area       | LRn     | n: 0 ~ 63    | N/A         | Word        |
| TC area       | TCn     | n: 0 ~ 511   | N/A         | Word        |
| DM area       | DMn     | n: 0 ~ 6655  | N/A         | Word        |

### Contacts

| Contact time | Format | Read/Write Range |            |  |
|--------------|--------|------------------|------------|--|
| Contact type | Format | Word No.         | Bit No.    |  |
| IR area      | IRnb   | n: 0 ~ 511       | b: 00 ~ 15 |  |
| HR area      | HRnb   | n: 0 ~ 99        | b: 00 ~ 15 |  |
| AR area      | ARnb   | n: 0 ~ 27        | b: 00 ~ 15 |  |
| LR area      | LRnb   | n: 0 ~ 63        | b: 00 ~ 15 |  |
| TC area      | TCn    | N/A              | n: 0 ~ 511 |  |

## C. Connections (Connector Pinouts)

### **RS-232**

## 1:1 Host Link via RS-232C converter

| DOP Series                | Controller                | Controller                              |
|---------------------------|---------------------------|---|
| 9 pin D-SUB male (RS-232) | 9 pin D-SUB male (RS-232) | 9 pin D-SUB male (RS-232)               |
| RXD (2)                   | (2) TXD                   | aballa                                  |
| TXD (3)                   | (3) RXD                   | Pin1e                                   |
| GND (5)——                 | ——(9) SG                  | ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) |
|                           | (4) RS                    |   |
|                           | (5) CS                    | Top View                                |

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### **Omron CJ1/CS1 Series PLC**

**DELTA** 

### A. HMI factory settings

Baud rate: 9600, 7, EVEN, 2. (RS-232)

Controller station number: 0.

Control area/state area: D0 / D10.



The meaning of Communication Error Message:

### 1) Word Device:

The <u>Device Name</u> and <u>Address Value</u> will display. For example, if using CIO, H, A, D, E, T, C, W, EM, IR DR, TK, it will show CIOn, Hn, An, Dn, Em.n, Tn, Cn, Wn, EMn, IRn, DRn, TKn respectively. "n" is the <u>Address Value</u>.

#### 2) Bit Device:

The <u>Device Name</u> and <u>Word Address Value</u> will display, but the <u>Bit Address Value</u> will not. For example, if using CIO, H, A, D, E, T, C, W, EM, IR, DR, TK, it will show CIOBn, HBn, ABn, DBn, EBm.n, TBn, CBn, WBn, EMBn, IRBn, DRBn, TKBn respectively. "n" is the <u>Word Address Value</u>.

#### B. Definition of controller Read/Write address

### Registers

| Decistor Time        |        | Read/Write F                         | Range   | Data law with |
|----------------------|--------|--------------------------------------|---------|---------------|
| Register Type F      | Format | Word No.                             | Bit No. | - Data length |
| CIO area             | CIOn   | n: 0 ~ 9999                          | N/A     | Word          |
| Hold area            | Hn     | n: 0 ~ 999                           | N/A     | Word          |
| Auxiliary area       | An     | n: 0 ~ 999                           | N/A     | Word          |
| DM area              | Dn     | n: 0 ~ 65535                         | N/A     | Word          |
| EM area              | Em.n   | M: 0 ~ 12 (bank no.)<br>n: 0 ~ 65535 | N/A     | Word          |
| Timer PVs            | Tn     | n: 0 ~ 9999                          | N/A     | Word          |
| Counter PVs          | Cn     | n: 0 ~ 9999                          | N/A     | Word          |
| Work area            | Wn     | n: 0 ~ 999                           | N/A     | Word          |
| EM Current Bank area | EMn    | n: 0 ~ 65535                         | N/A     | Word          |
| Index Register       | IRn    | n: 0 ~ 99                            | N/A     | Double Word   |
| DR area              | DRn    | n: 0 ~ 99                            | N/A     | Word          |
| TK area              | TKn    | n: 0 ~ 1022 (Even<br>No.)            | N/A     | Byte          |

CJ1M Models: An: A0-A477 is "read only".

### **Contacts**

| Contact              | F-40-4  | Rea                                  | ad/Write Range |
|----------------------|---------|--------------------------------------|----------------|
| Contact type         | Format  | Word No.                             | Bit No.        |
| CIO area             | CIOBnbb | n: 0 ~ 9999                          | bb: 00 ~ 15    |
| Hold area            | HBnbb   | n: 0 ~ 999                           | bb: 00 ~ 15    |
| Auxiliary area       | ABnbb   | n: 0 ~ 999                           | bb: 00 ~ 15    |
| DM area              | DBnbb   | n: 0 ~ 65535                         | bb: 00 ~ 15    |
| EM area              | EBm.nbb | n: 0 ~ 65535<br>m: 0 ~ 12 (bank no.) | bb: 00 ~ 15    |
| Timer area           | TBn     | N/A                                  | n: 0 ~ 9999    |
| Counter area         | CBn     | N/A                                  | n: 0 ~ 9999    |
| Work area            | WBnbb   | n: 0 ~ 999                           | bb: 00 ~ 15    |
| EM Current Bank area | EMBnbb  | n: 0 ~ 65535                         | bb: 00 ~ 15    |
| Index Register       | IRBnbb  | n: 0 ~ 99                            | bb: 00 ~ 31    |
| DR area              | DRBnbb  | n: 0 ~ 99                            | bb: 00 ~ 15    |
| TK area              | TKBnbb  | n: 0 ~ 1022 (Even<br>No.)            | bb: 00 ~ 15    |



- 1) The following address cannot be written:
  - IRn and DRn: It is not valid if the users write them. HMI will not show any error message if the write operation is done.
  - An and Abnbb: Some range of An and Abnbb (Auxiliary area) is "read only".
  - TKn / TKBnbb / TBn / CBn / EMBnbb / IRBnbb / DRBnbb: Writing these address is not allowed. If
    the write operation is done, the error will occur and display the error message "Command Can Not
    be Executed..." on the screen of HMI.
- 2) The unit of IR address is "Double Word".
- 3) The unit of TK address is "Byte" and it should be even number.

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## C. Connections (Connector Pinouts)

## RS-232

## CJ1M CPU module

| DOP Series<br>9 pin D-SUB male (RS-232) | Controller<br>9 pin D-SUB male (RS-232) | Controller 9 pin D-SUB male (RS-232) |
|---|---|--------------------------------------|
| RXD (2)——                               | (2) TXD                                 | 1/0/1/O.                             |
| TXD (3)                                 | (3) RXD                                 | Pin1∉                                |
| GND (5)                                 | ——(9) SG                                | O ZZZZA                              |
| 10.Q                                    | (4) RS                                  |                                      |
| Sight Wildle                            | (5) CS                                  | Top View                             |

Siemens S7 200 PLC DELTA

## A. HMI factory settings

Baud rate: 9600, 8, EVEN, 1. Controller station number: 2.

Control area/state area: VW0 / VW10.

### B. Definition of controller Read/Write address

### Register

| Register Type      | Format   | Read/Write Range |         |
|--------------------|----------|------------------|---------|
|                    | Politiat | Word No.         | Bit No. |
| Timer              | Tn       | n: 0 ~ 255       | N/A     |
| Analog Input Word  | AlWn     | n: 0 ~ 30        | N/A     |
| Counter            | Cn       | n: 0 ~ 255       | N/A     |
| Analog Output Word | AQWn     | n: 0 ~ 30        | N/A     |
| Input Image        | IWn      | n: 0 ~ 14        | N/A     |
| Input Image        | IDn      | n: 0 ~ 12        | N/A     |
| Output Image       | QWn      | n: 0 ~ 14        | N/A     |
| Output Image       | QDn      | n: 0 ~ 12        | N/A     |
| Special Bits       | SMWn     | n: 0 ~ 199       | N/A     |
| Special Bits       | SMDn     | n: 0 ~ 197       | N/A     |
| Internal Bits      | MWn      | n: 0 ~ 98        | N/A     |
| Internal Bits      | MDn      | n: 0 ~ 96        | N/A     |
| Data Area          | VWn      | n: 0 ~ 9998      | N/A     |
|                    | (DBWn)   | (n: 0 ~ 9998)    |         |
| Data Area          | VDn      | n: 0 ~ 9996      | N/A     |
| Special S          | SWn      | n: 0 ~ 99        | N/A     |
| Special S          | SDn      | n: 0 ~ 97        | N/A     |

### Contacts

| Contact time  | Format  | Read/Write Range |            |
|---------------|---------|------------------|------------|
| Contact type  | Format  | Word No.         | Bit No.    |
| Timer Bit     | Tn NOTT | N/A              | n: 0 ~ 255 |
| Counter Bit   | Cn      | N/A              | n: 0 ~ 255 |
| Input Image   | ln.b    | n: 0 ~ 15        | b: 0 ~ 7   |
| Output Image  | Qn.b    | n: 0 ~ 15        | b: 0 ~ 7   |
| Special Bit   | SMn.b   | n: 0 ~ 200       | b: 0 ~ 7   |
| Internal Bit  | Mn.b    | n: 0 ~ 99        | b: 0 ~ 7   |
| Data Area Bit | Vn.b    | n: 0 ~ 9999      | b: 0 ~ 7   |

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| Contact turns | Format | Read/Write Range |          |
|---------------|--------|------------------|----------|
| Contact type  | Format | Word No. Bit No. |          |
| Special S Bit | Sn.b   | n: 0 ~ 100       | b: 0 ~ 7 |

## C. Connections (Connector Pinouts)

## **RS-232**

## via RS-232 / PPI Multi-Master Cable (Connecting DOP series HMI and PPI cable)

| DOP Series<br>9 pin D-SUB male<br>(RS-232) | Controller<br>9 pin D-SUB male<br>(RS-232) | Controller 9 pin D-SUB male (RS-232) |
|--|--|--------------------------------------|
| RXD (2)                                    | ——(2) RD                                   | Pin1.                                |
| TXD (3)———                                 | (3) TD                                     |                                      |
| GND (5)———                                 | (5) GND                                    |                                      |
|  |  | Top View                             |

### RS-485

## via PLC Program Port (RS-485)

| 2        | DOP Series<br>9 pin D-SUB male<br>(RS-485) | Controller 9 pin D-SUB male (RS-485) | Controller 9 pin D-SUB male (RS-485) |
|----------|--|--------------------------------------|--------------------------------------|
| Cighton. | RXD+ (2)                                   | (3)TXD/RXD+                          | Pin1.                                |
|          | TXD+ (3)—<br>RXD- (1)—                     | (8)TXD/RXD-                          | S SSSS S                             |
| "ithe it | TXD- (4) — GND (5)                         | ——(5)SG                              | Top View                             |

### Siemens S7 300 PLC (with PC Adapter)

**DELTA** 

#### A. HMI factory settings

Baud rate: 38400, 8, ODD, 1. (RS-232).

Controller station number: 2.

(As the communicate is via PC adapter, PLC station will not be used, therefore, only 1(HMI) to 1 (PLC) communication is allowed.)

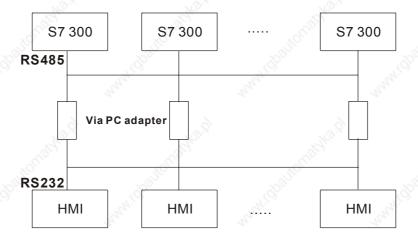
Control area/state area: DBW0 / DBW20.



1) PLC DB memory (DBm.DBWn, DBm.DBDn, DBm.DBXn.b) must be open so that HMI can read/write.

### 2) The reason for using PC adapter:

When communicating via PC adapter, it is profibus with <u>187.5 K</u> baudrate at PLC side. Therefore, the network structure is rapider and steadier.



When HMI communicates with PLC without PC adapter, the protocol will be complicated and it needs to lower PLC baud rate to 19200 due to HMI baudrate limit. Therefore, the efficiency of the network structure of S7 300 will be badly.

#### 3) Baud rate setting

- It needs to set PLC baud rate to 187.5 K and higher. (it cannot use 19.2K)
- It needs to set baud rate of two sides when using PC Adapter
  - i) "PLC side": It needs to set same baudrate as PLC side (as previous item it needs to set PLC baud rate to 187.5 K and higher and cannot use 19.2K)
  - ii) "HMI side": it can select 38.4K or 19.2K by using switch on the cable. (only these two choices)
  - iii) HMI baud rate: it needs to set the baud rate of HMI side of PC adapter as previous item to 38.4K or 19.2K) (protocol setting is still 8, ODD, 1)
  - iv) There is no setting for PLC station and HMI station, so it won't have the communication problem with error station setting.

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### v) PC Adapter:

The power LED will be lit once connect to PLC. (power supply of PC adapter is from PLC) If communication is OK, the communication LED will be blink. Otherwise, it will be dark.

### B. Definition of controller Read/Write address

### Register

| D. W. C.         | 140 mm     | Read/Write Range |            |
|------------------|------------|------------------|------------|
| Register Type    | Format     | Word No.         | Bit No.    |
| Input Image      | IWn        | n: 0 ~ 65534     | N/A        |
| Input Image      | IDn        | n: 0 ~ 65532     | N/A        |
| Output Image     | QWn        | n: 0 ~ 65534     | N/A        |
| Output Image     | QDn        | n: 0 ~ 65532     | N/A        |
| Internal Bits    | MWn n: 0 ~ |                  | N/A        |
| Internal Bits    | MDn        | n: 0 ~ 65532     | N/A        |
| Data Area        | DBm.DBWn   | n: 0 ~ 65534     | m: 1 ~ 255 |
|                  | DBm.DBDn   | n: 0 ~ 65532     | m: 1 ~ 255 |
| Data Area (DB10) | DBWn       | n: 0 ~ 65534     | N/A        |
|                  | DBDn       | n: 0 ~ 65532     | N/A        |
|                  | VWn        | n: 0 ~ 65534     | N/A        |
|                  | VDn        | n: 0 ~ 65532     | N/A        |
| Timer            | Tn         | n: 0-65535       | N/A        |
| Counter          | Cn         | n: 0-65535       | N/A        |



1) The valid digit number of the value for the T(Timer) and C(Counter) is 3-digit only. Therefore, please enter a 3-digit number. If entering a number that exceeds 3 digits, only the first 3 digits are valid (decimal format). The other digits of the value for the T(Timer) will be replaced as 0 and the other digits of the value for the C(Counter) will be abandoned. For example, assume that the users enter the value "12345", the actual write value for the T(Timer) will be "12300" and the actual write value for the C(Counter) will be "123".

#### **Contacts**

| Contact time  | Format     | Read/Write Range |             |  |
|---------------|------------|------------------|-------------|--|
| Contact type  | Format     | Word No.         | Bit No.     |  |
| Input Image   | ln.b       | n: 0 ~ 65535     | b: 0 ~ 7    |  |
| Output Image  | Qn.b       | n: 0 ~ 65535     | b: 0 ~ 7    |  |
| Internal Bit  | Mn.b       | n: 0 ~ 65535     | b: 0 ~ 7    |  |
| Data Area Bit | DBm.DBXn.b | n: 0 ~ 65535     | b: 0 ~ 7    |  |
|               | "OLLIO"    | "OLIGO.          | m = 1 ~ 255 |  |

| Contact type          | Facility. | Read/Write Range |          |
|-----------------------|-----------|------------------|----------|
|                       | Format    | Word No.         | Bit No.  |
| Data Area Bit (10 DB) | DBXn.b    | n: 0 ~ 65535     | b: 0 ~ 7 |
| M.                    | Vn.b      | n: 0 ~ 65535     | b: 0 ~ 7 |



- 1) For all contacts when performing "Multiple Duplicate" function:
  - If it exceeds 65535 when increasing, it will be regarded as 0.
  - If it is less than 0, it will be regarded as 655XX.

## C. Connections (Connector Pinouts)

### **RS-232**

### HMI connects to PC Adaptor

| 9       | DOP<br>pin D-SUB male | Controller<br>9 pin D-SUB female |          | Controller |
|---------|-----------------------|----------------------------------|----------|------------|
| Carles. | RXD (2)———            | (3) TXD                          | Unights. | Pin1       |
|         | TXD (3)———            | (2) RXD                          | ALICO .  | 10 State   |
|         | GND (5)———            | (5) GND                          |          | 0          |
| ,       | RTS (7)               | (8) CTS                          |          |            |
| .d/e.?  | CTS (8)———            | (7) RTS                          | -13/2.Q  | Top view   |
| -0°     |                       |                                  |          |            |

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### Siemens S7 300 PLC (without PC Adaptor)

**DELTA** 

### A. HMI factory settings

Baud rate: 19200, 8, EVEN, 1. (RS-485).

Controller station number: 2.

Control area/state area: DBW0 / DBW20.



1) Please notice that only 1(HMI) to 1 (PLC) communication is allowed.

2) PLC baud rate should be changed to **19200**. (8, EVEN, 1.).

3) **DB** need must be open, otherwise the related addresses can not be read and write.

(The related addresses are: DB.DBW, DB.DBD, DBW, DBD, VW, VD, DB.DBX, DBX, V)

- 4) HMI station must be set to  $0 \sim 15$ . If it is out of this range, it will be changed to 15 automatically. PLC station number must be set to  $0 \sim 15$ .
- 5) The communication cable is the same as S7 200 series (RS-485).
- 6) If not connecting to communication cable, after 5 seconds, HMI will show error message on the screen. If connecting to communication cable, it is needed to power on HMI again, and then the communication can be found.
- 7) After power in connected to HMI, HMI must accept the notification from PLC and then connection will be established. The first time connection will take more time, but in normal condition, it should be connected in 5 seconds.
- 8) This protocol is a multi-step and recurrent communication protocol (HMI needs to communicate with PLC for many times for completing 1 command.). The communication speed of S7 300 PLC (without PC Adaptor) is usually slower than the other controllers, but it is the same as the communication speed of S7 300 PLC (without PC Adaptor).

### B. Definition of controller Read/Write address

### Register

| Docistor Type | Format | Read/Write Range |         |  |
|---------------|--------|------------------|---------|--|
| Register Type | Format | Word No.         | Bit No. |  |
| Input Image   | IWn    | n: 0 ~ 65534     |         |  |
| Input Image   | IDn    | n: 0 ~ 65532     | N/A     |  |
| Output Image  | QWn    | n: 0 ~ 65534     | N/A     |  |
| Output Image  | QDn    | n: 0 ~ 65532     | N/A     |  |
| Internal Bits | MWn    | n: 0 ~ 65534     | N/A     |  |
| Internal Bits | MDn    | n: 0 ~ 65532     | N/A     |  |

| De sistes Tune     | Format   | Read/Write Range |                     |  |
|--------------------|----------|------------------|---------------------|--|
| Register Type      |          | Word No.         | Bit No.             |  |
| Data Area          | DBm.DBWn | n: 0 ~ 65534     | m: 1 ~ 255 (Note 1) |  |
| Ny.                | DBm.DBDn | n: 0 ~ 65532     | m: 1 ~ 255 (Note 1) |  |
| Data Area (DB10)   | DBWn     | n: 0 ~ 65534     | N/A                 |  |
| May May            | DBDn     | n: 0 ~ 65532     | N/A                 |  |
| Reger Holling .    | VWn      | n: 0 ~ 65534     | N/A                 |  |
| (Apa <sub>nr</sub> | VDn      | n: 0 ~ 65532     | N/A                 |  |
| Timer              | Tn       | n: 0 ~ 65535     | N/A                 |  |
| Counter            | Cn       | n: 0 ~ 65535     | N/A                 |  |



- 1) High Byte of Bit No.
- The valid digit number of the value for the T(Timer) and C(Counter) is 3-digit only. Therefore, please enter a 3-digit number. If entering a number that exceeds 3 digits, only the first 3 digits are valid (decimal format). The other digits of the value for the T(Timer) will be replaced as 0 and the other digits of the value for the C(Counter) will be abandoned. For example, assume that the users enter the value "12345", the actual write value for the T(Timer) will be "12300" and the actual write value for the C(Counter) will be "123".

### **Contacts**

| Contact time          | Format     | Read/Write Range |                      |  |
|-----------------------|------------|------------------|----------------------|--|
| Contact type          | Format     | Word No.         | Bit No.              |  |
| Input Image           | In.b       | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |
| Output Image          | Qn.b       | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |
| Internal Bit          | Mn.b       | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |
| Data Area Bit         | DBm.DBXn.b | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |
| Night.                | King.      | (1)              | m = 1 ~ 255 (Note 3) |  |
| Data Area Bit (DB 10) | DBXn.b     | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |
| "H <sub>I</sub> O,    | Vn.b       | n: 0 ~ 65535     | b: 0 ~ 7 (Note 2)    |  |



- 2) Low Byte of Bit No.
- 3) High Byte of Bit No.
- 4) For all timers, counters and contacts when performing "Multiple Duplicate" function:
  - If it exceeds 65535 when increasing, it will be regarded as 0.
  - If it is less than 0, it will be regarded as 655XX.

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### C. Connections (Connector Pinouts)

The communication cable is the same as S7 200 series (RS-485). Please refer to the Connections of S7 200 series (RS-485).

### C. Connections (Connector Pinouts)

### RS-485

### via PLC MPI Port (RS-485)

| 9 pin D- | DOP<br>SUB male (RS-485) | Controller<br>9 pin D-SUB male (I | Controller 9 pin D-SUB male (RS-485)   |
|----------|--------------------------|-----------------------------------|--|
| (a)      | RXD+ (2)—                | (3)TXD/RXD+                       | Pin1   |
|          | TXD+ (3)                 | <u> </u>                          | 6 3333   |
| 72       | RXD- (1)—                | (8)TXD/RXD-                       |  |
| , di     | TXD- (4)                 |                                   | Top view   |
| Cather . | GND (5) ———              | ——(5)SG                           | The state of the s |

Taian TP02 PLC DELTA

## A. HMI factory settings

Baud rate: 19200, 7, None, 1.
Controller station number: 1.

Control area/state area: V1 / V10.

### B. Definition of controller Read/Write address

### Registers

| - 25°          |         | A.S.        |         | 28          |
|----------------|---------|-------------|---------|-------------|
| Register Type  | Format  | Read/Write  |         | Data length |
| Register Type  | Torriat | Word No.    | Bit No. | Data length |
| WORD_DEVICE_X  | Xn      | n: 1 ~ 384  | N/A     | Word        |
| WORD_DEVICE_Y  | Yn      | n: 1 ~ 384  | N/A     | Word        |
| WORD_DEVICE_C  | Cn      | n: 1 ~ 2048 | N/A     | Word        |
| WORD_DEVICE_V  | Vn      | n: 1 ~ 1024 | N/A     | Word        |
| WORD_DEVICE_D  | Dn      | n: 1 ~ 2048 | N/A     | Word        |
| WORD_DEVICE_WS | WSn     | n: 1 ~ 128  | N/A     | Word        |
| WORD_DEVICE_WC | WCn     | n: 1 ~ 912  | N/A     | Word        |

<sup>➤</sup> WORD\_DEVICE\_X / WORD\_DEVICE\_Y / WORD\_DEVICE\_C: Address must be 1 or the multiple of 16+1.

### **Contacts**

| Contact type  | Format | Read/Write Range |             |
|---------------|--------|------------------|-------------|
| Contact type  | Tomat  | Word No.         | Bit No.     |
| BIT_DEVICE_X  | Xn     | N/A              | n: 1 ~ 384  |
| BIT_DEVICE_Y  | Yn     | N/A              | n: 1 ~ 384  |
| BIT_DEVICE_C  | Cn     | N/A              | n: 1 ~ 2048 |
| BIT_DEVICE_SC | SCn    | N/A              | n: 1 ~ 128  |

> BIT\_DEVICE\_SC: Only 1 Bit can be transferred for each read command.

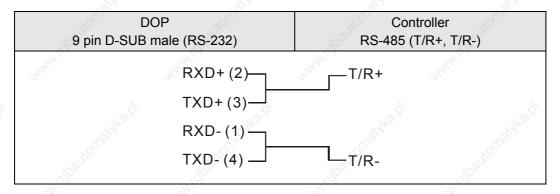
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## C. Connections (Connector Pinouts)

## RS-422

| DOP<br>9 pin D-SUB male (RS-422)             | Controller 9 pin D-SUB male (RS-422) | Controller 9 pin D-SUB male (RS-422) |
|--|--------------------------------------|--------------------------------------|
| RXD+ (2)———————————————————————————————————— | (3) TXD+<br>(8) TXD-                 | Pinl                                 |
| TXD+ (3)———————————————————————————————————— | (2) RXD+<br>(7) RXD-                 | Top View                             |

## RS-485



Vigor M Series DELTA

### A. HMI factory settings

Baud rate: 19200, 7, EVEN, 1.
Controller station number: 0.

Control area/state area: D0 / D10.



1) Controller station number: 0 for PROGRAMMER PORT; 1 for COM PORT

2) VB series also can use this driver.

### B. Definition of controller Read/Write address

### Registers

| Register Type                | Formet | Read/Write Range   |         | Data langth                 |
|------------------------------|--------|--------------------|---------|-----------------------------|
|                              | Format | Word No.           | Bit No. | Data length                 |
| Input Relay                  | Xn     | n: 0 ~ 770 (Octal) | N/A     | Word (multiple of 8)        |
| Output Relay                 | Yn     | n: 0 ~ 770 (Octal) | N/A     | Word (multiple of 8)        |
| Auxiliary Relay              | Mn     | n: 0 ~ 5112        | N/A     | Word (multiple of 8)        |
| Special Relay                | Mn     | n: 9000 ~ 9248     | N/A     | Word (9000 + multiple of 8) |
| Step Relay                   | Sn     | n: 0 ~ 992         | N/A     | Word (multiple of 8)        |
| Timer Present Value          | Tn 🕺   | n: 0 ~ 255         | N/A     | Word                        |
| 16-bit Counter Present Value | Cn     | n: 0 ~ 199         | N/A     | Word                        |
| 32-bit Counter Present Value | Cn     | n: 200 ~ 255       | N/A     | Word                        |
| Data Register                | Dn     | n: 0 ~ 8191        | N/A     | Word                        |
| Special Data Register        | Dn     | n: 9000 ~ 9248     | N/A     | Word                        |

### Contacts

| Contact type    | Format | Read/Write range |                   |
|-----------------|--------|------------------|-------------------|
|                 |        | Word No.         | Bit No.           |
| Input Relay     | Xn     | N/A              | n: 0 ~ 777(Octal) |
| Output Relay    | Yn     | N/A              | n: 0 ~ 777(Octal) |
| Auxiliary Relay | Mn     | N/A              | n: 0 ~ 5119       |
| Special Relay   | Mn     | N/A              | n: 9000 ~ 9255    |
| Step Relay      | Sn     | N/A              | n: 0 ~ 999        |
| Timer Contact   | Tn     | N/A              | n: 0 ~ 255        |
| Counter Contact | Cn     | N/A              | n: 0 ~ 255        |
| Timer Coil      | TCn    | N/A              | n: 0 ~ 255        |
| Counter Coil    | CCn    | N/A              | n: 0 ~ 255        |

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## C. Connections (Connector Pinouts)

## RS-232

## (PROGRAMMER PORT)

| 9 pin D-S | DOP Controlle  in D-SUB male(RS-232) USB TAPE A Co |             | Controller USB TAPE A Connector |
|-----------|--|-------------|---------------------------------|
|           | RXD (2) —  | ——— (3) TXD |                                 |
| 777       | TXD (3)  | (2) RXD     | 3 🔳                             |
| , di      | GND (5)  | ——— (4) GND | 2 3                             |
| Ugich.    |  |             |                                 |
|           |  |             | Top View                        |

# (COM PORT)

| DO                      | Р            | Controller                | Controller                  |
|-------------------------|--------------|---------------------------|-----------------------------|
| 9 pin D-SUB m           | ale (RS-232) | 9 pin D-SUB female (RS-23 | 9 pin D-SUB female (RS-232) |
| R                       | XD (2) ———   | (3) TXD                   | Pin1                        |
| N/CT                    | XD (3) —     | (2) RXD                   |                             |
| und G                   | ND (5)       | (5) GND                   | 0                           |
| California (California) |              |                           | Top View                    |

YOKOGAWA ACE PLC DELTA

### A. HMI factory settings

Baud rate: 9600, 8, EVEN, 1. (ASCII code)

Controller station number: 1.

CPU NO.: 1.

Control area/state area: D1 / D10.



1) CheckSum and End character (CR, LF) are not used during communication. Therefore, the controller should be set to "Not using CheckSum and End character" also.

2) CPU number is used during communication, however, Screen Editor software do not have this selection. Therefore, if the user desire to set CPU number, please set HMI station number in "General" tab in the "Configuration" dialog box in "Options" menu (Options → "Configuration" → General). (HMI station number is regarded as CPU number here. The default setting of HMI station number is 0, but 0 is an illegal number, the user must set it as a legal value.

#### B. Definition of controller Read/Write address

#### Registers

| Register Type  | Format | Word No.       | Data Size |
|----------------|--------|----------------|-----------|
| WORD_DEVICE_X  | Xn     | n: 201 ~ 65464 | Word      |
| WORD_DEVICE_Y  | Yn     | n: 201 ~ 65464 | Word      |
| WORD_DEVICE_I  | In     | n: 1 ~ 16384   | Word      |
| WORD_DEVICE_E  | En     | n: 1 ~ 4096    | Word      |
| WORD_DEVICE_L  | Ln     | n: 1 ~ 65488   | Word      |
| WORD_DEVICE_M  | Mn     | n: 1 ~ 9984    | Word      |
| WORD_DEVICE_TP | TPn    | n: 1 ~ 3072    | Word      |
| WORD_DEVICE_CP | CPn    | n: 1 ~ 3072    | Word      |
| WORD_DEVICE_D  | Dn     | n: 1 ~ 8192    | Word      |
| WORD_DEVICE_B  | Bn     | n: 1 ~ 32768   | Word      |
| WORD_DEVICE_W  | Wn     | n: 1 ~ 65499   | Word      |
| WORD_DEVICE_Z  | Zn (d) | n: 1 ~ 512     | Word      |
| WORD_DEVICE_V  | Vn 💍   | n: 1 ~ 64      | Word      |
| WORD_DEVICE_R  | Rn     | n: 1 ~ 4096    | Word      |
| WORD_DEVICE_TS | TSn    | n: 1 ~ 3072    | Word      |
| WORD_DEVICE_CS | CSn    | n: 1 ~ 3072    | Word      |

➤ WORD\_DEVICE\_X / WORD\_DEVICE\_Y: The last two digits of address must be 1 or the multiple of 16+1 and less than 65.

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- ➤ WORD\_DEVICE\_I / WORD\_DEVICE\_E / WORD\_DEVICE\_L / WORD\_DEVICE\_M: Address must be 1 or the multiple of 16+1.
- > WORD\_DEVICE\_X / WORD\_DEVICE\_Y / WORD\_DEVICE\_L / WORD\_DEVICE\_W: Valid address is inconsecutive.

#### **Contacts**

| Contact type  | Format | Bit No.        |
|---------------|--------|----------------|
| BIT_DEVICE_X  | Xn     | n: 201 ~ 65464 |
| BIT_DEVICE_Y  | Yn     | n: 201 ~ 65464 |
| BIT_DEVICE_I  | In     | n: 1 ~ 16384   |
| BIT_DEVICE_E  | En 🔊   | n: 1 ~ 4096    |
| BIT_DEVICE_L  | Ln     | n: 1 ~ 65488   |
| BIT_DEVICE_M  | Mn     | n: 1 ~ 9984    |
| BIT_DEVICE_TU | TUn    | n: 1 ~ 3072    |
| BIT_DEVICE_CU | CUn    | n: 1 ~ 3072    |

- ➤ BIT\_DEVICE\_X / BIT\_DEVICE\_Y : the last two digits of address must be less than 65 (1 ~ 64).
- ➤ BIT\_DEVICE\_X / BIT \_DEVICE\_Y / BIT \_DEVICE\_L : valid address is inconsecutive.
- Multiple Duplicate:

The next Bit address of X264 is X301 (invalid addresses X265 ~ X300 are skipped)

The next Bit address of X364 is X401.

The address of Y is the same as X.

(The Word addresses of X and Y are also auto skip invalid addresses)

### C. Connections (Connector Pinouts)

It needs to use specific cable of YOKOGAWA ACE PLC.

### RS-232

| 9 pin D   | DOP<br>0-SUB male (RS-232)                  | Controller (6 pin)<br>(RS-232 for YOKOGAWA) | Controller (6 pin) (RS-232 for YOKOGAWA) |
|-----------|---|---|--|
| 9         | RXD (2) —                                   | (1) TXD                                     | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1    |
| Carl Mari | TXD (3) ——————————————————————————————————— | ——— (2) RXD<br>——— (5) GND                  | ž El                                     |
|           | II. III Ballie                              | "Appen                                      | Top View                                 |

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