TSX ETY 110 Module

8

Introduction

Subject of this chapter

This chapter describes the implementation of a TSX ETY 110 module.

What's in this Chapter?

This chapter contains the following sections:

8.1 General points

Introduction

Subject of this sub-chapter

This sub-chapter introduces Ethernet communication from the TSX ETY 110 coupler and its characteristics.

What's in this Section?

This section contains the following topics:

TSX ETY 110 Module : General points

Introduction

The communication channel of the ETHERNET TSX ETY 110 module offers two connection types :

- connection to an ETHWAY network with common word and X-WAY messaging facilities on an ETHWAY profile,
- connection to a TCP/IP network with X-WAY UNI-TE and Modbus messaging facility on a TCP/IP profile,

Because it functions as an SNMP agent, the module can be supervised by one or two SNMP managers.

Architecture type

This module can be used in three different situations:

- in a closed proprietary ETHWAY architecture
- in a proprietary ETHWAY architecture connected to a TCP/IP network by an intermediate gateway
- in open TCP/IP architecture via direct connection to the network.

According to your choice of architecture, the recommended method of use is different. See *Example of proprietary architecture ETHWAY, p. 187*.

Note: When the ETHERNET network load passes 30%, it is recommended that you use :

- the TCP/IP profile instead of the ETHWAY profile,
- switch type accessories, routers to reduce the load.

Characteristics

Messaging

The TSX ETY 110 module supports:
- maximum 32 parallel connections on TCP/IP,
- but only one connection to a remote device.

The maximum frame size depends on the type of transaction :
- In synchronous messaging, the maximum frame size is 256 bytes.
- In asynchronous messaging, the maximum frame size is 1 Kbyte.

The number of communication functions handled simultaneously depends on the type of profile:
- where a TCP/IP profile is used, maximum 16 simultaneous messages,
- where an ETHWAY profile is used, maximum 16 simultaneous messages.

Maximum capacity of the module

The module provides the following capacities:
- in the case of ETHWAY messaging : 130 messages per second,
- in the case of X-Way messaging on TCP/IP : 140 messages per second,
- in the case Modbus messaging on TCP/IP : 100 messages per second.

Note: A message can be:
- sending a communication function,
- the response to a communication function.

Common words

A common word message is equivalent to 0.5 data messages.

Example of application dimensioning :
5 stations exchange common words every 100 ms and X-Way messaging on TCP/IP.
The flow of common words received by each module is 50 messages per second of common words, around 25 messages per second on TCP/IP.
So the remaining maximum capacity on each module on TCP-IP is:
140 – 25 + 115 messages per second

Performances

Example

The performances below are given for a communication between two PLCs equipped with TSX 57-30 processors.

The values are expressed in ms and represent an average period of time described in the table.

Opening time of a TCP/IP connection	10 ms
Transaction time for a UNI-TE request of 128 bytes in 50 ms periodic mode (MAST task)	150 ms
Transaction time for a UNI-TE request of 128 bytes in 4 ms cyclic mode (MAST task)	80 ms
Transfer time for common words (turnaround) in 50 ms periodic mode	250 ms
Module feed-through time	15 to 30 ms

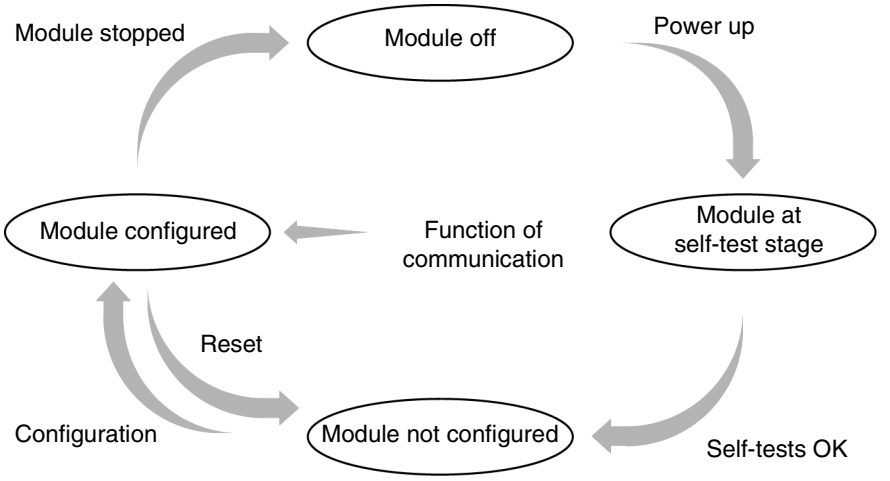
The transaction time takes into account the time it takes to send a message and receive a reply.

Module TSX ETY 110 operating modes

Introduction

The following graph describes the TSX ETY 110 module's operating modes.

General chart



Operation

- After power-up the module self-tests. During this stage the warning indicators flash.
- The module does not operate with a default configuration. This has to be transmitted to it by the local PLC's PL7 application.
  The configuration values are given in the list of %KW language objects.
  The network, station address is given by the code selectors on the front panel.
- When the configuration is received, the module resets the current communication to zero before configuring itself (terminates current exchanges, shuts down TCP connections).

Common functions on the ETHWAY and TCP/IP profile

Duplicate MAC address

Detecting a duplicate MAC address (defined by the code selector) between stations which have a Schneider MAC address is done when the device is switched on.

So that this detection is operational, the connection cable to the network must be plugged in before being switched on.

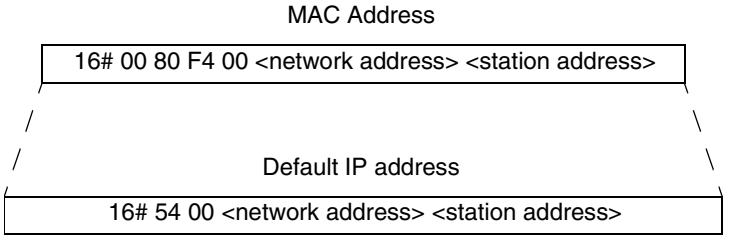
The RUN and ADR LEDs light up on the front panel of the module when a duplicate is detected.

Managing IP parameters

In a closed architecture you may choose not to configure IP parameters and to keep the default values.

In an open TCP/IP architecture, the IP parameters (IP address, subnet mask, gateway address) must be configured.

The default value of the local IP address is derived from the MAC address (its uniqueness is not guaranteed in an open TCP/IP architecture). It is a class A IP address.



The default value of the subnet mask is 0.0.0.0 (no subnet knowledge).
The default value of the default gateway is 0.0.0.0 (no IP gateway knowledge).

8.2 Configuration

Introduction

Subject of this sub-chapter

This sub-chapter describes the implementation of the TSX ETY 110 module during its configuration.

What's in this Section?

This section contains the following topics:

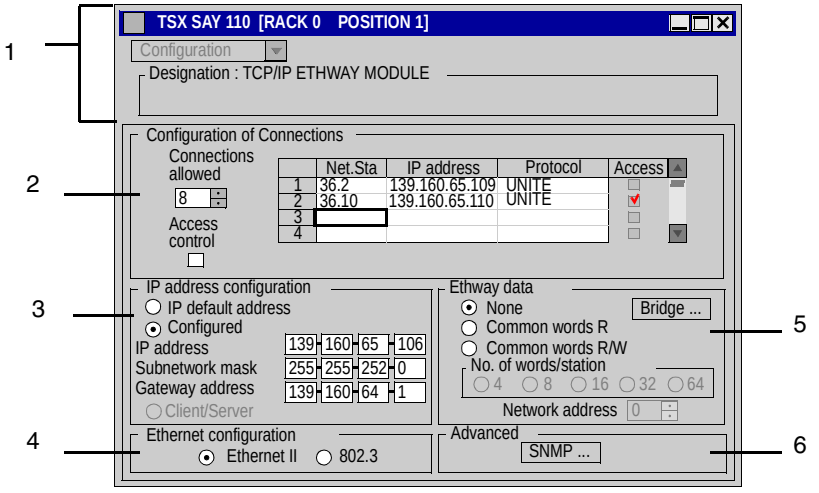
Module configuration screen

Introduction

This screen, split into six areas, is used to register the communication channel and to configure the necessary parameters for an ETHERNET link.

Illustration

The screen dedicated to ETHERNET communication looks like this :



Elements and functions

This table describes the different areas that make up the configuration screen:

Area	Address	Function
common	1	common section at the communication configuration screens (Communication applications Volume 1 - Overwiew of configuration screen)
specific	2	is used to configure TCP/IP connections. See *Connection configuration parameters, p. 138*.
	3	is used to configure the IP address of the module. See *Configuration Parameters for IP Addresses, p. 136*.
	4	is used to configure the ETHERNET type of frame. See *Ethernet configuration parameters, p. 140*.
	5	is used to configure the ETHWAY profile. See *Configuration of ETHWAY data, p. 169*.
	6	is used to configure the SNMP facility. See *Configuration of the SNMP Utility, p. 152*.

Type of communication according to chosen configuration

Introduction

Depending on the configuration of the TSX ETY 110 module, you can carry out messaging :

- either on the ETHWAY profile,
- or on the TCP/IP profile.

Module in client mode

When the module is the client, the ETHWAY or TCP/IP profile is fixed by the configuration of stations in the module's connection table.

The following table specifies which profile is used according to the configuration of the table.

	If the address of the remote station is …	
	referenced in the table.	**not referenced in the table.**
Communication profile	TCP/IP	ETHWAY

Note: If no station is recorded in the table, the communication profile is ETHWAY.

Module in server mode

When the module is the server, the ETHWAY or TCP/IP profile is fixed according to the client device :

- If the client transmits on the ETHWAY profile, the module responds on the ETHWAY profile.
- If the client transmits on the TCP/IP profile, the module responds on the TCP/IP profile.

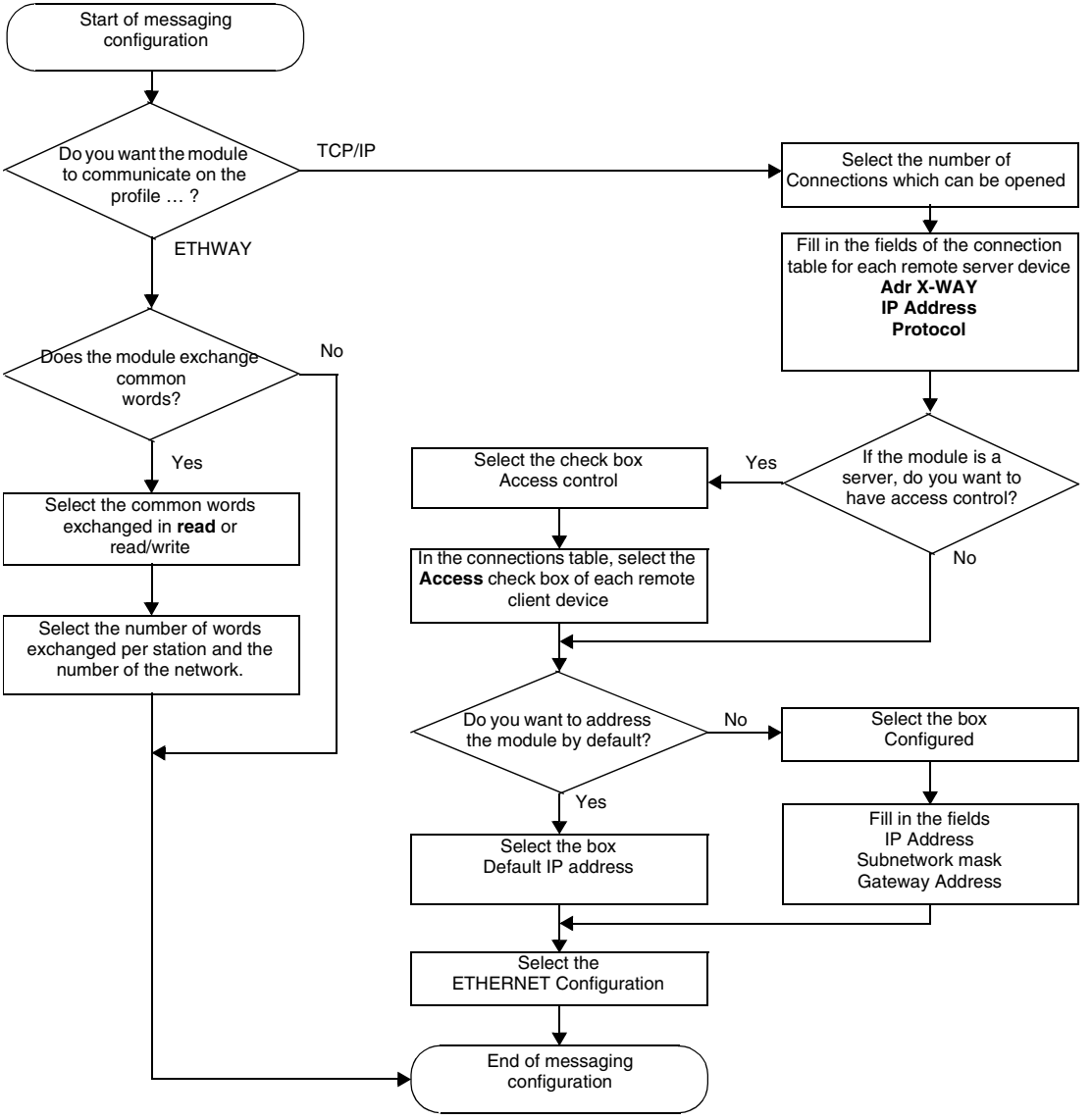
Note: Where access control is activated, compatibility must be ensured between the client and server's connection tables. If the client's address is referenced in the server's table, the client must communicate on the TCP/IP profile.

Messaging configuration on the TCP/IP or ETHWAY profile

Introduction

In order to use the TSX ETY 110 module to communicate on ETHERNET, it is necessary to adjust the configuration parameters.

How to configure the module Before configuring data module, access the configuration screen.



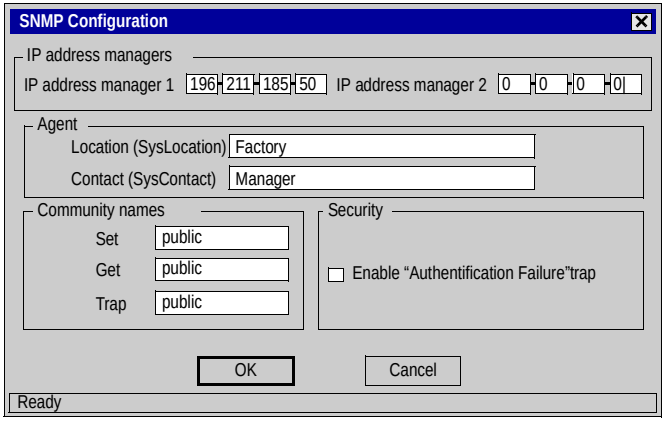
Configuration of SNMP facility.

Introduction

In order to use the TSX ETY 110 module as an SNMP agent, it is necessary to regulate the configuration parameters of the SNMP facility.

How to access the SNMP facility

The procedure for accessing the configuration parameters of the SNMP facility is as follows.

Step	Action
1	Access the module configuration screen.
2	Click on the **SNMP** button. **Result** The following window appears. 

How to configure SNMP

The procedure for configuring the SNMP facility is as follows.

Step	Action
1	Input the addresses of SNMP managers : • **IP Manager 1 addresses** • **IP Manager 2 addresses**
2	Fill in the fields : • **Location (SysLocation)** • **Contact (SysLocation)** .
3	If you want to set access rights, fill in the community names : • **Set** • **Get** • **Trap**
4	If you want to activate transmission of an event to the module, check off the **Activate "Authentication Failure" trap** box.
5	Accept the configuration with the **OK** button.

Configuration of the Bridge function

Introduction

The TSX ETY 110 module can be used as an X-WAY bridge station. This guarantees clear communication between different networks.

Note: To find out about the implementation of this function, refer to the multi-network communication part (See *Multi-network architectures, p. 289*). Subsequently, only the procedure for access to the bridge function will be developed.

How to access the bridge function

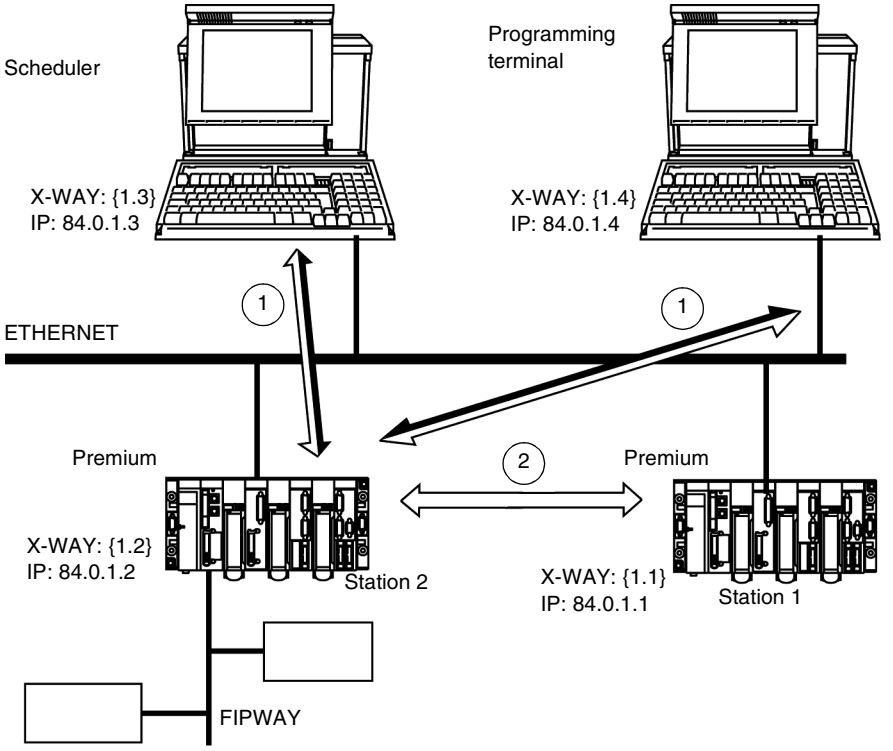
The procedure for accessing the configuration parameters of the bridge function is as follows.

Step	Action
1	Access the module configuration screen.
2	Select the **Bridge** button.

Example of proprietary architecture ETHWAY

Introduction

The following figure illustrates the implementation of a TSX ETY 110 data module in a proprietary ETHWAY architecture.



1 ETHWAY or TCP/IP TCP/IP communication

2 ETHWAY communication

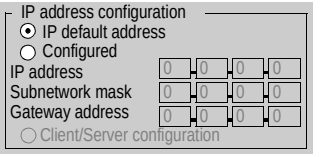
Recommended method of use

- The IP addressing is not set by the administrator (default value). It is derived from the values set on the module's code selector.
- Communication between the PLCs is by means of ETHWAY facilities (COM, UNI-TE).
- Communication between the PLC and the scheduler or the programming terminal makes use of ETHWAY facilities or UNI-TE on TCP/IP.
- The format of the frames used is ETHERNET II.

Note: In the sequence of examples, it is assumed that the communication with the terminals is done on TCP/IP.

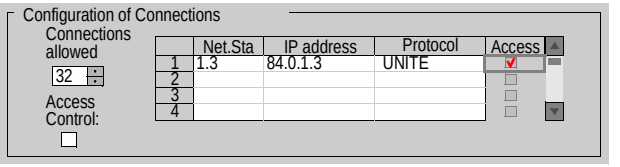
Configuration of the local address of the data module from station 2

In a closed environment, it is possible not to administrate the IP addresses; mode **Default IP address** is selected.



Configuration of the connections of the data module from station 2

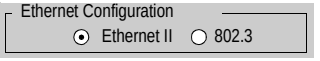
The field to input is the X-WAY address of the remote stations with which one wishes to communicate (X-WAY 1.3 address), the other fields are automatically initialized. Access protection is disabled by default and the maximum number of connections is 32.



Note: As the PLC is always the server with regard to the programming terminal, this does not have to be registered.

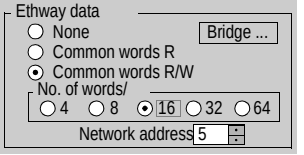
ETHERNET configuration of the data module from station 2

The ETHERNET frame format selected for TCP/IP is **Ethernet II** because in the example the terminals use this format.



Configuration of the common words of the data module from station 2

Station 2 exchanges 16 common R/W words with the other PLCs connected to the network.



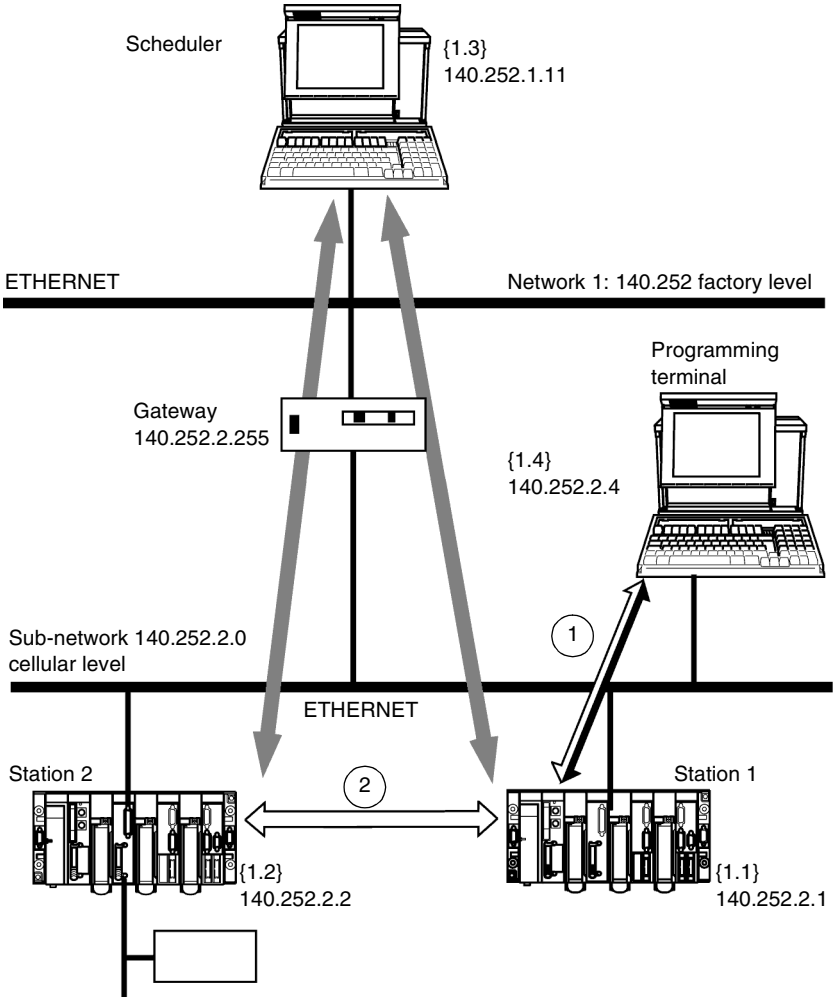
The configuration required is:

- the type of facility,
- the length of the common words,
- the network number.

Example of the ETHWAY architecture connected to TCP/IP

Introduction

The following figure illustrates the implementation of a TSX ETY 110 data module in an ETHWAY architecture connected to a TCP/IP network.



1 ETHWAY or TCP/IP TCP/IP communication

2 ETHWAY communication

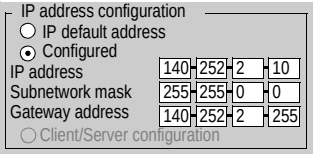
Recommended method of use

- IP addressing is administrated globally, because it is connected to an existing factory TCP/IP network.
- Communication between the PLCs, at the cellular level, is by means of ETHWAY facilities (COM, UNI-TE).
- Communication between the PLC and the programming terminal, at the cellular level, makes use of ETHWAY facilities or UNI-TE on TCP/IP.
- Communication between the PLC and the scheduler makes use of UNI-TE functionality on TCP/IP.
- The format of the frames used is ETHERNET II.

Note: The ETHWAY functionality at cellular level is identical to the functionality described in the previous example. This example only describes the communication between the scheduler at factory level and a PLC Premium at cellular level.

Configuration of the local address of the data module from station 2

As it is necessary to administrate the IP addresses, configured IP address mode is selected.



You should enter the IP parameters listed below. These values are taken from the installation's global addressing scheme managed by the network manager.

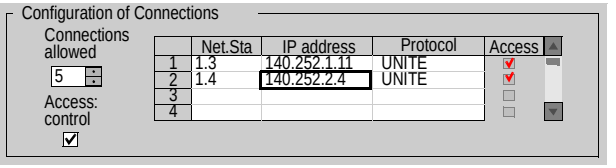
It is possible to ensure its uniqueness by having the network ID (140.252) assigned by an accredited body.

The network at cellular level is an IP sub-network. This permits the attribution of a unique network ID (140.252) for the whole of the architecture. The sub-networks are then defined by the user of the sub-network mask 255.255.0.0.

The class of address chosen (here class B) depends on the number of machines and the number of networks in the installation.

Configuration of the connections of the data module from station 2

You must input both the X-WAY address and the IP address of the devices with which the module must communicate.



Click on the **Access control** button to activate this control, then check off the corresponding box in the column **Access**
The maximum number of connections in the application can be adjusted.

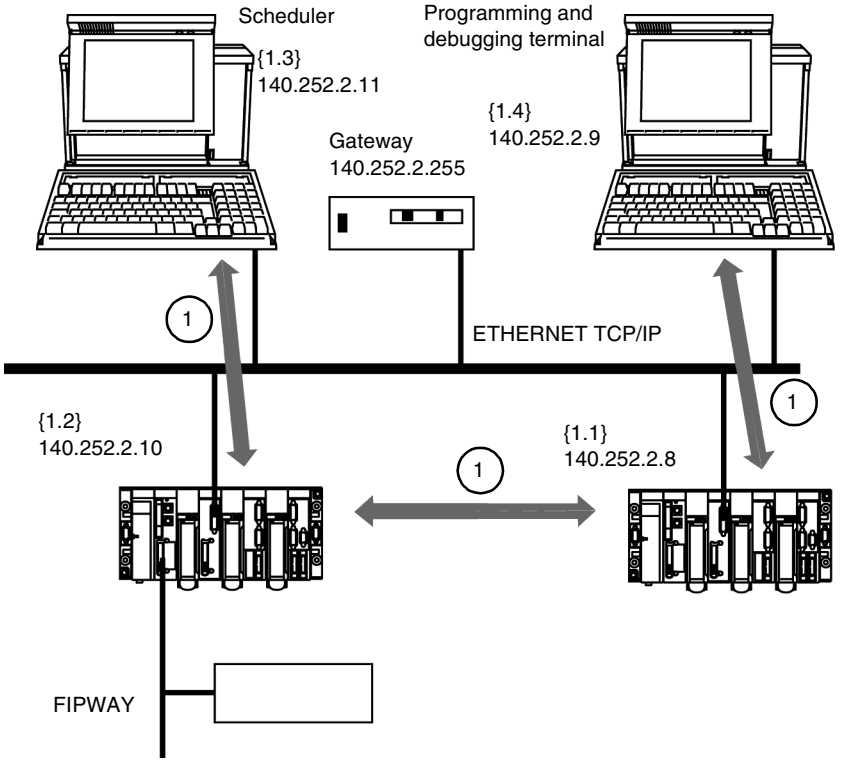
ETHERNET configuration of the data module from station 2

The ETHERNET frame format selected for TCP/IP is **Ethernet II** because in the example the terminals use this format.

Example of connection to a non private TCP/IP network

Introduction

The following figure illustrates the implementation of a TSX ETY 110 data module connected to an existing TCP/IP network.



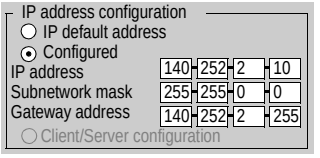
1 TCP/IP Communication

Recommended method of use

- IP addressing must be administrated because you are connecting to a non private TCP/IP network.
- Communication between the PLCs makes use of the UNI-TE facilities on TCP/IP.
- Communication between the PLC and the scheduler or the programming terminal makes use of UNI-TE facilities on TCP/IP.
- The format of the frames used is ETHERNET II.

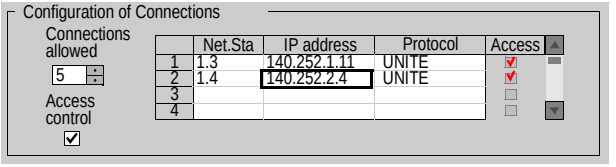
Configuration of the local address of the data module

The IP addresses must be set, **Configured IP address** is selected, you must enter the IP parameters.



Configuring the connections of the data module

You must input both the X-WAY address and the IP address of the devices with which the module must communicate.



Click on the **Access control** button to activate this control, then check off the corresponding box in the column **Access**.
The maximum number of connections allowed in the application can be adjusted.

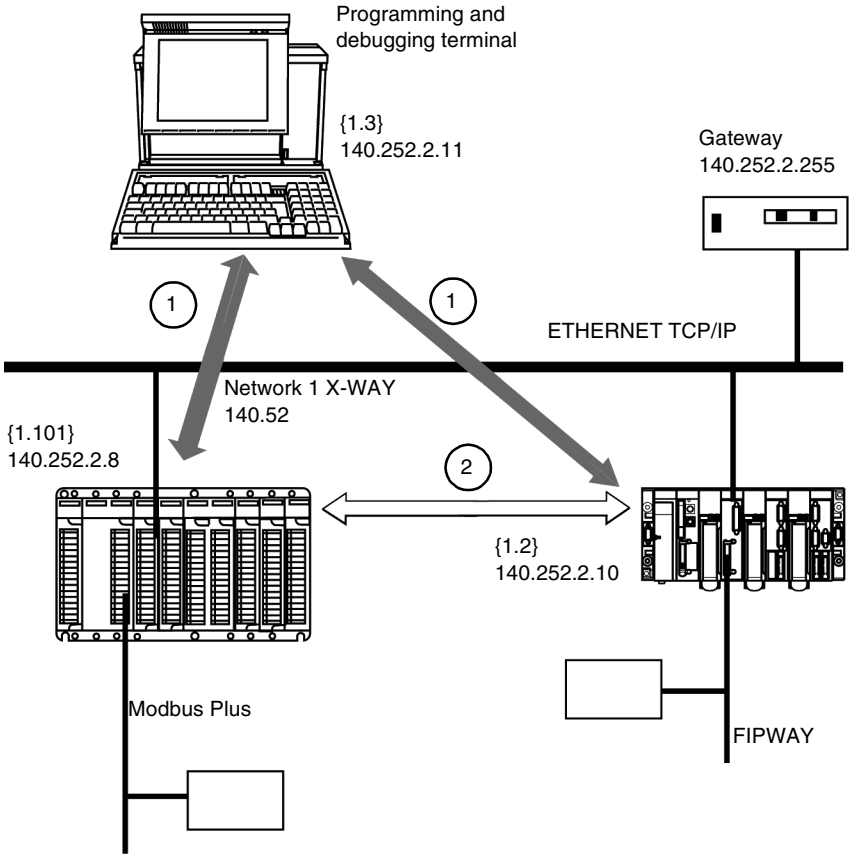
ETHERNET configuration of the data module

The ETHERNET frame format selected for TCP/IP is **Ethernet II** because in the example the terminals use this format.

Example of communication between Premium and Quantum

Introduction

The following figure illustrates the implementation of a TSX ETY 110 module to communicate with a Quantum PLC.

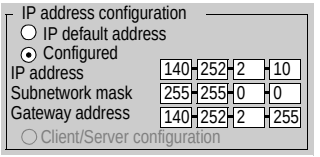


Recommended method of use

- The IP addressing is administrated because of the risk of duplicating IP addresses with default values.
- Communication between the PLCs makes use of the Modbus facilities on TCP/IP.

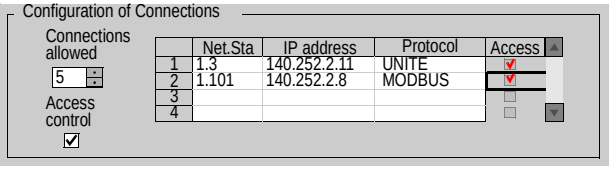
Configuration of the local address of the data module

The IP address must be set, **Configured IP address** is selected, you must enter the IP parameters.



Configuring the connections of the data module

You must input both the X-WAY address and the IP address of the devices with which the module must communicate.



Click on the **Access control** button to activate this control, then check off the corresponding box in the column **Access**.
The maximum number of connections in the application can be adjusted.

Note: Communication with the Quantum PLC requires the configuration of the Modbus protocol.

ETHERNET configuration of the data module

The ETHERNET frame format selected for TCP/IP is **Ethernet II** because in the example the terminals use this format.

8.3 Debugging

Introduction

Subject of this sub-chapter

This sub-chapter describes the debugging of the TSX ETY 110 module.

What's in this Section?

This section contains the following topics:

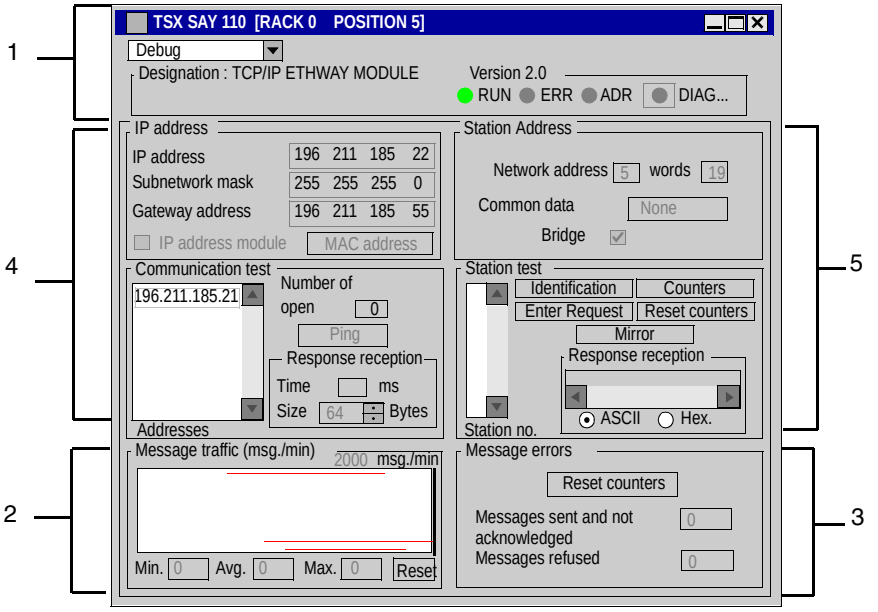
Module debugging screen

Introduction

This screen, split into five areas, is used to debug an ETHERNET link.

Illustration

The screen dedicated to ETHERNET communication looks like this :



Elements and functions

This table describes the different areas that make up the configuration screen:

Address	Area	Function
1	common	common section at the communication debugging screens (Communication applications Volume 1 - Description of communication debugging screens)
2	Message traffic (See *Message traffic, p. 200*)	is used to view graphically the number of messages handled by the module:
3	Message errors (See *Message errors, p. 200*)	used to view the number of unacknowledged or refused messages.
4	TCP/IP facilities (See *Debugging parameters for TCP/IP facilities, p. 201*)	used to : ● view configuration of TCP/IP facilities, ● test communication on the TCP/IP profile.
5	ETHWAY facilities (See *Requests available for the communication channel test, p. 204*)	used to : ● view configuration of ETHWAY facilities, ● test communication on the ETHWAY profile.

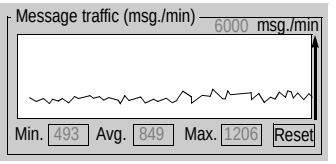
General debugging parameters

Introduction

The general debugging parameters are grouped into two windows :
- the **Message traffic** window,
- the **Message errors** window.

Message traffic

The window looks like this :



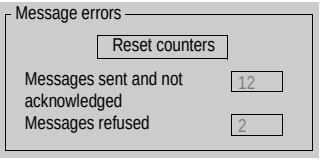
It shows graphically the number of messages per minute handled by the module (sending and receiving).

This number can be compared to the maximum flow rate offered by the module (7800 or 8400 messages of 128 bytes per minute) in order to determine whether the latter is working in a normal use range or in overload.

The **Reset** button resets to zero the three counters**Min.**,**Av.** and **Max.**.

Message errors

The window looks like this :



The message errors window shows the number of unacknowledged messages on ETHWAY and the number of refused messages on ETHWAY or TC/IP.
You can reset these counters to zero by clicking on the **Init counters** button.

Debugging parameters for TCP/IP facilities

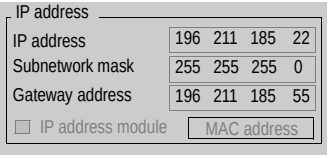
Introduction

The debugging parameters for TCP/IP facilities are grouped in two windows :

- the **IP Address** window,
- the **Communication test** window.

IP Address

The window looks like this :

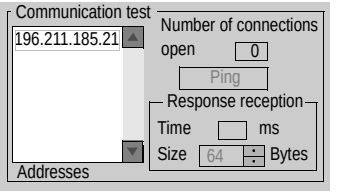


It shows the configuration data for the IP address:

- **IP Address**
- **Subnetwork mask**
- **Gateway Address** : gateway address

Communication test

The window looks like this :



This window is used to test the IP communication with another station registered in the table of remote devices.

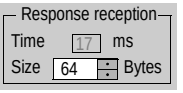
How to test TCP/IP communication with a Ping request

Introduction

This page indicates the procedure to be followed to test a TCP/IP communication by means of a **Ping** request.

Steps to follow

The following procedure allows the sending of the Ping request and thus tests the routing of information between two devices.

Step	Action
1	Select the address of the station to be interrogated with the help of the **Addresses** field.
2	Select the number of bytes to be transmitted using the **Size** field. This specifies the length of the message to be sent between 64 and 1472 bytes.
3	Press the button **Ping**. **Result** The reply appears in the field **Time** :  The time returned corresponds to the turnaround time for the message in ms.

Type of response

The following table groups together the different types of response to the Ping request.

If the response is…	then …
positive	The window indicates the turnaround time for the message in ms.
negative	• a window with the message **Timeout** specifies the absence of response from the remote device. • a window with the message **Host unreachable** specifies that the remote device has not been reached in the network architecture.

Debugging parameters of ETHWAY facilities

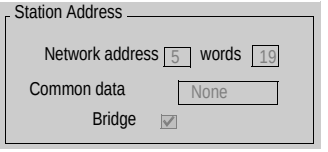
Introduction

The debugging parameters for TCP/IP facilities are grouped in two windows :

- the **IP Address station** window,
- the **Station test** window.

Station address

The window looks like this :

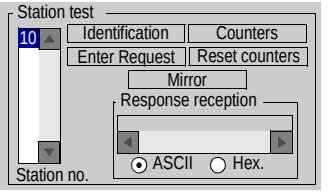


It shows the configuration data :

- **Network address** and **Station** : shows the network and station address coded on the module's code selectors
- **Common data** : shows the type of facility selection in configuration mode for common data
- **Bridge** : if the box is checked off, it shows that the station has been registered as an X-WayBridge.

Station test

The window looks like this :



This window is used to test a communication channel by sending a request to one of the existing stations on the network.

Requests available for the communication channel test

Introduction

This page describes the different possibilities for testing a communication channel from the debugging screen.

Test conditions

Sending a request to an unconnected station results in an error message.

Available requests

Window **Test station** allows the following requests :

- **Identification** (See *How to identify a station, p. 205*) : prompts the Identification request to be sent to the designated remote station,
- **Counters** : prompts the sending of the request for the Reading of the error counters to the designated station,
- **Counters** : prompts the designated station's error counters to be reset to zero,
- **Request input** (See *How to test a channel with requests, p. 207*): allows a UNI-TE request, other than those provided by the command buttons, to be sent to the designated station. The choices available in this function give access to a screen that allows you to select the parameters that are specific to the request (request code must be coded in hexadecimal),
- **Mirror** (See *How to send the Mirror request, p. 206*): allows a mirror request to be sent to the designated station. Selecting this function gives access to a screen that allows you to select the length of the character string to be sent (a maximum of 80 characters). The PLC then sends this character string (ABCD….) to the destination device. This automatically sends the character string that was received back to the sender.

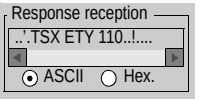
How to test a channel with Identification and Mirror requests

Introduction

This page indicates the procedure to follow to test a communication channel by means of Identification and Mirror requests.

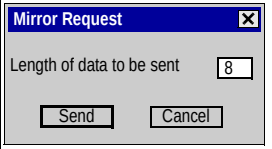
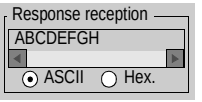
How to identify a station

The following procedure allows the identification of a designated station.

Step	Actions
1	Select the address of the station to be interrogated with the help of the field **Station**.
2	Click on the button **Identification**. **Result** The response appears in the window **Receive Response** : 

How to send the Mirror request

The following procedure allows the sending of the Mirror request and thus tests the routing of information between two devices.

Step	Action
1	Select the address of the station to be interrogated with the help of the field **Station**.
2	Click on the button **Mirror**. **Result** The following window appears : 
3	Input the length of data to be sent (maximum 80 characters).
4	Click on the button **Send**. **Result** The response appears in the window **Receive Response**:  The response contains: ● the character string ABCDEFGH that corresponds to the length of data sent 8.

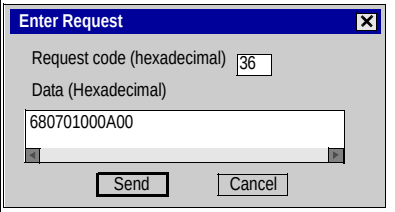
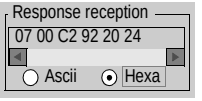
How to test a channel with requests

Introduction

This page indicates the procedure to follow to test a communication channel from the debugging screen through different requests.

How to send a request

The following procedure allows a request, other than those provided by the command buttons, to be sent to a designated station. In this example, the request sent is used to read 10 words (from %MW1 to %MW10).

Step	Action
1	Select the address of the station to be interrogated with the help of the field **Station**.
2	Click on the button **Input Request**. **Result** The following window appears :  The data sent in this example is coded on 6 bytes.
3	Input the function code (coded in hexadecimal on one byte), corresponding to the request that you want to send. For this example the read request code is 16#36.
4	Input the data to be sent by coding all the data in hexadecimal. The data is sent non-stop without any time intervals between them. When the data is coded on one word, the most significant and least significant bytes are reversed. For this example the data is as follows : ● 16#68 : on one byte, defines the segment (internal data), ● 16#07 : on one byte, defines the object type (words), ● 16#0100 : on one byte, defines the first word to read, ● 16#0A00 : on one byte, defines the number of words to read.
5	Click on the button **Send**. **Result** The response appears in the **Receive Response** window :  The response from the example has data on 21 bytes. ● 16#07 : corresponds to object type (words), ● 16#00C2 : corresponds to the value of the first word (the most significant and least significant bytes are reversed, its value is 16#C200), ● ...

8.4 Language objects associated with the TSX ETY 110 module

Introduction

Subject of this sub-chapter

This sub-chapter presents the different language objects specific to the TSX ETY 110 module.

What's in this Section?

This section contains the following topics:

Implicit Exchange Language Objects

At a Glance

This page describes all the implicit exchange (Communication applications Volume 1 - Default exchanges) language objects for ETHERNET communication with the TSX ETY 110 module that can be displayed or modified by the application program.

Bit Objects

The table below shows the various bit objects for implicit exchange.

Object (1)	Function	Meaning
%Ixy.MOD.ERR	Module error bit	This bit set to 1 indicates a module error (at least one of the channels has an error, for instance)
%Ixy.i.ERR	Channel error bit	This bit set to 1 indicates a line fault.
Legend		
(1)	Address xy.i • x: corresponds to the rack number • y: corresponds to the module number • i: corresponds to the channel number	

Word Objects

The table below shows the various word objects for implicit exchange.

Object (1)	Function	Meaning
%IWxy.i.0	Network status	• x0 = 1: if common words are received from at least one of the remote stations
%IWxy.i.1	Common data update indicators	• x0 = 1: station 0 common words are updated. • ... • x7 = 1: station 7 common words are updated. • x8 = 1: station 8 common words are updated. • ... • x15 = 1: station 15 common words are updated.
...	...	...
%IWxy.i.4	Common data update indicators	• x0 = 1: station 48 common words are updated. • ... • x7 = 1: station 55 common words are updated. • x8 = 1: station 56 common words are updated. • ... • x15 = 1: station 63 common words or shared table words are updated.
Legend		
(1)	Address xy.i • x: corresponds to the rack number • y: corresponds to the module number • i: corresponds to the channel number	

Common Words

Common words are exchanged on the ETHWAY profile and their number depends on the size of words per configured station.

The following table describes the common words:

Object (1)	Function	Meaning
%NW{n.s}0 to %NW{n.s}64	Common words	corresponds to exchanged common data
Legend		
(1)	Address n.s • n: corresponds to the network number • s: corresponds to the station number	

WARNING

The update bit switches to 1 at the beginning of the PLC cycle if it receives common words from the corresponding station. At the end of the cycle the update bits automatically return to 0.
Consequently, common words can only be considered valid if the update bit of the corresponding station is set to 1.
After power up, common words are set to value 0.

Failure to follow this precaution can result in death, serious injury, or equipment damage.

Language objects in explicit exchange

Introduction

This page describes all the language objects for explicit exchange (Communication applications Volume 1 - Specified exchanges: General points) for ETHERNET communication with the TSX ETY 110 module that can be displayed or modified by the application program.

Word objects

The table below shows the different word objects for explicit exchange.

Object (1)	Function	Meaning
%MWxy.MOD.2	Module status	• x0 = 1 : defective module • x1 = 1 : functional error (error between the processor and the module, adjustment or configuration error, …) • x2 = 1 : terminal block fault (not connected) • x3 = 1 : self-tests running • x4 = 1 : reserved • x5 = 1 : error in hardware or software configuration (the module present is not that declared in the configuration, the sub-modules are not compatible) • x6 = 1 : missing module • x7 = 1 : error in one of the sub-modules
%MWxy.i.2	Standard channel status	• x0 à x3 = 0 : reserved • x4 = 1 : module error or self-tests running • x5 et x6 = 0 : reserved • x7 = 1 : application error (error in the configuration)
%MWxy.i.3	Specific channel status	Byte 0 : • x0 = 1 : if X-WAY bridge (0 if not bridge) Byte 1 : number of TCP connections open
%MWxy.i.4	Error counters on ETHWAY	Unacknowledged messages on ETHWAY
%MWxy.i.5	Error counters on ETHWAY	Refused messages on ETHWAY
%MWxy.i.6	Network/station address	Byte 0 : station number Byte 1 : network number
%MWxy.i.7	Information on common words or shared tables	Byte 0 : • = 16#00 : inactive facility • = 16#01 : read/write of common words • = 16#02 : reading of common words Byte 1 : size of common words produced

Object (1)	Function	Meaning
%MWxy.i.8	Counter of messages on TCP/IP	Number of messages refused on X-WAY on TCP/IP
%MWxy.i.9 and %Mwxy.i.10	Message counters on the link level	Number of messages received on the link level
%MWxy.i.11 and %Mwxy.i.12	Message counters on the link level	Number of messages sent on the link level
Key		
(1)	Address xy.i • x : corresponds to the rack number • y : corresponds to the module number • i : corresponds to the channel number	

Explicit exchange management and report

Introduction

This page describes all the language objects that manage explicit exchanges (Communication applications Volume 1 - Exchange and report management).

Word objects

The table below shows the different word objects for the management of explicit exchanges.

Object (1)	Function	Meaning
%MWxy.MOD.0	Module exchanges in progress	• x0 = 1 : status reading in progress • x1 = 1 : sending of command parameters to the communication module • x2 = 1 : sending of adjustment parameters to the communication module
%MWxy.MOD.1	Module report	• x1 = 0 : command parameters received and accepted by the module • x2 = 0 : adjustment parameters received and accepted by the module
%MWxy.i.0	Channel exchanges in progress	• x0 = 1 : status reading in progress • x1 = 1 : sending of command parameters to the communication channel • x2 = 1 : sending of adjustment parameters to the communication channel
%MWxy.i.1	Channel report	• x1 = 0 : command parameters received and accepted by the communication channel • x2 = 0 : adjustment parameters received and accepted by the communication channel
Key		
(1)	Address xy.i • x : corresponds to the rack number • y : corresponds to the module number • i : corresponds to the channel number	

Language objects associated with configuration

Introduction

This page describes all the configuration language objects for ETHERNET communication with the TSX ETY 110 module that can be displayed by the application program.

Internal constants

The following table describes the internal constants:

Object	Function	Meaning
%KWxy.i.0	Type	Byte 0 = 11 for ETHWAY communication Byte 1 : reserved
%KWxy.i.1	Physical layer	Byte 0 : reserved Byte 1 : reserved
%KWxy.i.2	Supported facilities	Byte 0 : common data ● x0 = 1 : activation of ETHWAY common words ● x1 = 0 : reserved ● x2 = 1 : common read only words ● x3 = 1 : common R/W words ● x4 to x7 = 0 : reserved Byte 1 : reserved
%KWxy.i.4	Common words	Byte 0 : number of common words Byte 1 : reserved
%KWxy.i.5	X-WAY network address	Byte 0 : network number (0 by default) Byte 1 : reserved
%KWxy.i.6	Type of ETHERNET driver for TCP/IP	Byte 0 : ● = 16#00 : AUI (default value) ● = 16#01 : RJ45 Byte 1 : ● = 16#00 : ETHERNET II (default value) ● = 16#01 : 802.3
%KWxy.i.7	TCP/IP configuration : address type	Byte 0 : reserved Byte 1 : inherited address ● = 16#00 : default address ● = 16#01 : from the application-specific function ● = 16#03 : from a server
%KWxy.i.8 and %KWxy.i.9	Local IP address	Example with the address 139.160.650.109 Byte 0 = 109 (least significant bit) Byte 1 = 65 Byte 2 = 160 Byte 3 = 139 (most significant bit)

Object	Function	Meaning
%KWxy.i.10 and %KWxy.i.11	IP address of gateway	Example with the address 139.160.65.1 Byte 0 = 1 Byte 1 = 65 Byte 2 = 160 Byte 3 = 139
%KWxy.i.12 and %KWxy.i.13	Subnetwork mask	Example with the address 255.255.255.0 Byte 0 = 0 Byte 1 = 255 Byte 2 = 255 Byte 3 = 255