

MxDS1 CNC Data Shuttle

*Installation Instructions
And Operator Manual*

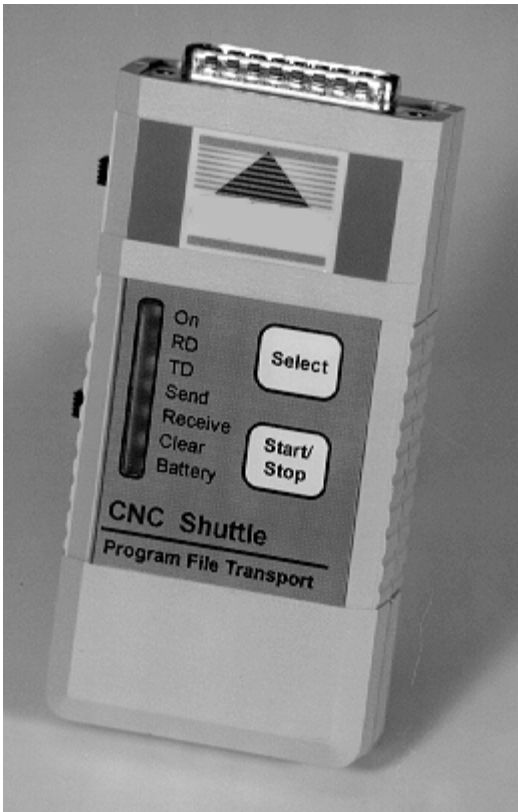


Table of Contents

Table of Contents	3
1. Connecting the MxDS1 Via The Serial Port.....	4
1.2 - Installing the WinShuttle Software.....	5
2. Configuring the MxDS1 through WinShuttle.....	6
2. 1 - Main User Interface Screen	6
2.2 - Set WinShuttle COM Port	6
3. Preferences	8
4. WinShuttle to MxDS1 Operation.....	9
4.1 - Transfer File to MxDS1 From WinShuttle.....	9
4.1 - Transfer File to MxDS1 From WinShuttle.....	10
4.3 - Delete Files From MxDS1 Data Shuttle.....	11
4.3 - Delete Files From MxDS1 Data Shuttle.....	12
5. Troubleshooting	13
6. APPENDIX.....	14
6.1 Explanation of Serial Communications Port.....	14

1. Connecting the MxDS1 Via The Serial Port

The MxDS1 Data Shuttle is designed to serially load a CNC part program (ASCII file), hold it in non-volatile memory, and deliver it to a machine tool when needed. With only 4 buttons – 2 black switches on the left side (bottom is power on/off, top is the DCE/DTE switch), and 2 on the face (Select and Start/Stop) – the unit is simple to operate.



To use the unit, one must only:

1. Connect the serial cable (either from the computer or the CNC),
2. Power the unit on, and toggle the DCE/DTE switch until the top 3 lights (ON+RD+TD) are on.
3. Press the “SELECT” button to choose between the “SEND” or “RECEIVE” command function (see LEDs toggle).
4. Then depress the “START/STOP” key to either upload (“SEND”) or download (“RECEIVE”) the file to the machine.
5. Finally, if receiving a file use the “STOP” button to end the download process.

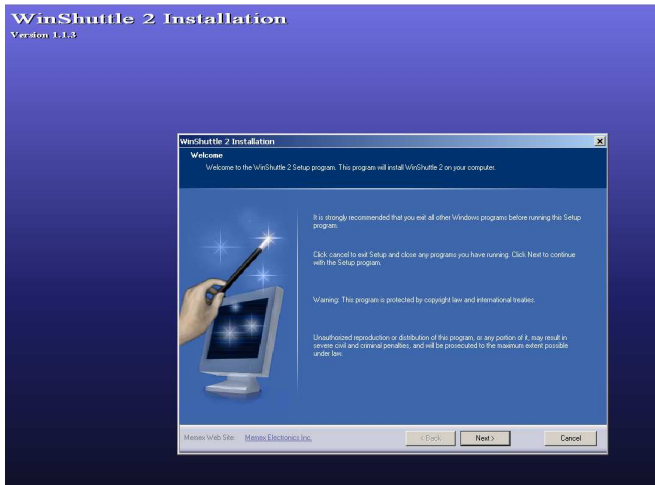
The CLEAR light should be “off” after a file is loaded. To clear the unit, power on the unit holding the top two soft keys and wait until the CLEAR light is lit. The lights “dance” while the unit is being cleared by the way.

Load the Memex WinShuttle™ software provided if you want to automate the clearing or serial transferring (no keys need be pressed when using it). The software is also needed to reset the default communication parameters from “4800, E,7,1 Hardware & Software flow control” to something else.

The unit has a 9-volt battery that is used, except when connected to a Fanuc CNC with our supplied cable, as we draw +24V off of pin 25 to prolong the battery life. Another internal battery maintains the built-in SRAM memory. A battery-low light comes on when the 9 volt battery is low.

NOTE: Please refer to the Troubleshooting section of this manual for information on checking the PC serial connections.

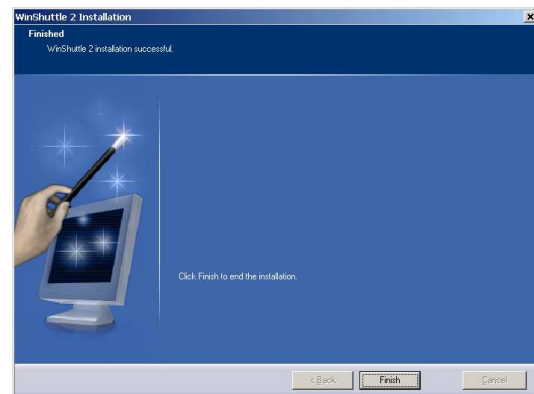
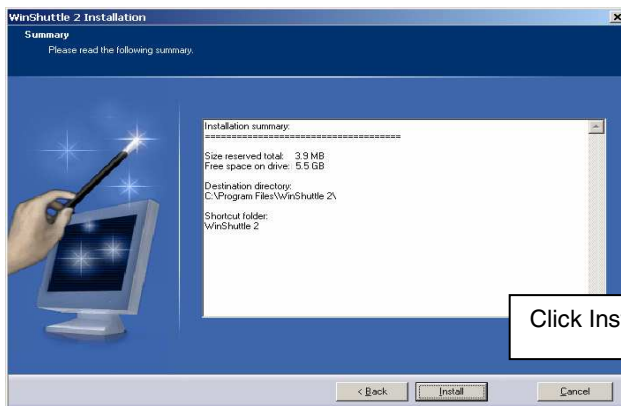
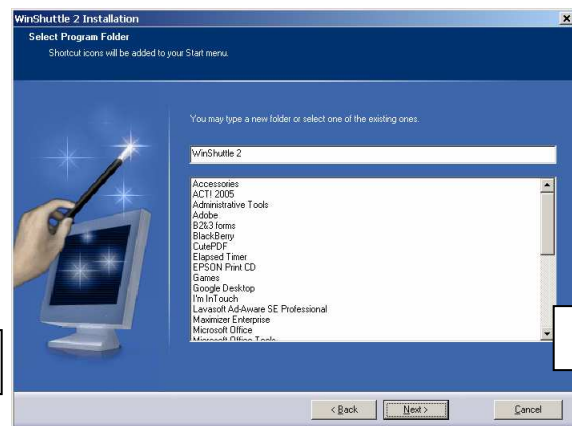
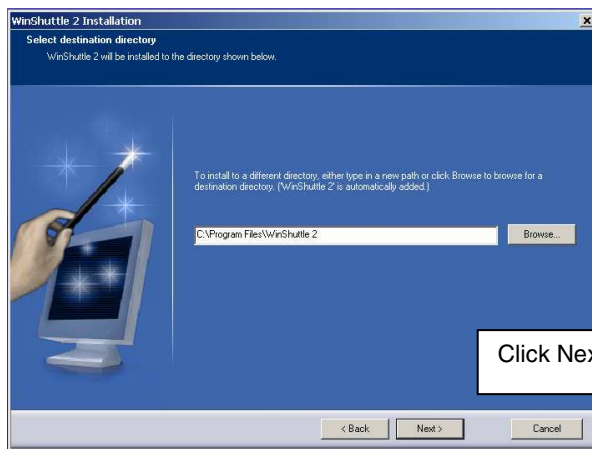
1.2 - Installing the WinShuttle Software



Double click on the WinShuttle exe file on the accompanying Diskette #1, CD, or on the downloaded WinShuttle software from our website.

You will see the WinShuttle 2 installation screen.

Click Next...



2. Configuring the MxDS1 through WinShuttle

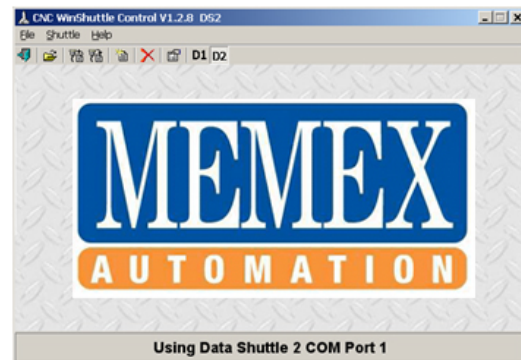
Connect the serial cable to a free serial port on your computer. Connect the 25DB connector to the MxDS1 Data Shuttle.

Make sure that the two switches located on the left hand side of the MxDS1 are in the **up position**. The **On**, **RD** and **TD** lights should be lit (the CLEAR light will be lit if the MxDS1 is empty)

LAUNCH the WinShuttle2 Software with the MxDS1 connected to the serial port.

2.1 - Main User Interface Screen

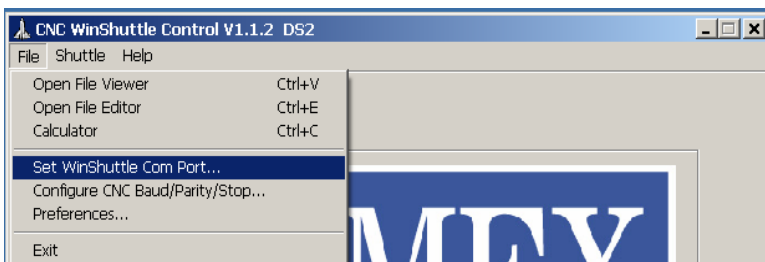
The user interface is a simple layout of function and design. The interface can be toggled between the MxDS1 and the DS1 Data Shuttle by clicking on the D1/D2 buttons. The WinShuttle software is compatible with both the MxDS1 and the MxDS2 Data Shuttles.



The WinShuttle software configuration screens allow a user to:

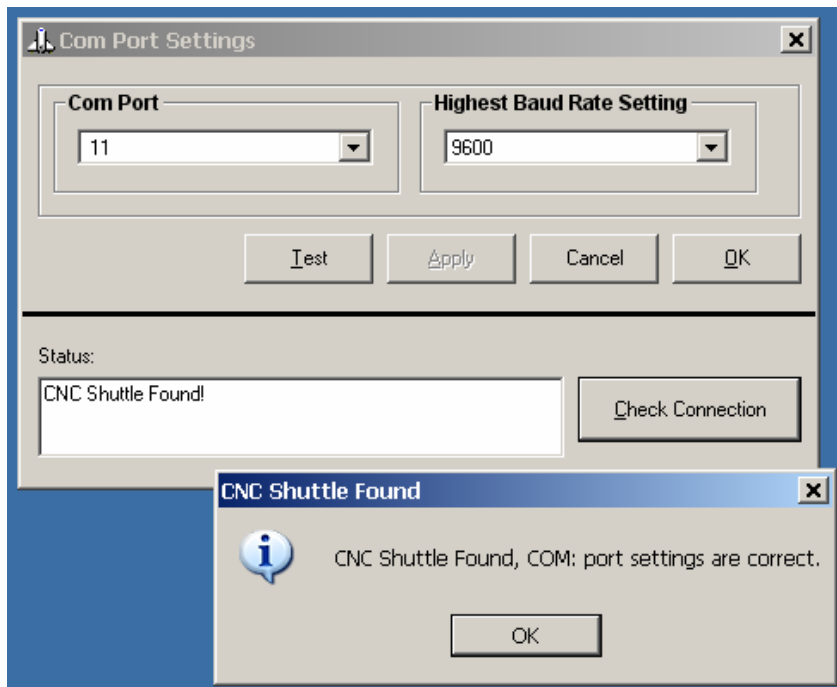
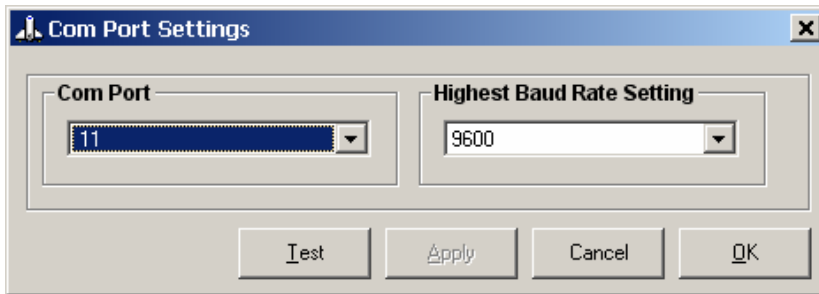
1. Set/Modify the Serial port between the MxDS1 and the WinShuttle software.
2. Set/Modify the Serial port on the MxDS1 for communications with a CNC control.
NOTE: The Configure CNC Baud Does Not Apply to the MxDS1
3. Modify the Send and Receive folder locations on the PC
4. Modify the default file extensions
5. Set the communication Timeout

2.2 - Set WinShuttle COM Port



To configure the Serial port which the WinShuttle uses to communicate with the MxDS1 unit, click **File / Set WinShuttle COM Port...** menu item. To exit without making changes click **Cancel**.

Make your changes to the configuration and click **Apply** to enable the new configuration and click **OK** - To exit without making changes click **Cancel**



To test the COM port settings click **Test** and then click **Check Connection**.

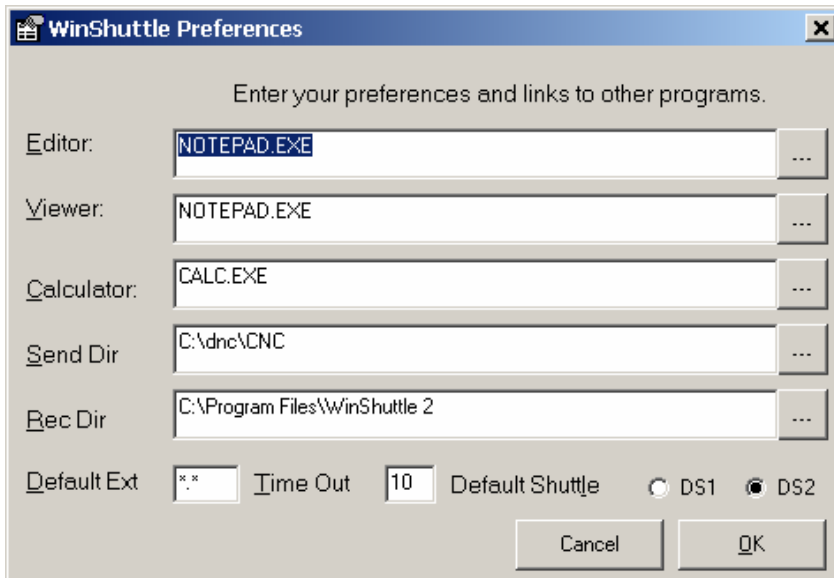
If the settings are correct then a message window will appear. Click **OK** on the message window and click **OK** to accept changes.

If you make any changes to the protocol screen then make sure you click **Apply** before testing.

NOTE: If you get an error message please review the Troubleshooting section of the manual.

3. Preferences

To modify the default preferences click **File / Preferences**



To change the default application which you use for your Editor, Viewer or Calculator click on the **Browse** button to the right of the listing, Browse to the application executable and select it. Then click **Open**.

Your selection will now be displayed as the new default application.

To modify the default Send or Receive directories, click on the ... browse button to the right of the directory listing. Navigate to the folder you desire and click **OK**.

To change your default file extension modify the text in the Default Ext window. Remember that the format must be ***.xxx** (e.g *.cnc - *.nc - *.prg - *.txt - *.*).

To modify the communications Timeout limit change the number in the **Time Out** window.

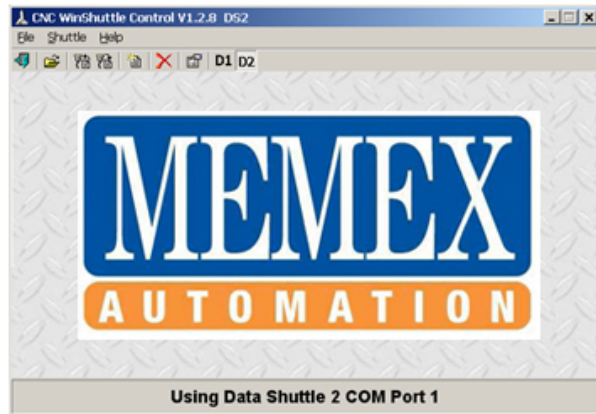
To default the WinShuttle software to communicate with an MxDS1 or MxDS1 select the appropriate radio button.

Note: You can also select the MxDS1 or MxDS1 by toggling the DS1/DS2 button on the main user interface screen.

To save your changes click **OK**.

To exit without making changes click **Cancel**.

4. WinShuttle to MxDS1 Operation

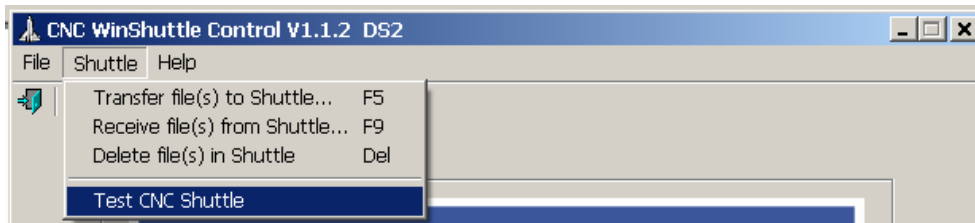


Make sure that the two switches located on the left hand side of the MxDS1 are in the **up position**. The **On**, **RD** and **TD** lights should be lit (the **CLEAR** light will be lit if the MxDS1 is empty)

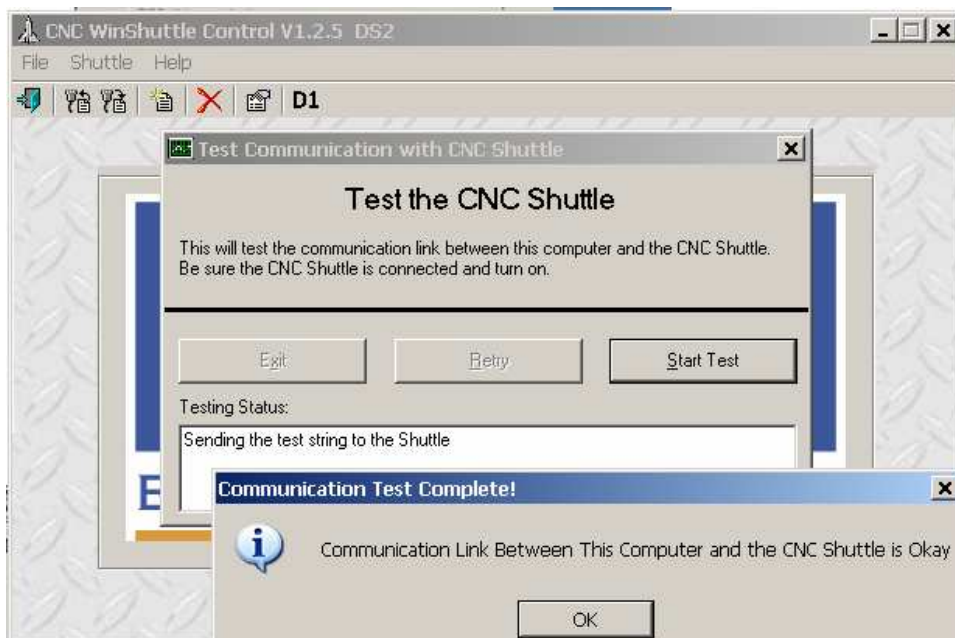
1. The Data Shuttle is now ready to communicate with the PC.
2. Connect the Serial cable to Data shuttle.
3. Launch the WinShuttle software by clicking on the WinShuttle2 icon on the desktop or by navigating to the WinShuttle program icon:

**Start/
Programs/
WinShuttle2/**

Confirm connection by clicking on the "**Shuttle**" menu item. Then click on "**Test CNC Shuttle**".



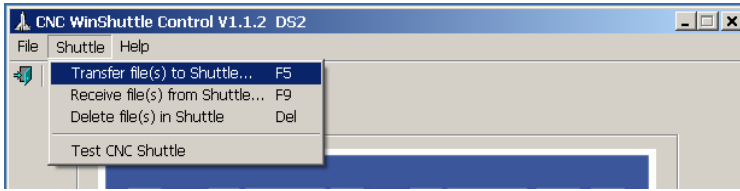
Click "**Start Test**". The Status Codes from CNC Shuttle window should display: "Sending test string to shuttle"



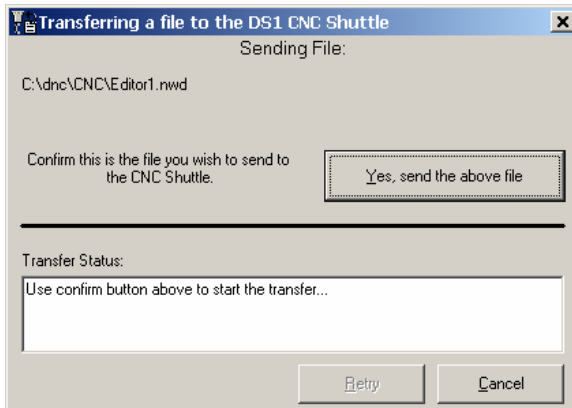
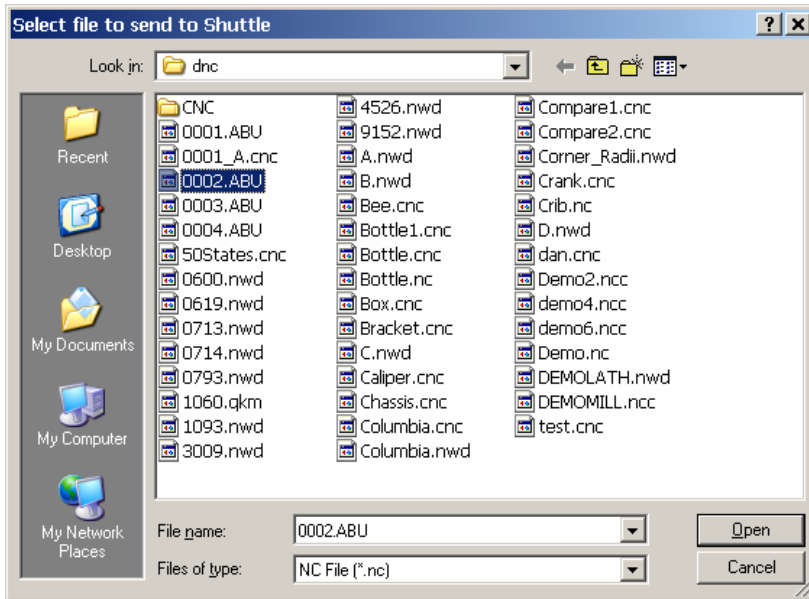
After several seconds a message will be displayed "**Communication Link Between This Computer and the CNC Shuttle is Okay**".

Click **OK** to clear the window. Click **Exit** You are now ready to transfer files.

4.1 - Transfer File to MxDS1 From WinShuttle

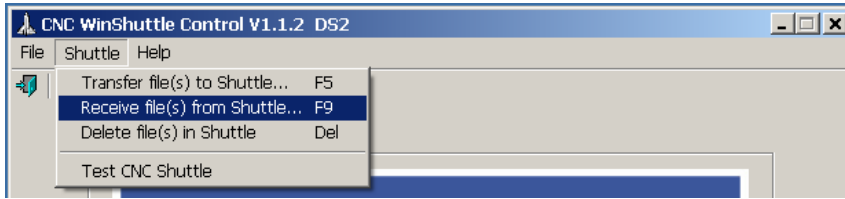


To transfer a file or multiple files from WinShuttle to the MxDS1 click on **Shuttle** and then select **Transfer Files to Shuttle**. Browse to the location of the files you wish to transfer. Select the file and click **Open**.

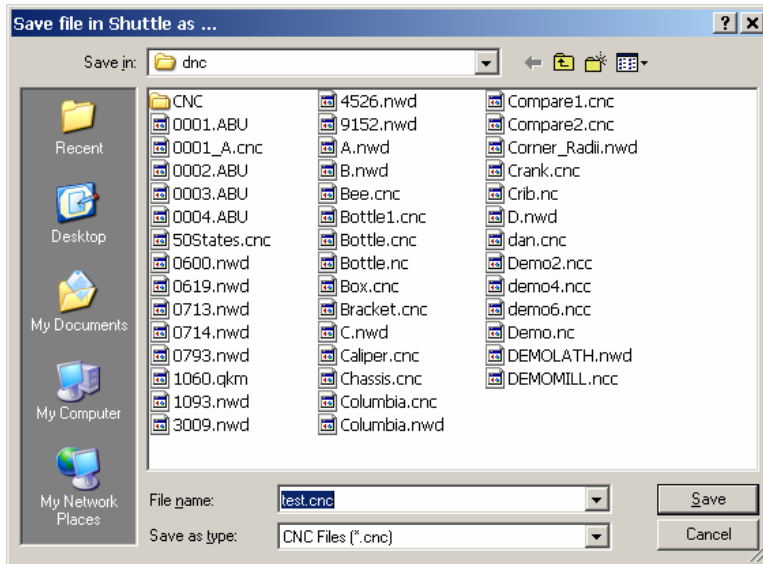


Click **Yes**, send the above file and the file will be sent to the MxDS1.

4.2 - Receive Files From MxDS1 Data Shuttle



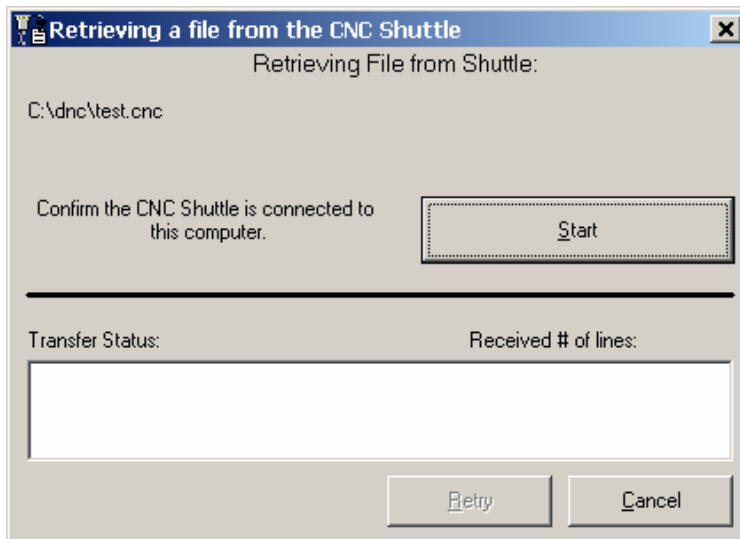
To transfer a file from the MxDS1 to the PC through WinShuttle click on **Shuttle** and then select **Receive Files from Shuttle**.



You will be presented with a “Save File” screen Name the file and click the Save Button.

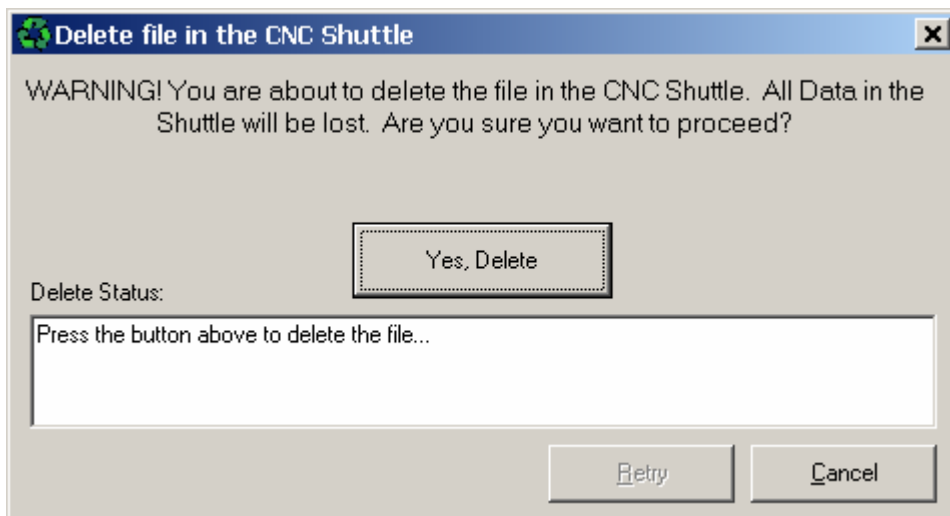
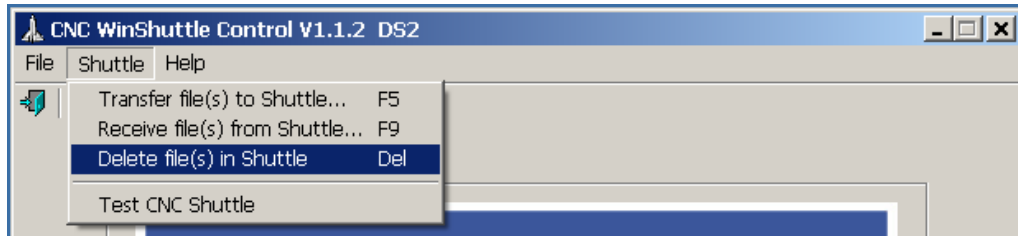
The files will be transferred to the PC. When the transfer is complete the message “**All files have been received and saved**” will be displayed.

When the file transfer is complete click OK and then click Exit



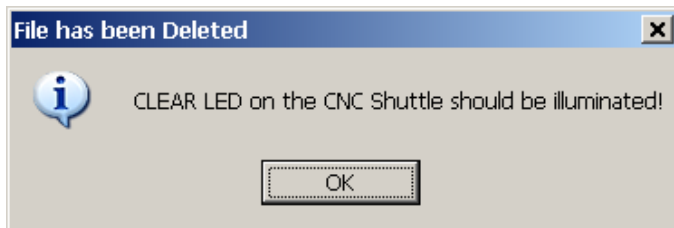
4.3 - Delete Files From MxDS1 Data Shuttle

To Delete a from the MxDS1 click on **Shuttle** and then select **Delete Files from Shuttle**



Click the Yes, Delete Button to delete the file on the MxDS1

When the Delete is complete the following message will be displayed.



5. Troubleshooting

5.1 Incomplete File transfers, strange MxDS1 behaviour, loss of communication to the MxDS1

Cause: Check **Battery** LED. If the LED is blinking on the MxDS1 during a file transfer or while powered on but not in use, the Battery requires changing. DO NOT operate the MxDS1 with the Low **Battery** LED lit or blinking. File corruption can occur.

Solution: Replace Battery

5.2 MxDS1 unit not responding

Cause: If communications to the MxDS1 is lost and the MxDS1 is not responding to button presses then the unit needs to be reset.

Solution: Press and hold the **Start/Stop** and **Select** buttons simultaneously for approximately 2 to 3 seconds. This will reset the MxDS1.

5.3 An RS-232 serial device is functioning poorly or not at all.

Cause: Some RS-232 serial devices now support speeds faster than the 115.2 kilobits per second (Kbps) currently supported by the standard serial ports installed on most computers. (For example, some serial devices support 230 Kbps.)

Solution: If the Port speed in the connection preferences is faster than 115.2 Kbps, then try reducing the speed to 115.2 Kbps. You can leave the Maximum Port Speed in the modem properties at the higher setting. If the serial port on your computer supports speeds faster than 115.2 Kbps, then set the Port speed to whichever is slower, the serial port speed or the device speed.

5.4 Checking the COM Port's Setup in Windows 95 & 98

Click the **[Start]** button on the Windows desktop, highlight **Settings**, then select **Control Panel**. Double click the **Computer** icon, select the **View Resources** tab and select **Interrupt request (IRQ)**. This will display the **Computer Properties** dialog and a list of your PC's Interrupts or IRQ's. Interrupts are just what they sound like, a signal that interrupts what the processor is doing and says "Hey! Look at me." Each Com port will ideally have it's own Interrupt number. If two ports share an interrupt they can't both be used at the same time. In some cases one may not work at all. Scroll down through the list and make a note of each COM port and what IRQ it uses (the number in the left column) and also make a note of which IRQ your modem uses, if you have one (bet you do if you're reading this...). Now look for unused IRQ's. There are 16 IRQ's labelled 0-15, if unused they won't appear in the list. Make a list of any unused IRQ's. If all your COM ports use a separate IRQ, it's time to go back to the drawing board. If not, cancel the Computer Properties dialog and go back into the device manager. At this point you must assign the COM port you wish to use an unused IRQ or disable another device and use it's IRQ.

Select the + next to **Ports** and then select the **COM port** you'd like to change and press the **Properties** button. Click the **Resources** tab and highlight **Interrupt Request** and then unclick the checkbox next to **Use automatic settings**. Now you can click the **Change Setting** button and select the IRQ you wish to use. You'll probably have to reboot in order for the changes to take effect.

5.5 Serial Connection Access Issues under Win 2000/ XP

A problem that plagues Windows NT/2000/XP, is its strict control over I/O ports. Unlike Windows 95 & 98, Windows NT/2000/XP will cause an exception (Privileged Instruction) if an attempt is made to access an I/O port that your program is not privileged to access.

6. APPENDIX

6.1 Explanation of Serial Communications Port

Serial ports are a type of computer interface that complies with the RS-232 standard. They are 9-pin or 25-pin connectors that relay information, incoming or outgoing, one byte at a time. Each byte is broken up into a series of eight bits, hence the term serial port.

Serial ports are one of the oldest types of interface standards. Before internal modems became commonplace, external modems were connected to computers via serial ports, also known as communication or “COM” ports. Computer mice and even keyboards also used serial ports. Some serial ports used 25-pin connectors, but today the 9-pin variety is more common. Serial ports are controlled by a special chip call a UART (Universal Asynchronous Receiver Transmitter).

In traditional computers, serial ports were configured as follows:

Serial Ports Interrupt Memory Address:

COM 1 IRQ 4 0x3f8 (where “0x” means the address is in hexadecimal or base 16)
COM 2 IRQ 3 0x2f8
COM 3 IRQ 4 0x3e8
COM 4 IRQ 3 0x2e8

Other legacy issues include the potential for serial devices configured to use serial ports COM 1 and COM 3 could not be active at the same time, as they shared interrupt IRQ 4. The same was true of COM 2 and COM 4 port devices that shared IRQ 3. Often this led to manually reconfiguring the serial ports at COM 10 and above!

Today, serial ports are mainly used for dial-up modems and current operating systems handle configuration automatically. Newer, faster technologies of USB (Universal Serial Bus) and Firewire have otherwise replaced both local peripheral communications.

That said, most CNC machine tools still have a reliable RS-274 serial port that the MxDS1 can easily communicate with, even if off-shelf computers can't. The idea of USB from the PC to MxDS1 and then Serial from the MxDS1 to the CNC is really a solid-state disk drive that is reliable and portable. It should be the back up for any DNC system.

Normal Serial Port Pin Outs:

25 Pin Connector	25 Pin Connector	25 Pin Connector	9 Pin Connector
SG 7	7 SG	SG 7	5 SG
SD 2	3 RD	SD 2	2 RD
RD 3	2 SD	RD 3	3 SD
RS 4	4 RS	RS 4	7 RS
CS 5	5 CS	CS 5	8 CS
DR 6	6 DR	DR 6	6 DR
CD 8	8 CD	CD 8	1 CD
ER 20	20 ER	ER 20	4 ER

Typical DB25 Serial Connections using XON/XOFF only. The MxDS1 can be set to use RTS/CTS (hardware flow control with Pins 4 & 5 crossed) as well. We recommend both, but one must be on at any given time to data can be corrupted. Note that the MxDS1 already has Pins 6, 8 & 20 jumpered for Fanuc Controls.

Notes:



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