

SERIAL COMMUNICATION WITH HYPERTERMINAL

INTRODUCTION

This document was developed to help customers interface Hyperterminal to the 9/Series for Part Program 'drip feed' and Upload/Download.

Hyperterminal(TM) is a trademark of Hilgraeves Inc.

Hardware Configuration

This is the cable configuration.

<u>PC</u>		<u>9/Series</u>	
	-----1 shield		
2-----	-----3	send data	
3-----	-----2	transmit data	
4-----	-----20		
5-----	-----7	ground	
6-----	-----6	data set ready	
7-----	-----4	ready to send	
8-----	-----5	clear to send	

This cable will connect directly to the serial port that you will configure. The pin outs of the 9/SERIES serial ports are also shown in the Integration manual. If you do not want to build a cable, we have found the easiest way to interconnection your computer to the 9/SERIES is to use a "Smart Cable" or an "SC-821 Plus Smart Cable" both made by IQ Technologies, Inc. The "SC-821 Plus Smart Cable" will actually determine, in most cases, what the exact cable wiring needs to be between almost any two serial devices. With that information you can build the appropriate cable at a later date. The "Smart Cable" is a device that allows you to make the interconnect but does not identify the proper cabling, so you will use it each time you need to communicate.

9/SERIES configuration

NOTE: You should configure your Hyperterminal and the 9/SERIES for the same baud rate, stop bits, and parity. (see note below)

In this example, the 9/SERIES was configured to use port "B". The user can configure either port "A" or port "B" as required. Please note that you can not select the same device at the same time on port "A" and port "B".

The configuration of the port being used was as follows:

```
SERIAL PORT:  B
DEVICE:      Intelligent Device
PORT TYPE:   RS232C
BAUD:       19200
PROTOCOL:   LEVEL 1
PARITY:     EVEN
STOP BITS:  1
DATA LENGTH: 7
TIME OUT:   15 SEC.
OUTPUT CODE: N/A
AUTO FILENAME: NO
STOP PRG END: YES
PROGRAM END: M02,M30:  YES
M99:       YES
```

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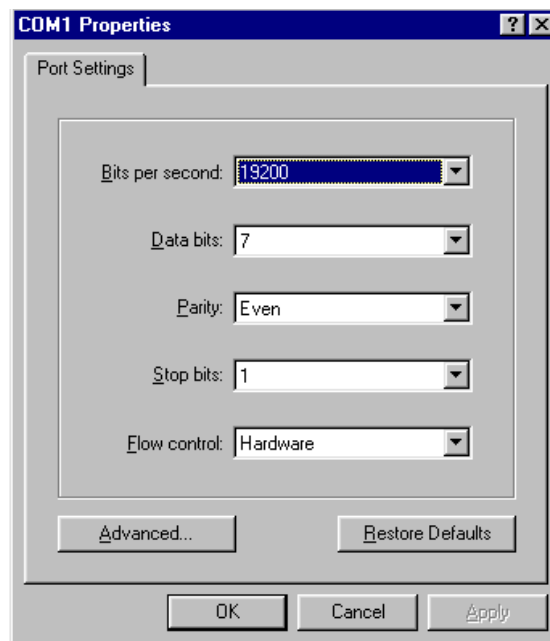
?: NO
PRGRM NAME: NO

Note: On older version of executives (release 4.xx, 5.xx and 6.xx) the settings for the port are Facit N4000 and 8-1-N. If not, characters will be dropped.

Hyperterminal settings:

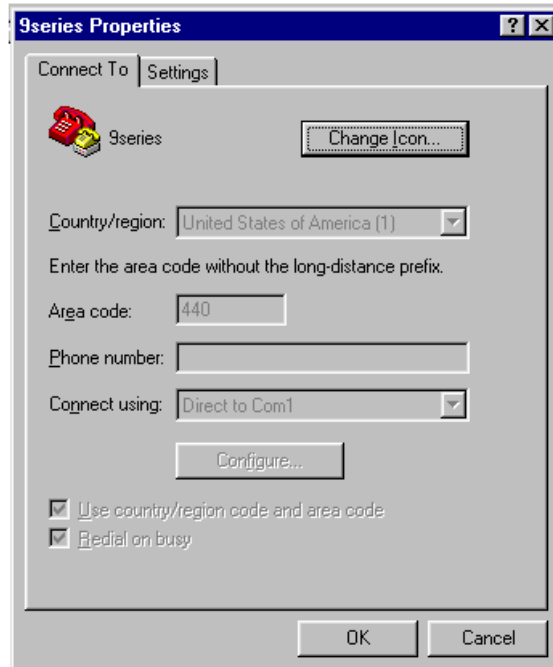
The communication software was tested on Windows 95, NT, and 2000 Professional using version 6.3 of Hyperterminal private edition. This is available from their web site at www.hilgraves.com/hpte/. There is a fee if used for business purposes.

At the first usage of Hyperterminal, you will need to create a new connection. Be sure that it is in Disconnect mode. Select New Connection. Then enter a name for this connection and select an icon. In the "connect using" select 'Direct to Com1'. Set the port settings as follows:

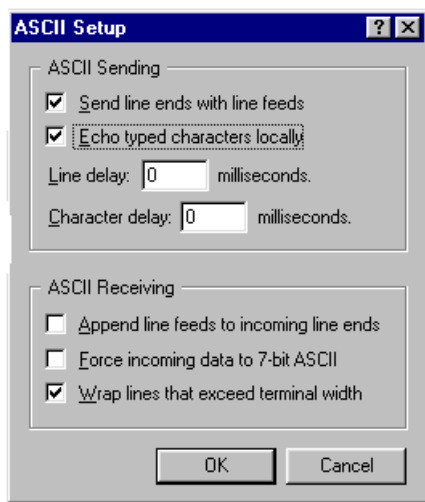


Under Files, select Properties.

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Select the Settings tab. Select the ASCII Setup entry. Make the settings as follows:



Beginning transmission of data from the 9/SERIES

To transfer a part program from the 9/series to the PC, perform the following:

1. Configure your device as described earlier.
2. Configure the 9/SERIES by selecting "System Support" softkey then selecting "Device Setup". Choose port "A" or "B" and configure it as described earlier.
3. Get the Hyperterminal running. Be sure that it is connect mode. Under the "Transfer" selection, select 'Capture text'. You will be prompted for a file name to be used for the program name.

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4. On the 9/series, select copy program under "Program Manage" softkey.
5. Place the cursor on the program to be copied. If you want to do all programs, the location of the cursor is not important.
6. Select the softkey "From Mem" to the port you have configured.
7. Choose the function you want to accomplish. "Single Program" will output the program that the cursor was on and then terminate. "Output All" will send all the programs in part program memory consecutively then terminate.
8. When "Multi Program" is pressed, then the program the cursor was on will be output. When that program is completed the control will display the directory. At this point you will have two choices. Output Program or Finish Tape. Placing your cursor on another program and pressing "Output Program" will dump that program and return you to this screen after each dump. When you have sent the late program, press the "Finish Tape" softkey which will terminate the file and end transmission.
9. Once the file is transferred, select Transfer/Capture Text/Stop to close the file. Then, disconnect from HyperTerminal.
10. Notice that the file being sent to the PC does not contain any carriage returns (CR). The part program blocks will display in a stair step manner on the screen of the PC. Also, when using a text editor on this file, all the data will appear on one line (because there are no carriage returns). CR can be added with the editor. The program is usable by the 9/Series without the CR. The line feed (LF) is the important control code that is required by the 9/Series.

Sending a program from the PC to the 9/Series

1. Configure your HyperTerminal as described earlier.
2. Configure the 9/SERIES by selecting "System Support" softkey then selecting "Device Setup". Choose port "A" or "B" and configure it as described earlier.
3. Get the Hyperterminal ready to transmit the file by selecting 'Send text file' from the Transfer tab.
4. Select "copy program" under "Program Manage" softkey.
5. To load a new program on the 9/SERIES, press the "shift" key with the cursor up key as many times as needed to move the cursor to the "name" position on the screen which will clear the select program line. You may also use the "DEL" key on the keyboard to clear the program name one character at a time.
6. You can then type the program name and press the soft key "From port to Mem". You may also have program names on the tape or automatically give file names depending on how you configure the device setup. See your programming manual for further details on these features.
7. Select "Single Program" on the 9/series and then complete the opening of the program to be sent from the HyperTerminal.
8. After the data is sent, the 9/series will wait for the amount of time specified in the device settings before it closes the port and save the program. This time setting can be reduced, but remember,

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this also applies to turning the port off when no data is received. You may experience "Serial Communications Error #5" which is a time out of the serial port. Or, once the screen of HyperTerminal does not display data being sent, use the CANCEL soft key on the 9/series to terminate the transmission. The program will still be saved.

9. When file transfer is complete, select 'Disconnect' to close the file.

Running a part program from Hyperterminal

1. Configure your Hyperterminal as described earlier.
2. Configure the 9/SERIES by selecting "System Support" softkey then selecting "Device Setup". Choose port "A" or "B" and configure it as described earlier.
3. Select "Input Device" under "Program Manage" softkey.
4. Select the port to which you have connected your device.
5. Pressed the "Right Screen" key until you find "Active Program" softkey. Press that key. This will activate the port to run.
6. On Hyperterminal, select "send text file" from the transfer topic. Use the windows provided to select the part program to execute and Open. This will begin the transfer of the program blocks to the 9/series.
7. Select "Auto" and press "Cycle Start" on the MTB panel to begin execution of the program.

Note: The blocks of data from the part program will not be displayed on the 9/Series until the program is started.

General information

Handshaking

The system does not actually do hardware handshaking in the level II mode, but it uses the lines to sense the external device in the level II mode.

Part program format

It is recommended to use a "%" at the beginning of each part program. The part programs can be generated with Notepad, Wordpad, or other Windows text editors. The use of the M30 or M99 at the end of the program may result in an error message "rewind error". The use of the M02 is preferred.

The use of the O word can add a number to the part program name. It must be the first block of code and must contain five numeric values. Ex. O23456. Also, the first block containing a comment line will be added on the Program Manage screen in the Comment space for the program.

According to the version of HyperTerminal that is being used, it has been reported that the first sending of the text file does not wait for the control to be ready. It will send the data immediately. If using this as a drip feed operation and cycle start is not press quickly after the text is sent, the part program can be missed. Thus, the error message for a serial time out will eventually be display. Subsequent transfers of data will wait for the request from the CNC before the data is sent.