CADCAM INTEGRATION

Driving Manufacturing Productivity for Over Two Decades

SuiteFactory Technote

Document and Records Mangement   Job Packets
DNC   Wired and Wireless Ethernet Networks
Wired and Wireless RS-232   Consulting Services

CNC Communications Setup
RS-232 or Networked Ethernet
Hurco/Hurco Ultimax

Please note! The following information comes from our many years of experience in setting up RS-232 communications with this CNC. However, our experience also has taught us that many controls do not necessarily match the standard. So, please double check this information in the Operator or Maintenance or Parameter manual that came with your machine.

The Hurco Ultimax CNC has two CRT screens. The left hand one is for text and is where you perform setup, issue commands or edit files. The right hand one is for viewing the graphical representation of the part program in memory.

1   RS-232 Settings

1.1   CNC Setup

The Hurco Ultimax CNC console has four pushbuttons arranged in a square on the panel: Input, Auxiliary, Review and Help. To setup serial port parameters press [Auxiliary] then soft key Download/Upload then soft key Serial Port Setup. Select Port 1, XON/XOFF, 9600 baud, 7 bit word, 1 stop bit, even.

1.1.1 Choose the Industry Standard N/C (G-code) Editor or the Conversational (Graphical) Editor

To change from one editor to the other, select soft key Change Editor. Select the one you want.

1.2   SuiteFactory DNC Setup

1.2.1 Industry Standard (G-code) Editor Selected

Set the DNC machine properties to 9600, Even, 7 bits, 1 stop bit, Xon/Xoff wait. Set the protocol to Generic RS-232 and data type to ASCII.

Note! Hurco G-code files should end in the letter E.

1.2.2 Hurco Conversational (Graphical) Editor Selected

Set the DNC machine properties to 9600, None, 8 bits, 1 stop bit, CTS/RTS. Set the protocol to Generic RS-232 and the data type to Binary.

RHL 1/24/2001 revised 7/13/2010

1.3 Wiring

Use 24 AWG stranded, low capacitance computer cable with an overall shield (foil is fine and easier to work with.)
The following is standard wiring, however some Hurco models use DSR/DTR lines for hardware handshaking and
require the alternate wiring scheme. In order to determine which wiring scheme to use you need an RS-232
tester or break out box. Contact CCI for details

```
        CNC          DNC COM port
   (9 pin socket)      (9 pin socket)
        Chassis --- shield--x
        2-----------------------3
        3-----------------------2
        7-----------------------8
        8-----------------------7
        5-----------------------5
```

1.4 Alternate Wiring Scheme

```
        CNC     DNC COM port
   (9 pin socket)     (9 pin socket)
        Chassis --- shield--x
        2----------------------3
        3----------------------2
        4----------------------8
        6----------------------7
        5----------------------5
```

1.5 Sending and Receiving Programs

1.5.1 To get a program from the DNC

Note! Depending upon whether the file is G-code or Hurco Conversional you have to set the DNC parameters to match. See setup instructions, above.

1. At the DNC computer, queue up the program you want to send to the Hurco CNC.
2. At the Hurco console, press pushbutton [Auxiliary] then softkeys Download/Upload then Upload/Receive.
3. When the program has been read in it can be displayed on the graphics screen by pressing the pushbutton [Input] and then softkey Part Programming and then press [Draw].

1.5.2 Erasing a Program in Active Memory

To erase a program in active memory press [Input] then softkeys Erase Functions, Erase All, Yes.

1.5.3 To send a program to save in the DNC database

Note! Depending upon whether the file is G-code or Hurco Conversional you have to set the DNC parameters to match. See setup instructions, above.

1. At the DNC computer, queue up the program name you want to get from the Hurco CNC.
2. At the Hurco console, press pushbutton [Auxiliary] then softkeys Download/Upload then Download/Send.
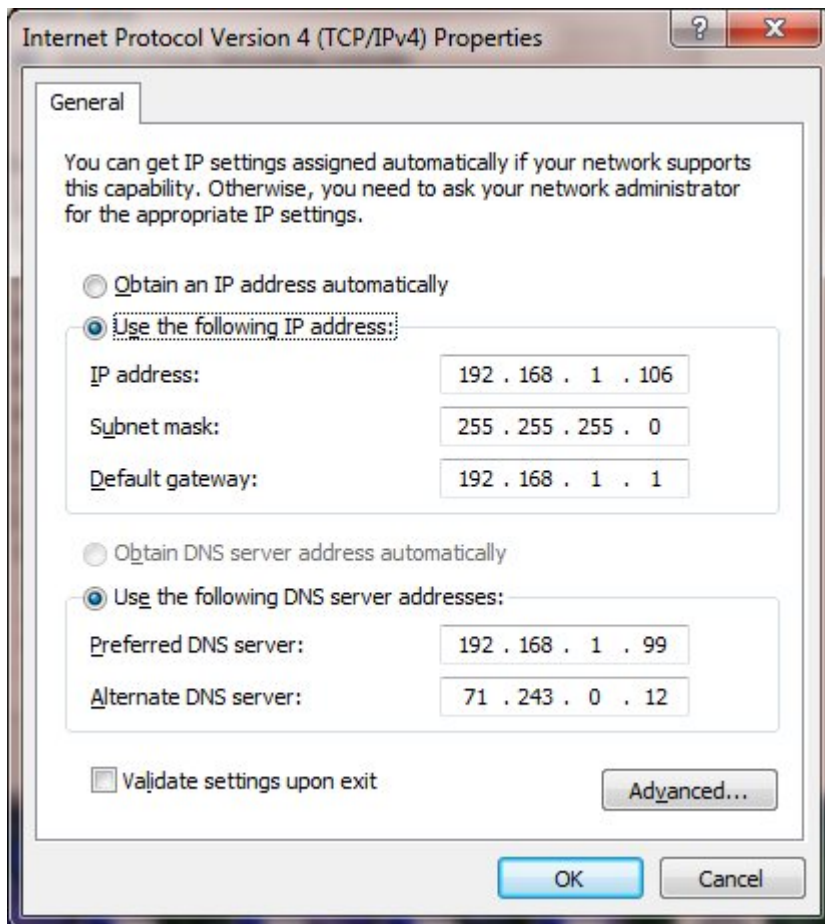
2 Networked (Ethernet) Setup

Newer models of the Hurco CNC are PC based running Windows XP at this writing. The PC has an Ethernet connection that is setup much the same way as any PC would be, via the Window Control Panel "Network Connections" icon. Communication between the CNC and SuiteFactory is done via a shared folder on the CNC's hard drive. *Please note that although there is an RJ45 Ethernet socket on the outside of the CNC cabinet it is not necessarily connected internally to the built in Ethernet card. You might need a CAT5 patch cable to hook it up inside the cabinet. Then plug the external plug via CAT5 cable to a network Ethernet switch.*

2.1 Accessing Windows on the Hurco CNC

In order to establish the required network settings, we must access the Windows Control Panel. Hurco CNC's that are PC based have a standard keyboard that you can pull out and the screen is a "touch screen". There is no mouse but there is a touch stylus handing on the front of the control that you can use. On this keyboard enter <CTRL><ESC> and you will see a tab appear on the left side on the left hand screen. Touch this tab and a menu appears. Select [Service]. Enter password 46268 and then <Enter>. On the resulting Hurco Service Window, first touch "Turn on full drive". Then select [Control Panel].

2.2 Setting up the TCP/IP address

Select "Network Connections". Re-enter the password, 46468, if required, and then <Enter>. Now you should see the regular Windows Local Area Connections screen. Select Local Area Connections with the stylus and then on the menu bar select File/Properties. Scroll down to TCP/IP (V4 if there is a choice) and double click to get to its properties.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
⦿ Use the following IP address:

IP address:	192 . 168 . 1 . 106
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	192 . 168 . 1 . 1

○ Obtain DNS server address automatically
⦿ Use the following DNS server addresses:

Preferred DNS server:	192 . 168 . 1 . 99
Alternate DNS server:	71 . 243 . 0 . 12

☐ Validate settings upon exit

[Advanced...]

[OK] [Cancel]

The above is an example. You must set this up as per the requirements of your own network. It could be setup to obtain an IP address automatically or to use a specifically assigned unique address. We recommend an assigned address. Then you can use that IP address to access the CNC rather than trying to find it by a name.

2.3   Changing Computer Name

If you wish you can change the default name of the CNC's PC to something meaningful to you. To do this, return to the Hurco Service Window. As above, on the standard keyboard, press <CTRL><ESC> to get the tab to appear on the left side of the left screen. Touch the tab to get back to the service window. Re-enter password 46268. Touch "Open Explorer". Highlight "My Computer". With the stylus, on the menu bar, select File/Properties. Select the Computer Name tab and then touch the "Change" button.
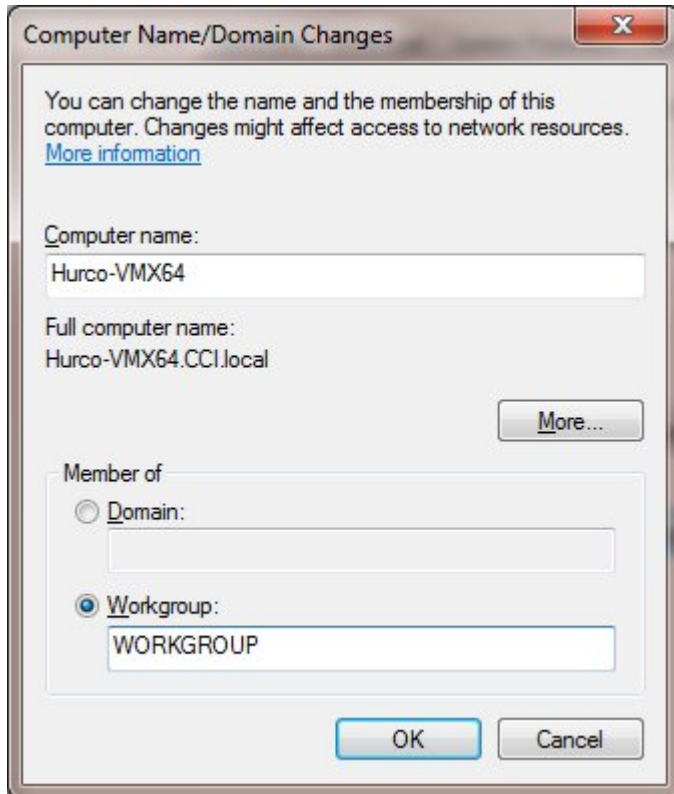
You can name the CNC computer anything you'd like (no spaces please) so long that it is a unique name in your local area network. You can have your CNC's computer join a Domain or have it just part of a workgroup. It is entirely up to the networking requirements of you facility. Touch OK and you should return to the explorer window. You will have to reboot the CNC computer for these changes to take effect. Before you do that, complete the next two sections.

2.4   Creating a Network Share

You should be in Windows Explorer (My Computer). If not, repeat the instruction in paragraph 2.3, above, to get there. The D partition should contain the part programs. You can either share the entire partition or as we recommend, create a new folder in the D partition and share that drive. To create a new folder, use the stylus to highlight the D: drive. On the menu bar, touch File/New and select folder. Name that folder DNC (or anything you want). With that new DNC folder highlighted touch File/Sharing and Security. Select Share this Folder. Give it a share name. The default name, DNC, should be fine. Under "Permissions", give "Everybody" full control. If necessary (if you are on a domain) setup the security as required.

2.4.1 Windows Firewall

Under certain circumstances it might be necessary to disable the Window Firewall on the CNC PC. For example, your CNC is on a different subnet than the computer hosting the SuiteFactory software. This should not be a security problem since it is not common to give the CNC internet access. If you are installing this CNC on a large factory network you will need your IT department to work with you.

NOW REBOOT THE CNC PC.

2.5   Setting up SuiteFactory for the Networked CNC

Login to SuiteFactory as administrator. At the main toolbar, click on Machines or select Configure/Machines. If this is a new machine, select New.
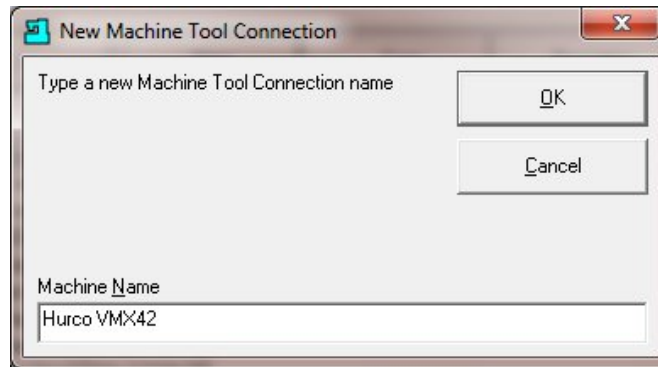
Enter the Machine's name. Click OK.

If not new, select the machine from the tree and click Properties.
Now select the Protocol tab. Change both send and receive to Networked Controller UNC.
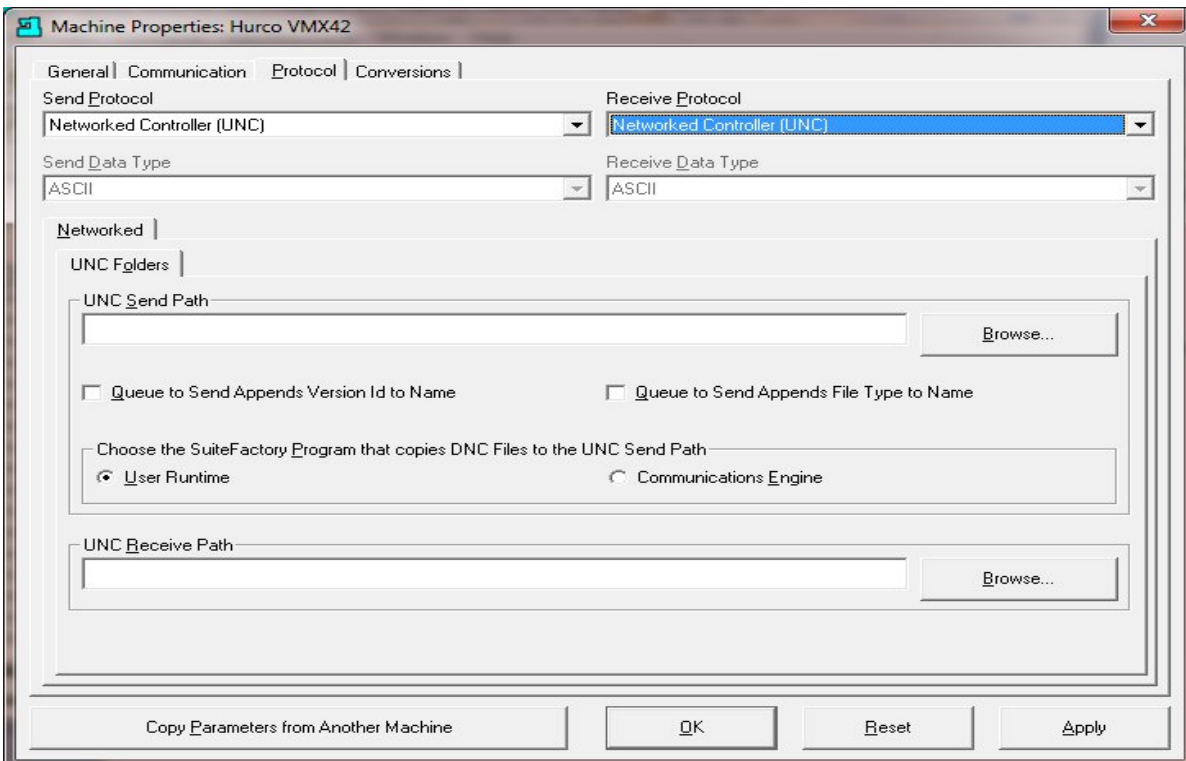
For both the UNC Send Path and UNC Receive Path click Browse and enter the path to the share folder on the CNC. Using the CNC's IP address is the most direct way to its shared folder. You can use the CNC's computer name if it is on a network with DNS (Domain Name System) services. Click Browse and enter the path manually. Note! The OK button will not be enabled unless the path you've entered actually exists.
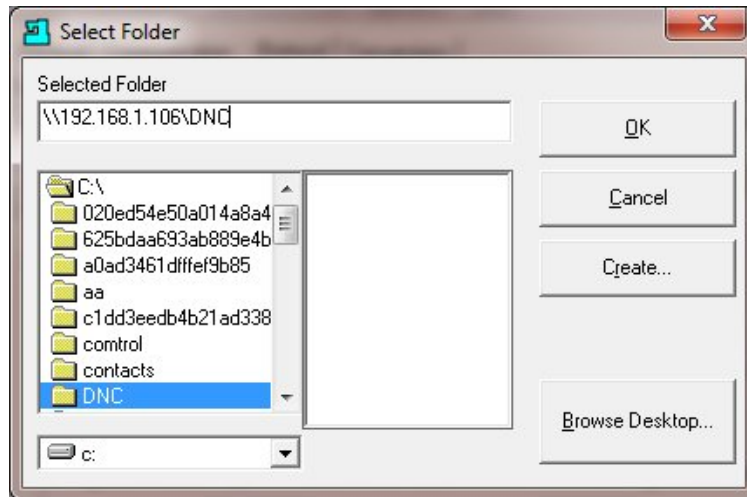
Click OK.
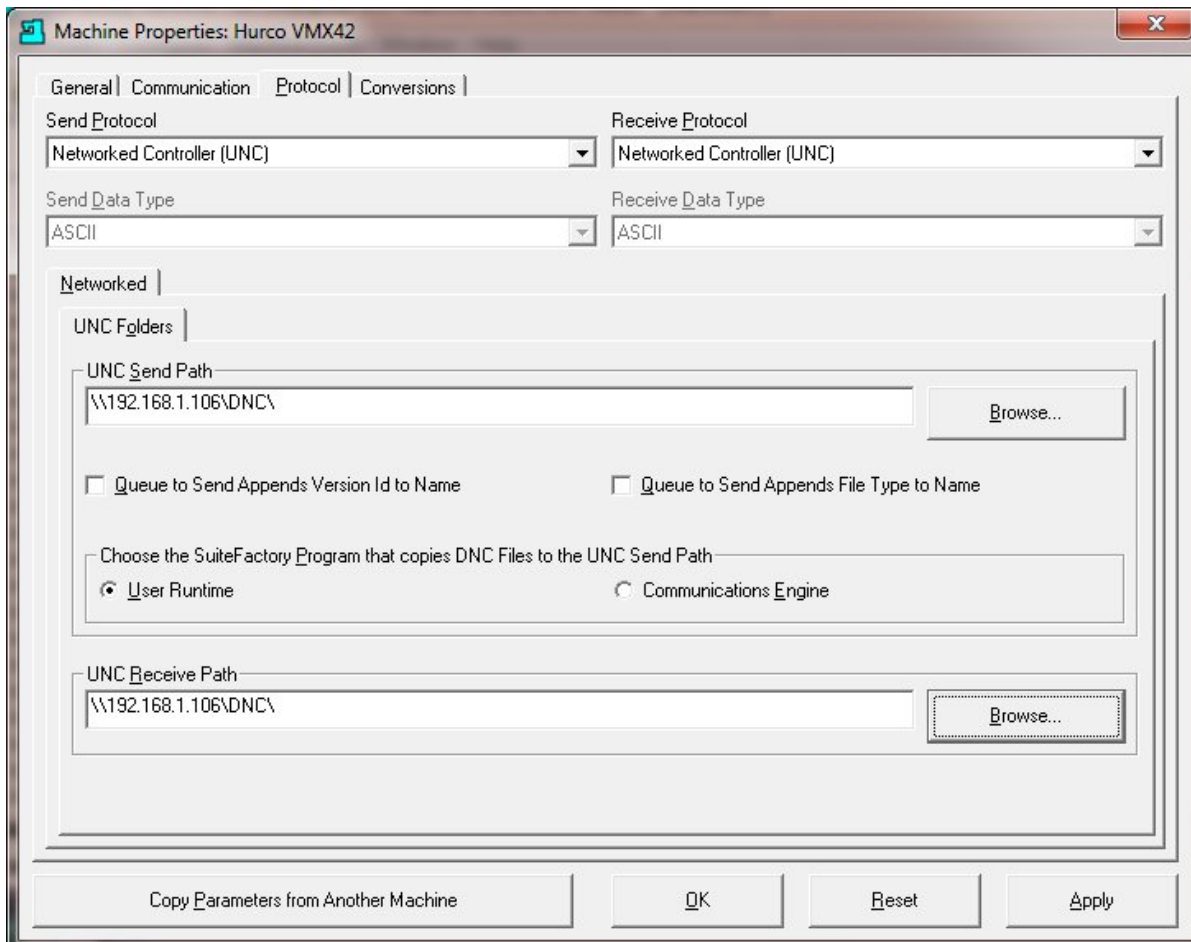
Select "Queue to Send Appends Version Id to Name" if you have are set up as a multi-version system and you want to differentiate between versions sent to the CNC.

Select "Queue to Send Appends File Type to Name" if your CNC requires a specific .ext. You can change the file type in the "Manage DNC Files" window.

Select "User Runtime" if you send and receive DNC files manually at a shop floor workstation.

Select "Communications Engine" if you use SuiteFactory's Remote Request feature from your CNC control panel.

Click OK.

2.6 Sending and Receiving Programs

2.6.1 To get a program from the DNC
- At the DNC computer, queue up the program you want to send to the Hurco CNC. If you have the right you can use SuiteFactory's filter function to create a list of files you wish to send. Click Send to send one file. Click Send All Listed DNC Files to send all the files in the list. The file(s) will be copied into the configured shared CNC folder.
- At the Hurco console, press pushbutton [Auxiliary] then soft keys Program Manager/Disk Operations. Go to D:/DNC. In the right side window highlight the program to be run and press soft key LOAD.

2.6.2 To send a program to save in the DNC database
- At the DNC computer, go to Manage DNC files. Select the machine. Enter the program name you to be fetched from the Hurco CNC. Click Receive. The list of files in the shared CNC folder will appear. Select the program to be saved and click Receive.