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DncRemo (easyDnc) Version 3.0

June 2006

For Windows 95/98/ME/XP/W2000 and W2003Server

Installation and User Guide

Cable / Wiring Diagrams



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Introduction

easyDnc is a brand new program based on the Windows 32 bit GUI allowing many functions to be accomplished using the computer mouse. Sending a CNC file to a machine, for example, requires no keyboard work at all; simply use the mouse to navigate to the required file (or files) and click&drag the file(s) onto the relevant machine icon then stand back while DncRemo queues the files ready for transmission. Just one more mouse click and the data is on its way to the machine.

easyDnc also runs in DripFeed mode displaying the program being processed with one-click Pause, Stop and Repeat.

This new version, 'DncRemo' 3.0 is a brand new Multi-Tasking DNC system based on our popular easyDncXP. Opening full independent 'DNC Task Windows' which you can size and position on your display allowing you send, receive and observe data traffic to and from more than one CNC at the same time.

By opening a number of fully independent task windows we've made 'remo' into a true multi-tasking system where problems or errors caused in one process have no effect on other tasks.

All in all, DncRemo is the ideal solution for those computers which don't require expensive CAD/CAM functionality but do need simple and extremely low cost multi-tasking DNC file-transfer and drip-feed capability.

Installation

In most cases DncRemo will be installed from our downloadable setup package available on the internet at www.dncremo.com

Alternatively you may have received your software via email or on a CD possibly from a colleague or a local reseller.

If you download from the internet all the setup files will be compressed into a self extracting zip file which will normally download onto your Windows desktop. Double click the icon and the install/setup files will be extracted to the same location on your computer.

To begin setup double click the Setup icon and the installation wizard will guide you through the installation process.

Setup may need to reboot your computer in which case you'll probably need to re-run Setup once your computer has restarted.

When the install process is complete you'll find a DncRemo item in your Windows Start menu and, depending on your version of windows, you may also have a startup icon on your desktop.

Use this now to start DncRemo

We've done as much as we can to make DncRemo work just like Windows. If you can use Microsoft Windows then you can use DncRemo.

The first time you run DncRemo the main screen will look like the picture at the top of the next page.

Before you can send and receive data you need to add at least one machine icon to your DNC system.

Start by double clicking the ‘Add Machine’ icon.



And just like Microsoft Windows, you can RightClick the new icon to get a menu of options related to the new machine.

In this case of course the first thing to do is to give the machine icon a more sensible name. You rename the machine icon just like renaming any other Windows file or folder.

Configuration

Once you've added a new machine you need to configure DncRemo so that it knows how to communicate with the new machine.

To begin select the machine by clicking its icon. You'll see the border appear around the machine's icon.

You can select “Setup” from the options across the top of the screen or RightClick the machine icon to expose the context menu where you can select “Properties”.

Whichever menu item you select, the main setup screen, shown on the opposite page, appears.



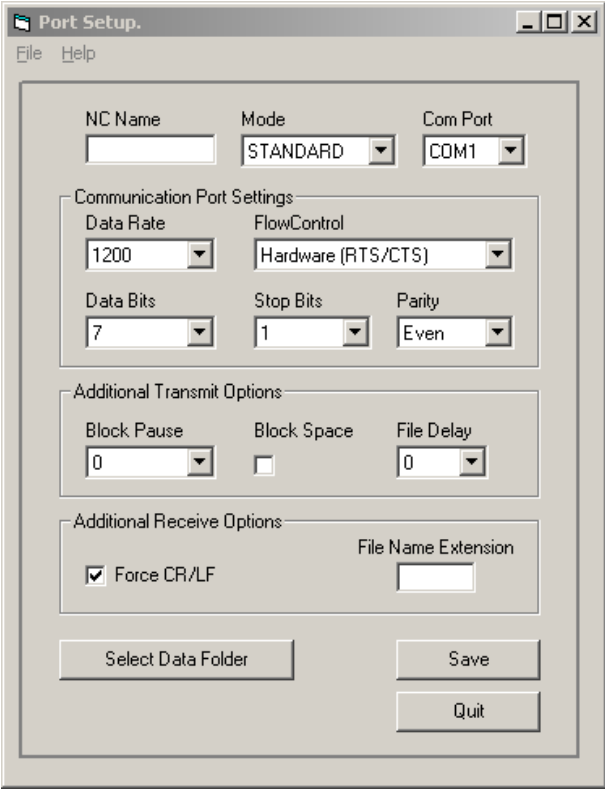
Note:

This section of the manual explains the manual setup procedure. You might also like to read the section about ‘Port Scan’ which allows most setup parameters to be configured automatically.

The options in this window need to be adjusted so that they match the communications settings of your CNC.

This window in your version of easyDnc may have a slightly different layout but in general the options will be the same.

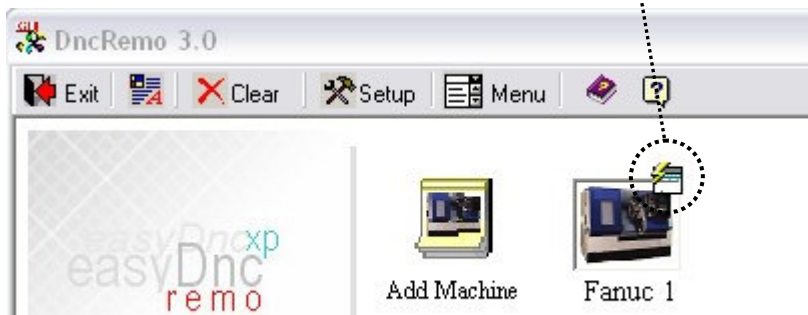
At the top of the window is a 'Help' menu which you can refer to for an explanation of each of the options.



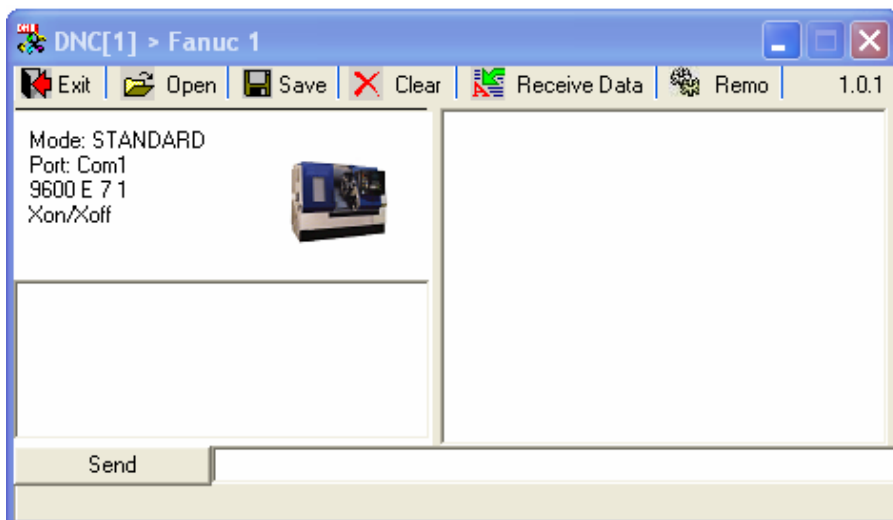
When you're finished click the [Save] button followed by [Quit] to close the setup window and return to the main DncRemo window.

MultiTasking

In previous versions of easyDnc you did everything via the main program window. This of course restricted the number of things you could do at the same time. In this new 'MultiTasking' version you open a new 'task' window. You do that by clicking on the icon of the machine you wish to work with and then click the small 'task' button that appears as shown in this image.

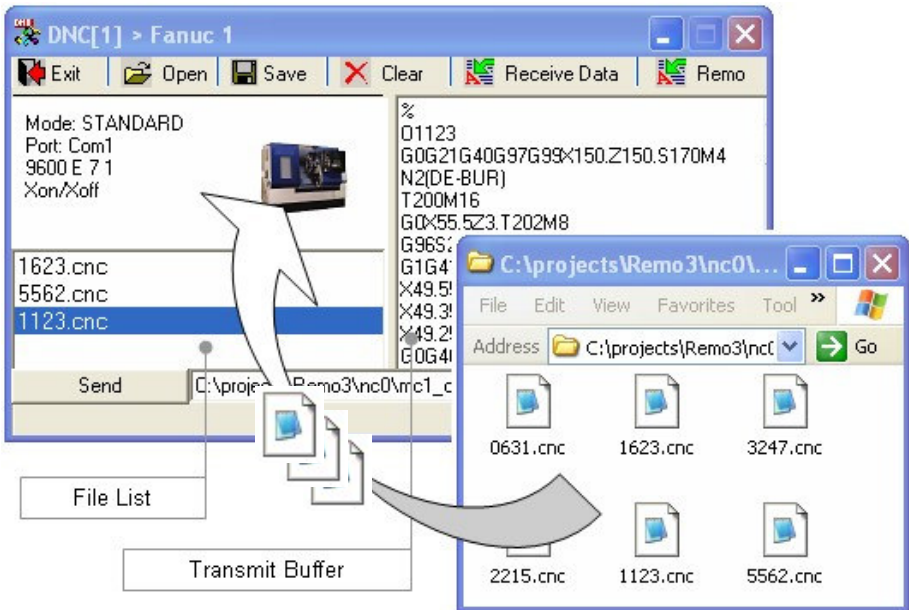


When you click the Task button a new task window opens as shown below.



Before you can send a file to the machine you need to place it into the file list. The easiest way to place files into the list is by Drag & Drop.

To do this you navigate to your file(s) using Windows Explorer or 'MyComputer', click the file (or files) to select and then drag with the mouse and drop the file(s) onto the machine icon in the task window.



Note:

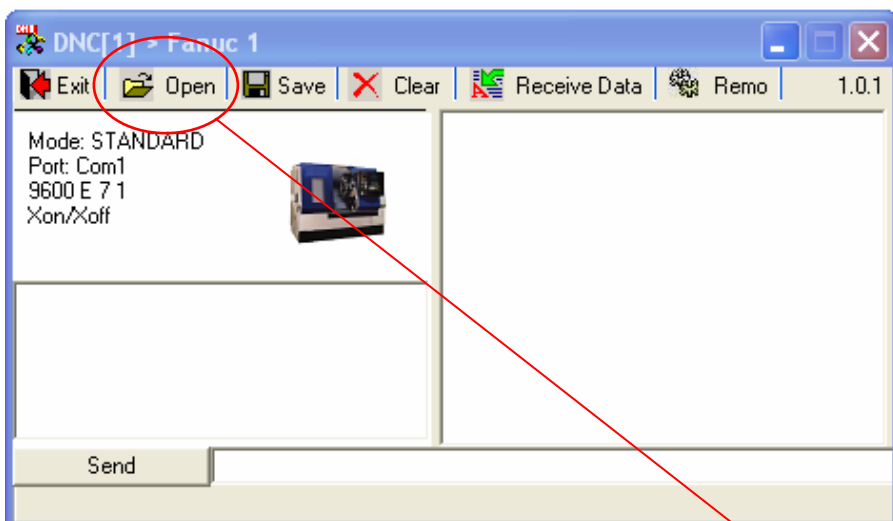
When you drag and drop files onto the machine icon the actual file is not moved from its original location. This action simply tells DncRemo what the file is called and where it can be found.

Selecting a file via the Open File dialog

Windows allows you to select files in a number of different ways and different people prefer different methods.

To make using DncRemo as easy as possible we've also adopted the same methods allowing you to select files by whichever method you prefer.

So, as well as Drag&Drop described on the previous page you can also select files via the Standard Windows file-open dialog.



To access the Windows file-open dialog click the 'open' button near the top of the task window.

The standard Windows file open dialog appears as shown on the following page.

The exact look and feel of the Windows file-open dialog on your computer depends on your version of Windows.

This is the dialog from Windows XP.



The file-open dialog allows you to navigate to any files anywhere on your computer or local network.

By clicking the file(s) they will be added to the current machine's transmission queue.

Note: The files you select are not moved or altered in any way. This action simply tells DncRemo what the files are called and where they can be found.

Send Data to CNC

The names of files entered into the transmission queue are shown in the small text area at the bottom left of the main window.

To prepare one of the queued files for transmission select it in the list and its contents appear in the Transmission buffer. (The transmission buffer is the larger text area on the right of the task window shown below)



When you're ready to send the data to the CNC you need to place your CNC into 'Read' or 'Data In' mode and then click the [Send] button.

During transfer the data in the buffer scrolls up the window indicating which part of the program is being processed.

Any time during transfer you can click the Stop button to abort or the Pause button to hold temporarily.

The progress indicators and the display of data scrolling up through the window might well be of interest when "Drip Feeding" of large programs giving at a glance an indication of progress.

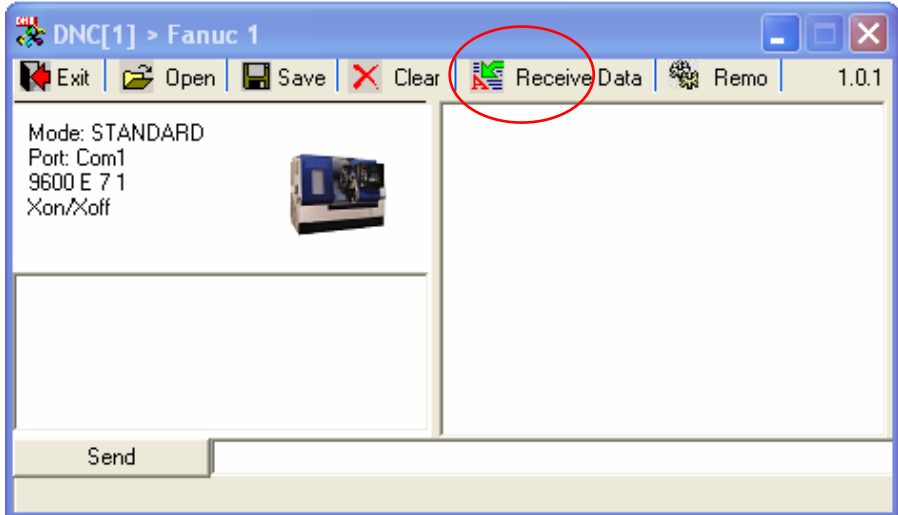


Note:

This version of easyDnc is MultiTasking. This means that you can open a number of 'Task' windows and start transfer of data to and from a number of machines at the same time.

Receive Data from the CNC

To receive data from the CNC you need to set the task window into 'Receive' mode by clicking the "Receive Data" button shown in the picture below.



You can now operate the CNC console to punch/send data from the CNC.

Received data appears in the data window where you can edit it, send it back to the machine or save it.

Remo

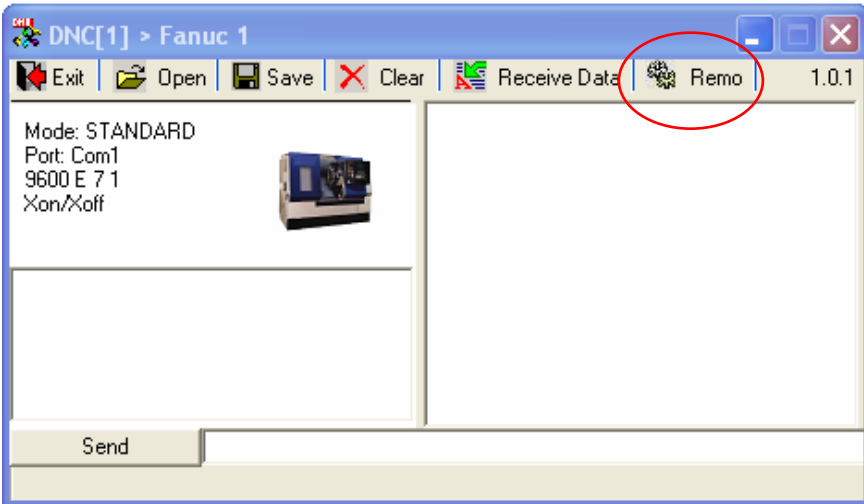
In many cases the CNC machine may be located a distance away from the computer or maybe you've got a number of machines connected to a central computer. In either case the last thing you want is you or your machine operators running or shouting across the shop between cnc control and the remote computer.

Unfortunately, CNC machines are not very clever. If they were based on a smart operating system then you'd be able to use the CNC console to browse through a remote server's files, select the one you want and download it into CNC memory. In most cases though the CNC control just doesn't have any networking capability so can't do anything like that.

One thing most CNCs can do though is send and receive files. They **can't** request files **from** remote servers but they **can** send files **to** remote servers. So, imagine if we created a small file on the CNC and wrote our request into that file and sent that file to the server. As long as the server, in this case 'remo', was expecting such a file it would be able to open the file, read the request, and complete whatever action was contained within. The good news is remo has been programmed to expect such simple file requests from pretty much any CNC as long as the CNC is capable of punching CNC program/data.

In the example on the following page we'll use a machine like a Fanuc because there's lots of other makes and models of CNC which adhere to the same ISO data standards. At the end of the example we'll cover a couple of alternatives so you can adjust this method to suit other machines.

First thing to do is enable 'Remo'. To start Remo you open a 'task' window for the relevant CNC and click the 'Remo' option in the menu bar as shown in the image on the following page.



Once Remo is enabled you can leave the computer and do all your work at the CNC.

In the CNC control create a small program which isn't used by the machine. We call this program 'The Runner' (because we send it, just like a runner, back to the computer with our message) Lets use program number 9999 as our runner (O9999) (you can of course use any program number you want, O0001, or anything else) In our example we'll imagine that we want the remote computer to send program 1234 into the machine. On a Fanuc we'd create a small 'runner' program like this:-

```
%  
O9999  
P1234  
M30  
%
```

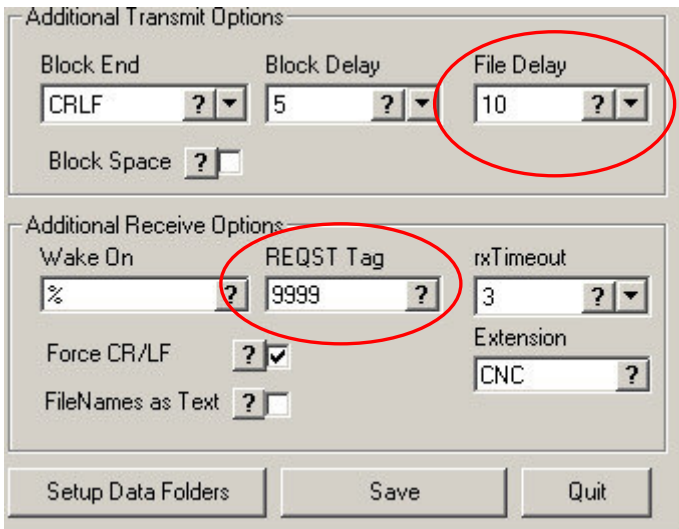
When you're ready, send the Runner to the computer and switch the CNC into 'Input' mode.

When you've created your runner you simply punch it out/send it to the computer and then quickly switch the CNC in to data input mode.

When easyDnc – remo receives the runner it opens the incoming file, sees that second line 'P1234' and knows that the machine is waiting for program number "1234".

easyDnc reads the file "1234" from the machine's default folder, loads it up and sends it back to the CNC.

easyDnc's setup page has been updated to add a couple of new options shown in the diagram below



File Delay

Once the CNC has sent the runner back to the computer you need to quickly set the CNC into data input or receive mode because easyDnc may send the requested file before you're ready. File delay tells easyDnc to wait this number of seconds giving you plenty of time to prepare the CNC for data input.

REQST Tag

When Remo is enabled it's always listening for data from the CNC. Such data would usually be an incoming file being saved to the computer's disk drive in the default folder. In this case though we want Remo to recognise the data as our runner and read the file's contents. This REQST tag option tells Remo how to recognise the runner. (IE the runner program's name or number or some unique comment text contained inside the runner program)

In our example we entered '9999' as the tag because that's the number/name of the program we decided to use as the runner.

However, you may not wish to restrict yourself to a particular program name or number so if you're prepared to write an extra line of text into your runner you could enter some text such as 'SEND' or 'REQST' as the REQST tag. The REQST Tag can be any text that you've typed into the runner program.

```
%  
O9876  
(SEND)  
P1234  
M30  
%
```

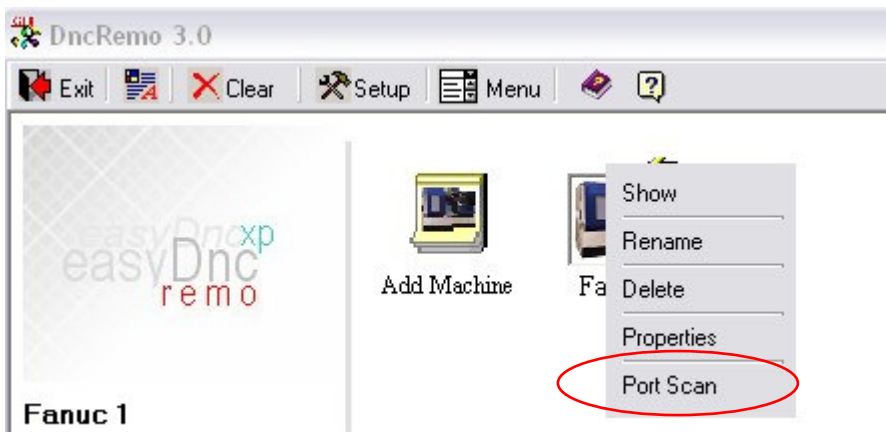
In this example we've typed (SEND) as a comment into our runner program. The text SEND is now our REQST Tag and we'd enter that as the REQST Tag in setup so that Remo can identify the runner.

Note. When Remo receives any programs from the CNC which 'do not' contain the REQST tag those programs will be saved to the machine's default data folder. Make your REQST tag quite unique so that other programs are not mistaken for the REQST tag.

Detect CNC Communications parameters via Auto Port Scan

Port scan can be used to detect the CNC's parameters. Even if the CNC parameters are known it can still be an extremely convenient method of setting up a machine for the first time.

To enter Port Scan mode select that option from the machine menu.



The port scan window, shown on the opposite page appears.

Note:

Port Scan is done using the main easyDnc window. Not a task window. Port Scan only checks com ports 1 through 6 and only scans for data rates (baud rates) of 19200bps or below.

It's recommended that you use a standard COM port if possible although you can use USB or other intelligent adapters by following the instructions on the following page(s).



You should now use the CNC console to punch/send a program from the CNC which easyDnc will analyse.

Port Scan works best if you use a standard physical COM port instead of a USB or other intelligent add-on adapter. You can of course use a USB port for DNC once the machine has been 'set up'.

If you don't have a standard COM port on your computer then you can still use a USB or other add-on although it's recommended that you scan using a small file from the CNC of maybe 2 or 3 KB in size and repeat 2 or 3 times until port scan is complete.

When is a standard not a standard ?

You don't have to read this section unless you're technically minded, curious or extremely bored so, if you want, you can now skip ahead to page 23.

Whichever of the above categories you're in you might know that the usual response to the above 'riddle' is "When it's RS232".

In fact, contrary to popular belief, RS232 "is" a standard and a fairly rigid one at that. So much so that an engineer, or pretty much anyone capable of using a soldering iron, will usually have no problem making up cables to connect almost any make and model of CNC equipment to a computer.

First thing to understand when accepting that RS232 is indeed a standard is its intended purpose. RS232 is a point to point connection intended to carry data from a device at one end point of a connection through to the other end point some distance away. These 'end' devices are referred to, in RS232 jargon, as "Data Terminal Equipment" (abbreviated to DTE.)

If the distance between the two DTE devices is great then other equipment is needed to boost the signal or convert it to some other standard and back again. For example a modem converts the RS232 signal into another format for transmission over public telephone networks.

Such communications equipment is referred to as "Data Communications Equipment" (Abbreviated to DCE.)

So, it's now very clear in that **all** devices using RS232 can be grouped as either **DTE** (Computers and data terminal devices at each end of the link which wish to exchange data) or **DCE** – the

communications equipment such as modems, routers, line boosters etc which make transmission over distance possible.

To Allow a DTE devices to be correctly connected to a DCE device and to each other the RS232 standard describes the pins used in the actual cable connections so that the transmitter at one end of the link connects to the receiver at the other.

The pins carrying the data and other signals at the RS232 port of a DTE are of course a 'one-to-one' fit with a DCE which allows them to be connected together pin for pin. Pin 2 to pin 2, pin 3 to pin 3 etc.

But to connect two DTE's together (IE to connect two computers via a short cable without any intermediary DCE) one must obviously create a 'cross over' so that pin 2 (The transmitter) of one computer connects to pin 3 (The Receiver) of the other.

Notice that we haven't mentioned where your CNC machinery fits into the RS232 puzzle. Well, that's the confusing bit.

Knowing what you now know about DTE and DCE you'd assume that your CNC Control would be a DTE (Data Terminal Equipment). After all, your CNC is on one end of your cable while your computer is on the other.

Unfortunately, not all CNC manufacturers see it that way.

Although many manufacturers do, correctly, configure their RS232 ports as a proper DTE, some others configure their ports like a DCE and that is the one main reason that many users have difficulty getting their CNC equipment to talk to a personal computer.

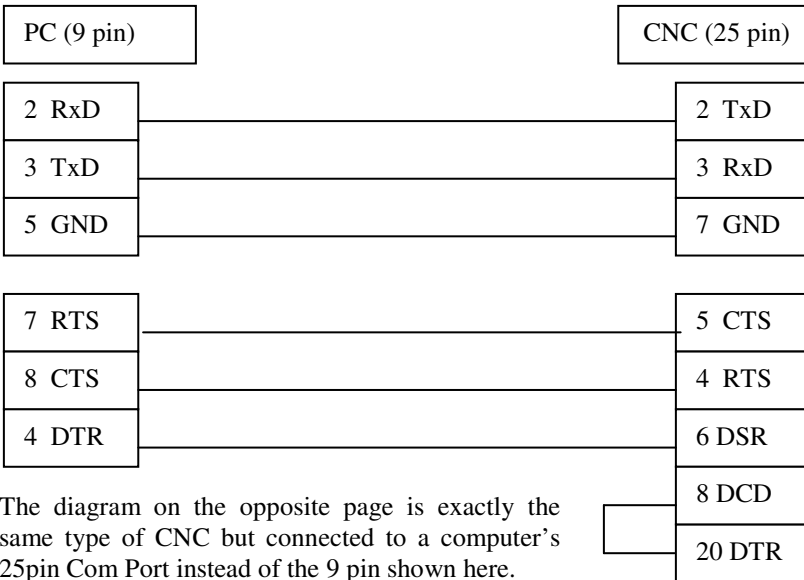
Whatever the reasoning behind the differences in the RS232 ports on CNC machines, there are still only two basic type of RS232 port on a CNC. Those which function as DTE and those which function as DCE.

If you skipped here from the previous section then you won't know what the difference is between DTE and DCE or why they exist at all. To be fair you don't really need to know. Just accept that it's two different type of RS232 device and unfortunately a CNC might be either and the only real problem is deciding which one to use.

Another spanner in the works is that older PCs have 25 pin RS232 ports while more recent computers have 9 pin meaning that each type of RS232 port has two possible cables (9 pin or 25 at the computer end of the cable)

PC with 9 Pin Com port to CNC with 25 Pin (DTE)

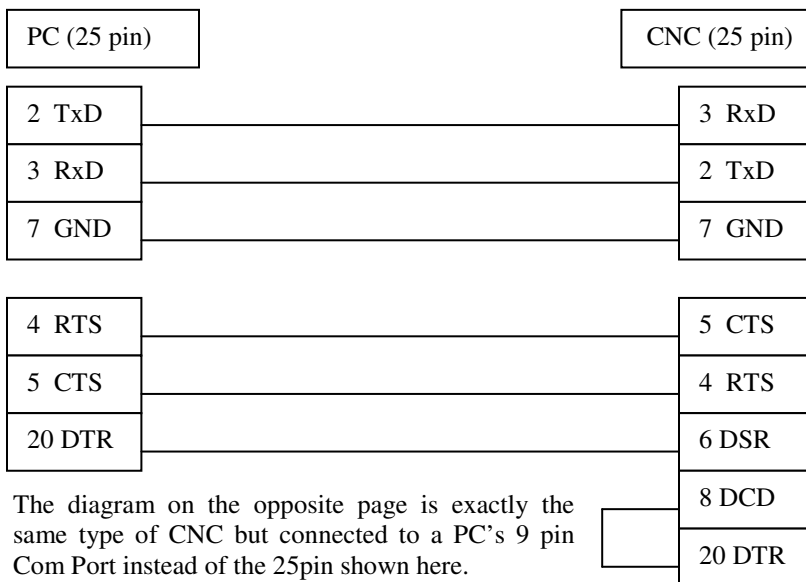
This is the most common type used by Fanuc and many others.



The diagram on the opposite page is exactly the same type of CNC but connected to a computer's 25pin Com Port instead of the 9 pin shown here.

PC with 25 Pin Com port to CNC with 25 Pin (DTE)

This is the most common type used by Fanuc and many others

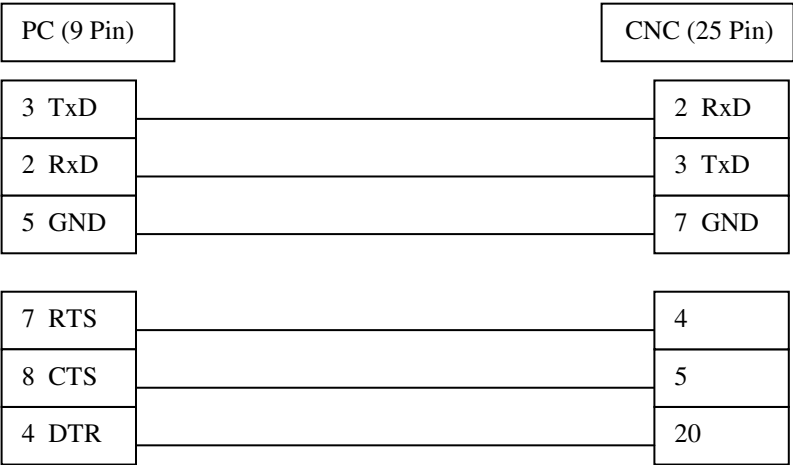


Note:

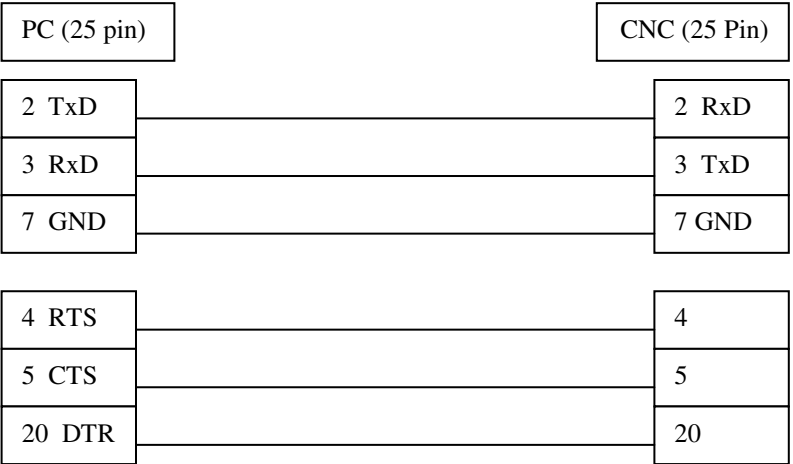
The diagrams in this section are designed to support full Hardware Flow Control (RTS/CTS) as well as Software Flow Control (XonXoff sometimes referred to by CNC types as DC control codes) So if in doubt make up your cable like this.

If however you're certain that your CNC requires only software flow control then you only need to carry the top three signals (TxD, RxD and GND) but at the CNC end of the cable make two short links. One to connect CNC pins 6, 8 and 20 together and another short link to connect CNC 4 with 5.

PC with 9 Pin Com port to CNC with 25 Pin (DCE)



PC with 25 Pin Com port to CNC with 25 Pin (DCE)



Note:

These diagrams are intended to support full Hardware-RTS/CTS flow control as well as Software flow control Xon/Xoff (DC Control codes).

If you're certain that your control requires only Xon/Xoff software flow control then you can make up your cable using only the top 3 connections TxD, RxD and GND although, in this case you should make short links between pins 6-8-20 and 4-5 at the CNC end of the cable.

In deciding which of the two RS232 formats to adhere to (is your CNC a DTE or DCE and therefore whether to use the DTE diagram or the one for DCE) an electrician with a voltmeter might proceed as follows.

With the CNC switched on and ready to communicate with no RS232 cable connected:-

Measure the voltage on pin 20 or pin 6 (using pin 1, 7 or chassis as 0v).

If you observe a definite positive or negative voltage of between 6 to 12 volts on pin 20 while pin 6 is zero or floating then your machine is almost certainly a DTE and you can use the DTE diagrams.

If on the other hand your definite voltage is on pin 6 and nothing on pin 20 then your CNC is almost certainly a DCE and you can use the DCE diagrams.

If the test proves inconclusive then do the same test but measuring voltage on pins 4 or 5 while the machine is prepared for data input. (Again using 1, 7 or chassis as 0v) Result = Volts on pin 4 then wire as DTE. but volts on pin 5 then you should wire as DCE.

Notes