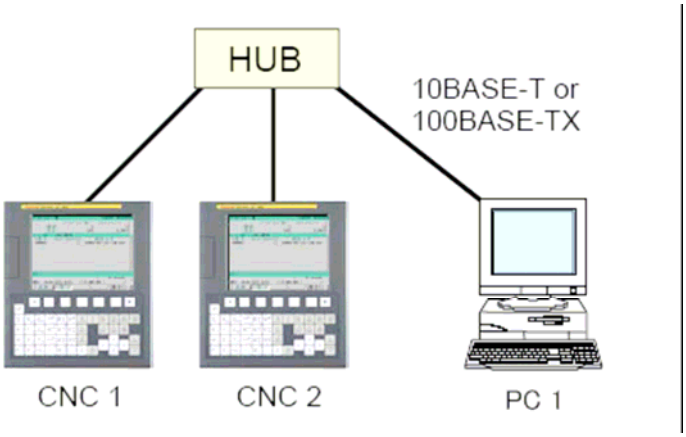
Settings for Ethernet connection in the CNC Model: 0i-D / 30i/31i/32i

These models of CNC allow 3 possibilities of connecting to an Ethernet network:

1) Connecting to the Ethernet port built into the own CNC, also called “embedded”.
2) Connecting through a FANUC network card plugged into the CNC in the PCMCIA slot.
3) High-speed Network board or DATA SERVER installed optionally in the CNC. The DATA SERVER is a network card that includes a massive storage memory.

The more usual way to connect the CNC and PC to an Ethernet network is by using a HUB . In that case we could use a parallel **(NOT CROSSED)** standard Ethernet cables with RJ45 connectors, as indicated in the next figure:



It is also in possible to connect directly CNC - PC.
In the case of using a direct cable point to point, you should normally use a **CROSSOVER** cable.

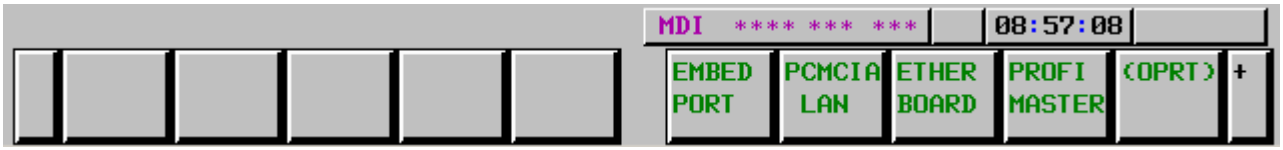
See the corresponding document for the connection details.

Following are some examples of setup in the mentioned CNC for the 3 types of available connections described above.

* Select the CNC in **MDI. mode**

* Push the **[SYSTEM]** function key [

- Press the lower-right soft key (additional menus) [>] several times until the following menu (or similar) is displayed on the screen:
-



This menu is used to select the kind of Ethernet connection we want to select and adjust.

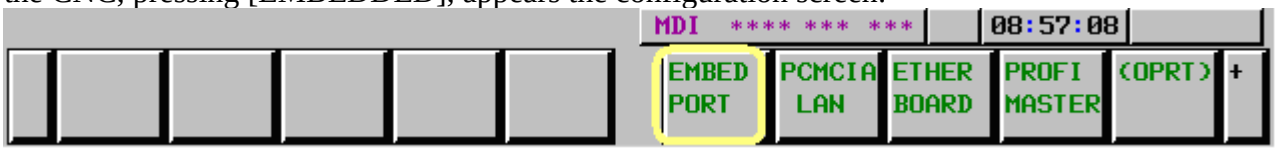
1- [EMBED PORT] refers to the Ethernet port built into the CNC available in these models of CNC.

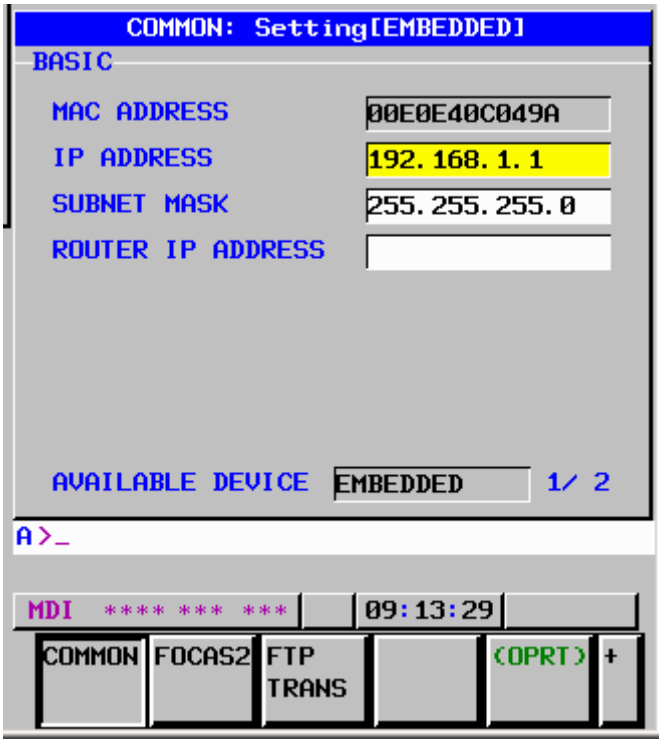
2- [PCMCIA LAN] refers to a FANUC network card that it is possible to plug in the PCMCIA slot available in the CNC. This connection and the above [EMBEDDED], are not possible to use simultaneously, we must select one or the other through a softkey.

3- [ETHER BOARD] normally refers to a board called DATA SERVER installed optionally in the CNC. This device, in addition to an Ethernet connection, contains a hard disk or a memory card as a high-capacity storage
Note: in the case of not having this device, the mentioned selection does not appear on the screen.

1) Connection to the built-in Ethernet port (EMBEDDED)

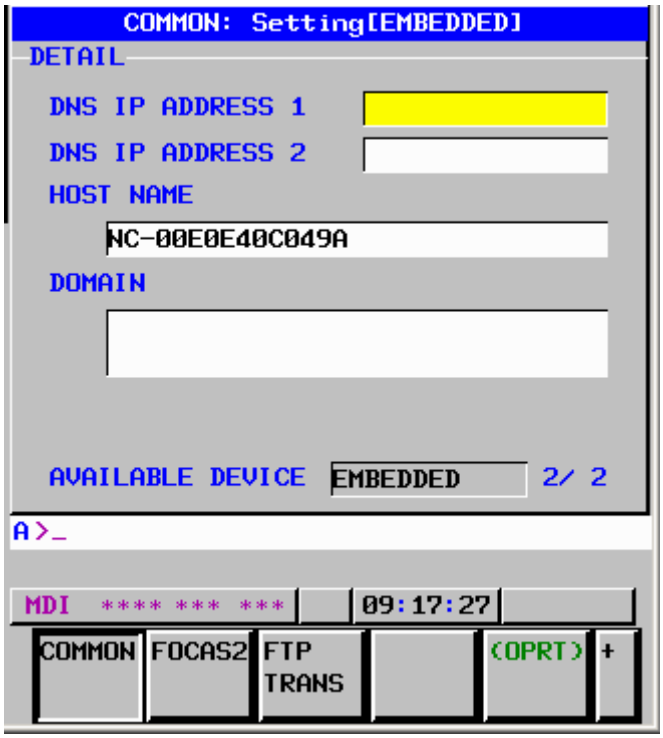
The following is an example of adjustment in the case to connect the Ethernet cable in the port integrated into the CNC, pressing [EMBEDDED], appears the configuration screen:



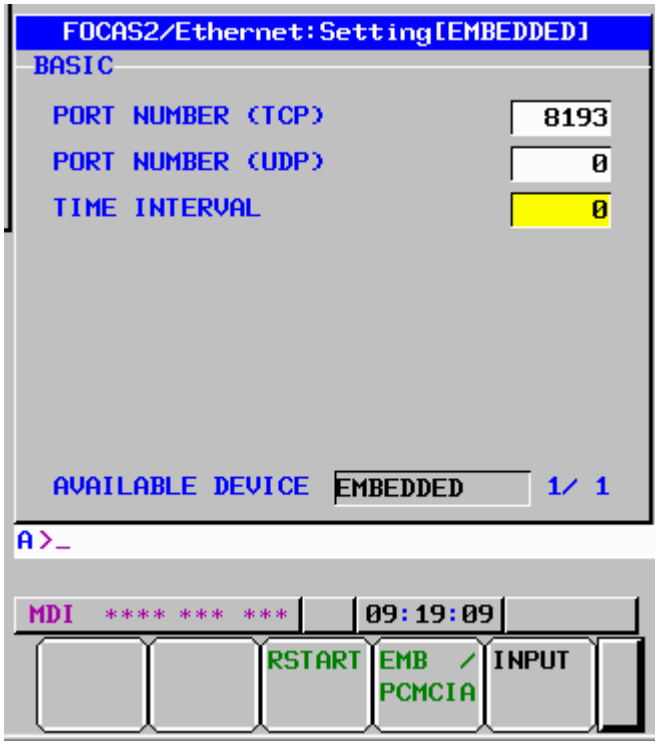


In this screen you only need to adjust the IP address of the Ethernet connection.
E.g. 192.168.1.1. It must match with the one adjusted in the configuration (setup) screen of “OPEN COMMUNICATION” application.
Adjust the mask to: 255.255.255.0, is the standard setting in the small and medium-sized networks.

In the next screen there is no need of any adjustment.



Pressing **[FOCAS2]** appears the next selection:



It is sufficient to introduce a number of TCP port, the typical value is 8193 , must coincide with the one adjusted on the screen of Ethernet setup (configuration) of OPEN COMMUNICATION application.

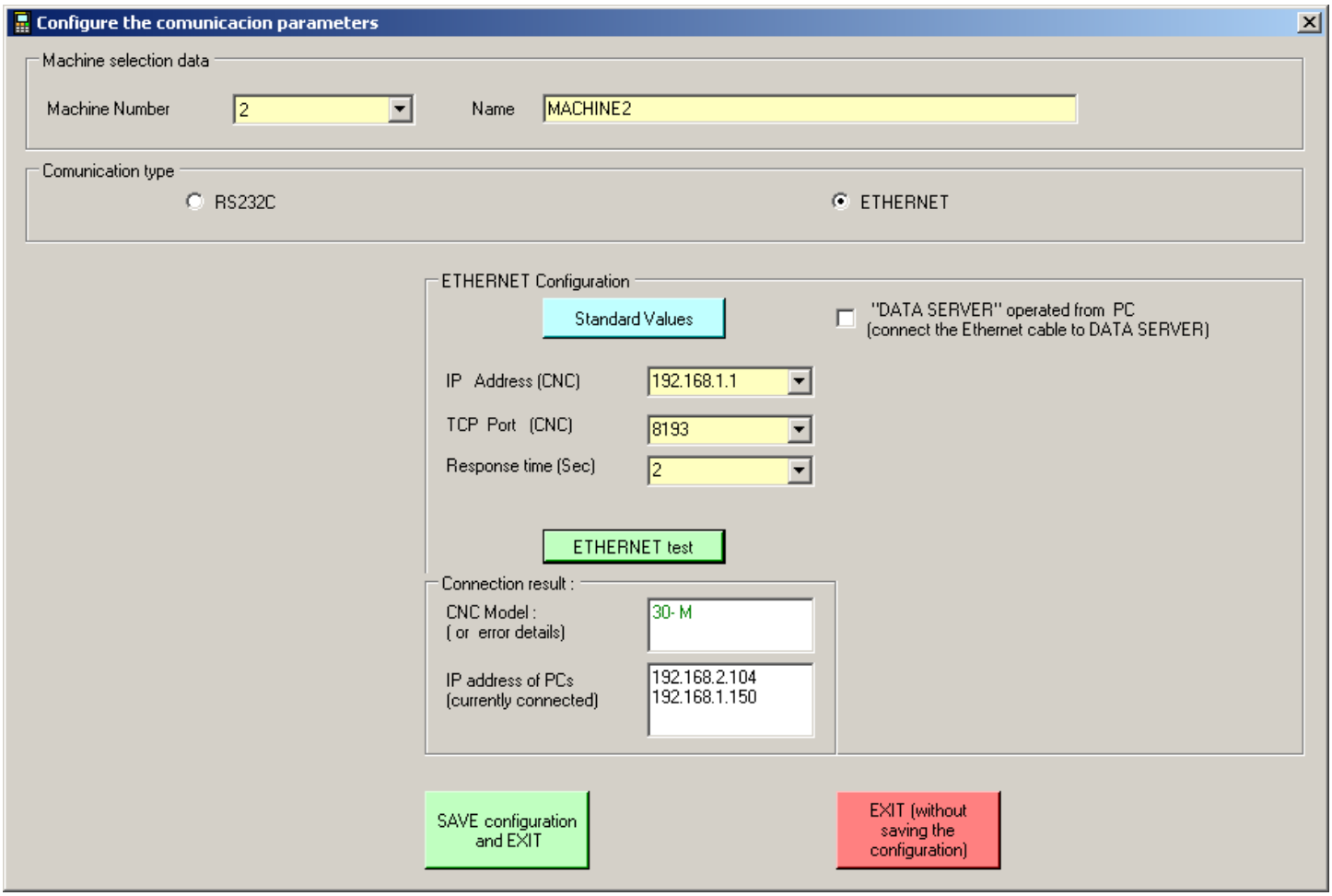
With the softkey **[EMBED / PCMCIA**] is possible to switch the connection between:

1- [EMBEDDED] refers to Ethernet port built into the CNC available in the CNC.

2- [LAN PCMCIA] refers to a FANUC network card that it is possible to plug-in in the PCMCIA slot available in the CNC
Obviously, if the cable has been connected to the integrated Ethernet port, the type of device to be selected is the [EMBEDDED]

IMPORTANT:
The described adjustment is sufficient to upload and download programs in the memory of CNC from your PC using the OPEN COMMUNICATION application through the Ethernet connection.

The following is a possible adjustment in the configuration (setup) screen of the OPEN COMMUNICATION application :

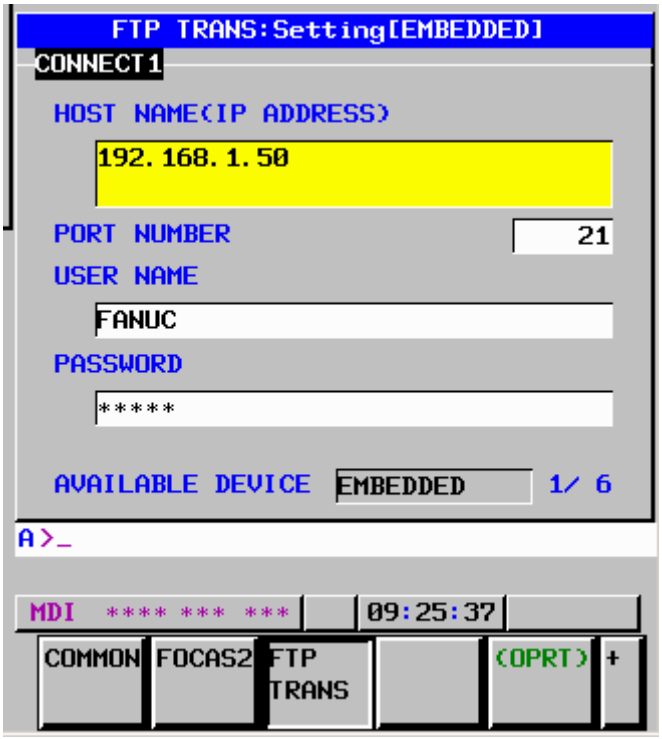


If the response to “Ethernet test” is correct, the system is prepared to transfer programs and other data in the CNC from your PC.
Look at the Manual of the “OPEN COMMUNICATION” application.

Adjustment for loading and unloading of programs from the CNC (FTP)

Pressing **[FTP TRANS]** is possible to configure the connection to operate from the CNC and transfer programs to the CNC and vice versa using FTP protocol. To work in this way, in the PC, you must select “Server Mode” from the main menu of the OPEN COMMUNICATION program. .
It is important to emphasize that this adjustment is only necessary when it is going to work from the screens of CNC for loading, unloading, delete etc. the files in the PC. It is not necessary when the operation of sending, receiving programs etc. is done from your PC.

The following is an example of adjustment in the case of operation from CNC is required.



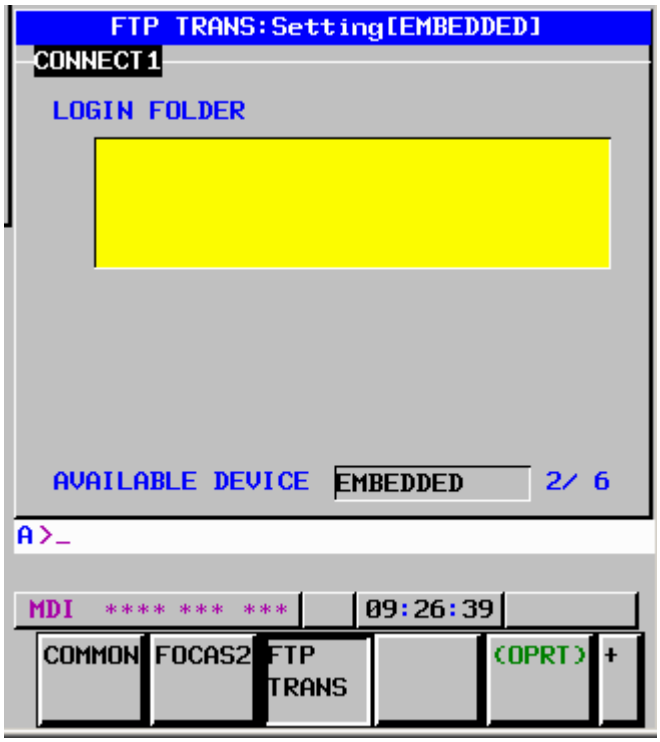
Enter the IP address of PC currently connected to the network, for instance: 192.168.1.50.
The last number, in this case 50, must not coincide with the IP address set for the CNC. The rest of numbers (192.168.1), must be the same, if the adjustment of the mask has been set to 255.255.155.0 (more usual adjustment).

The port number 21 must coincide with the one established in the PC in the “CNC Server” menu of the OPEN COMMUNICATION program. If this port number is already used by another FTP application, there might be problems of communication. In that case it is possible to change it by other number but it must be the same as the port number set in the PC, that is in the “Server Mode” mentioned before.

Introduce any user name, for instance “FANUC”, the password is optional, in this example it has also been introduced as “FANUC”, but it would work even without password because, by default, the OPEN COMMUNICATION application, accepts FTP commands for all users (CNC) connected to the network..

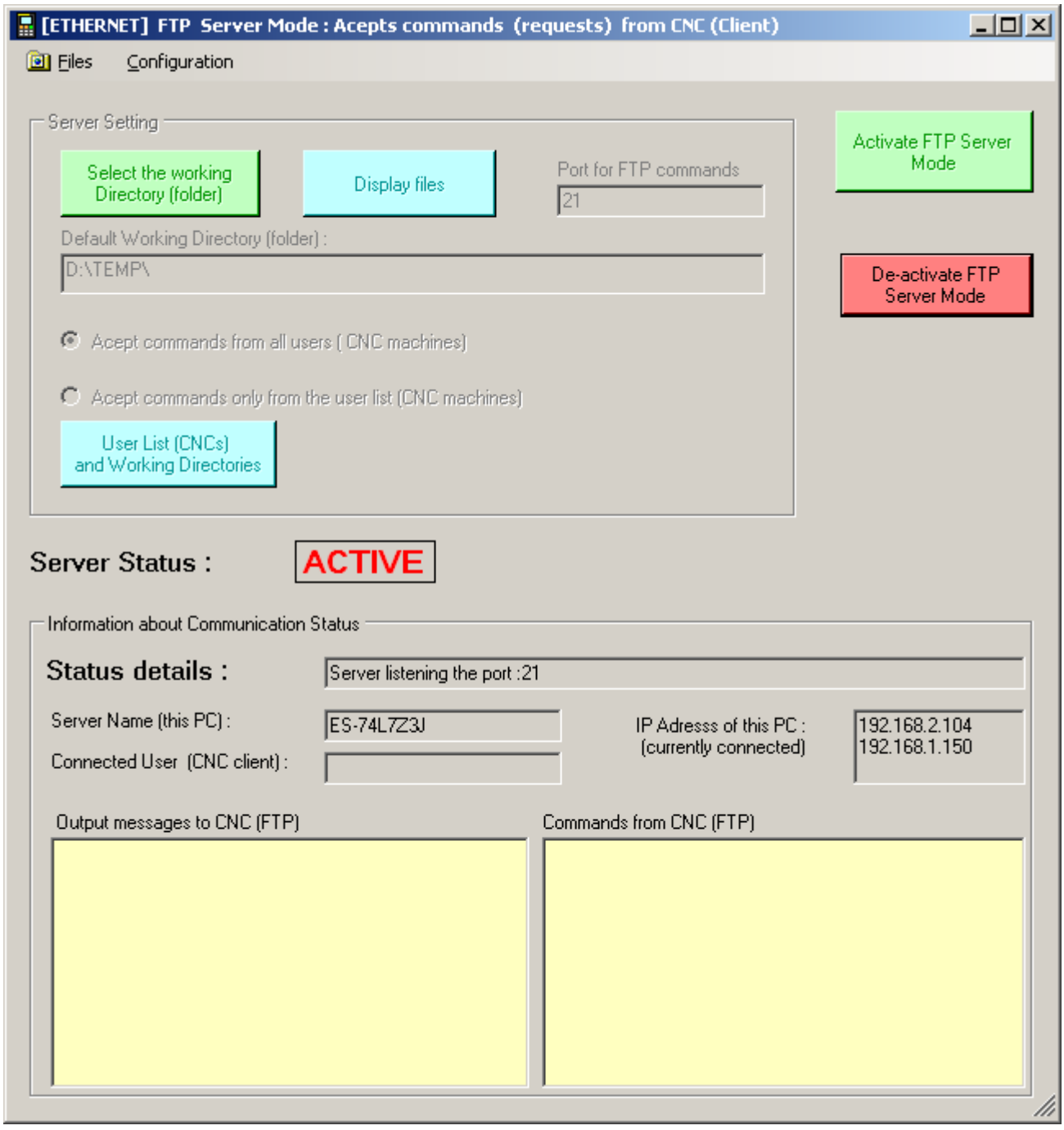
Only in case of selecting the radio button “accept orders only from the list of users” in the “CNC Server” menu of “OPEN COMMUNICATION” application, you can limit the access to a defined list of users (CNCs) with its corresponding password.

In the next page, it is not necessary to specify the working directory in the PC , because it is possible to do so from the “CNC Server” menu “OPEN COMMUNICATION” application.

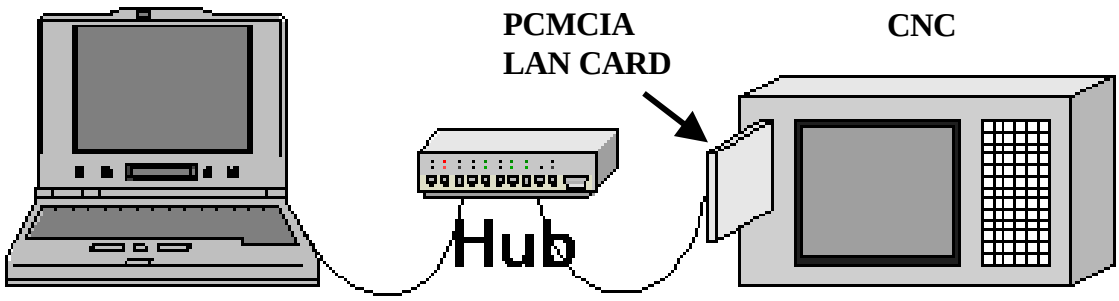


You can set up to 3 FTP connections from the CNC, so it is possible to connect to 3 different PCs.
The connection is selectable from the CNC. [CONECT1], [CONECT2], [CONECT3].
In the case to connect with a single PC, it is not necessary the adjustments in the following pages. Normally only the (CONECT1) is set.

The following shows a possible adjustment of “CNC Server” menu of “OPEN COMMUNICATION” application in order to operate from the CNC for listing, loading, unloading, and erasing etc. the part programs stored in the working directory of PC.
Look at the CNC manual for the procedure for such operations from the CNC.

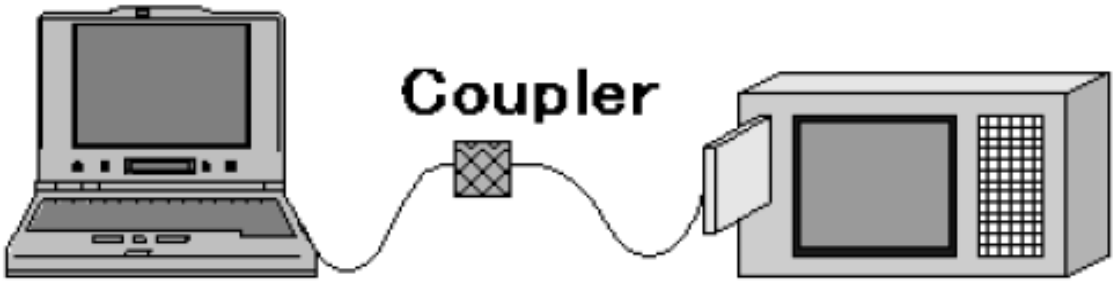


2) Ethernet Connection with the “PCMCIA LAN CARD” in the CNC

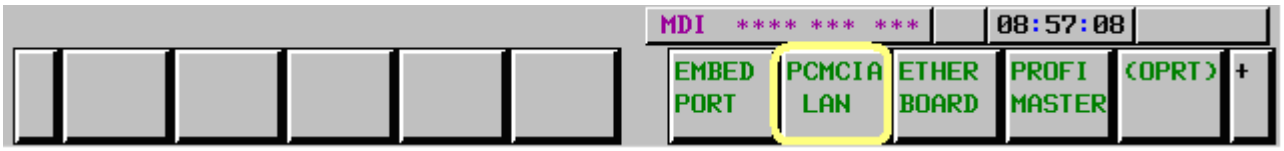


Normally in the front of CNC, it is possible to plug-in a PCMCIA FANUC LAN card and in that way you will be able to connect the CNC to a Ethernet network through a Hub . In that case the Ethernet cable to use is a normal cable not crossed. .

It is also possible to connect directly CNC – PC with a coupler converter (female-female).
In that case the Ethernet cable to use is a crossover cable.



Following there is an example of adjustment in the case of the cable in the PCMCIA card LAN CARD of FANUC.
Press [LAN PCMCIA] in order to get the configuration screen:



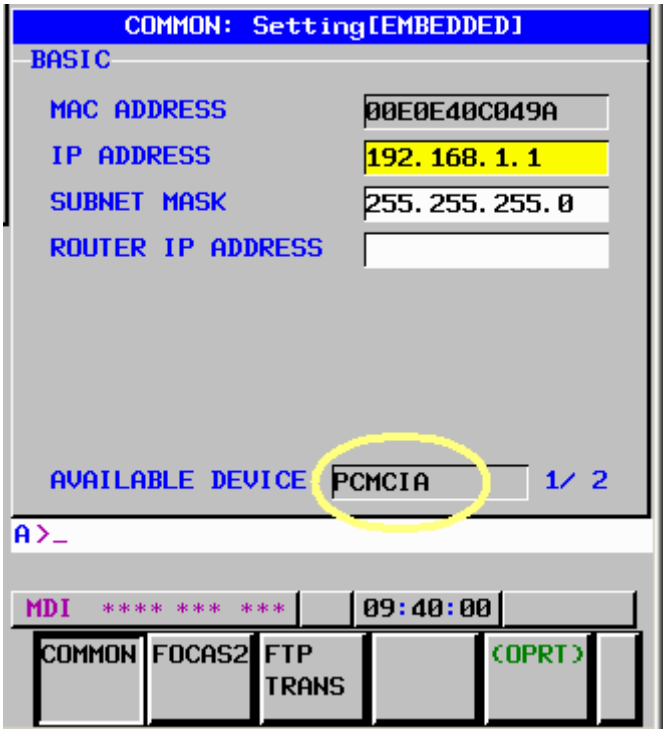
The adjustment is similar to the one described for embedded Ethernet connection explained above.

With the “softkey” **[EMBED / PCMCIA]** is possible to switch the Ethernet connection:

1- [EMBEDDED] refers to Ethernet port built into the CNC.

2- [LAN PCMCIA] refers to a FANUC network card that it is possible to plug in the CNC in the PCMCIA slot available in the CNC.

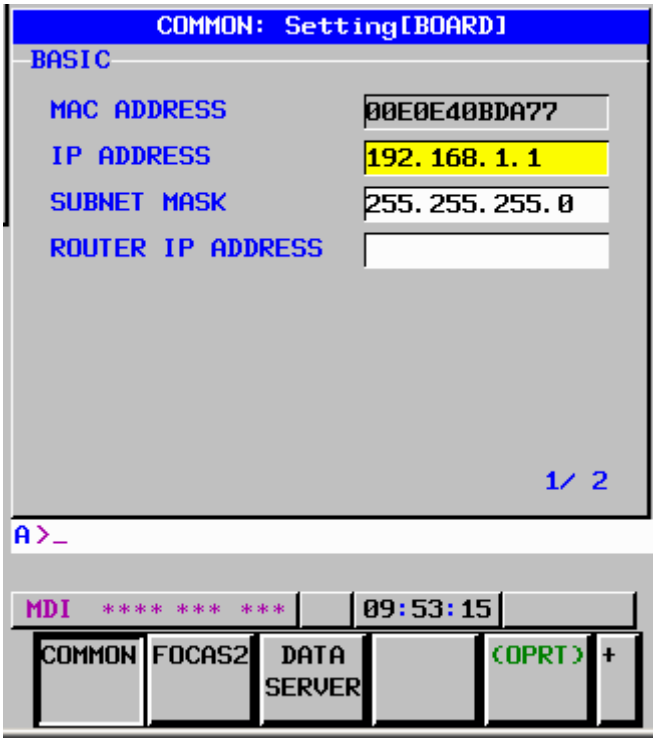
Obviously if the cable has been connected to the PCMCIA LAN card , you have to select [LAN PCMCIA]



The rest of the adjustments is similar to the one described for Embedded Ethernet connection explained above.

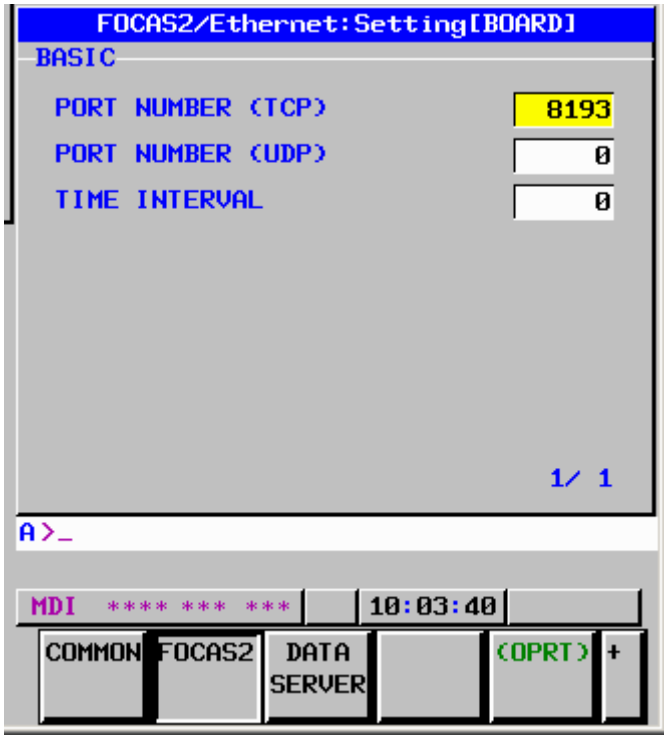
3) Ethernet connection on the DATA SERVER

Following there is an example of adjustment in the case to connect the Ethernet cable to a card called DATA SERVER installed optionally in the CNC. In the case that this card is available, a softkey [ETHERNET CARD] appear on the screen.
This device, in addition to an Ethernet connection, contains a hard disk or a memory card for high-capacity CNC data storage.



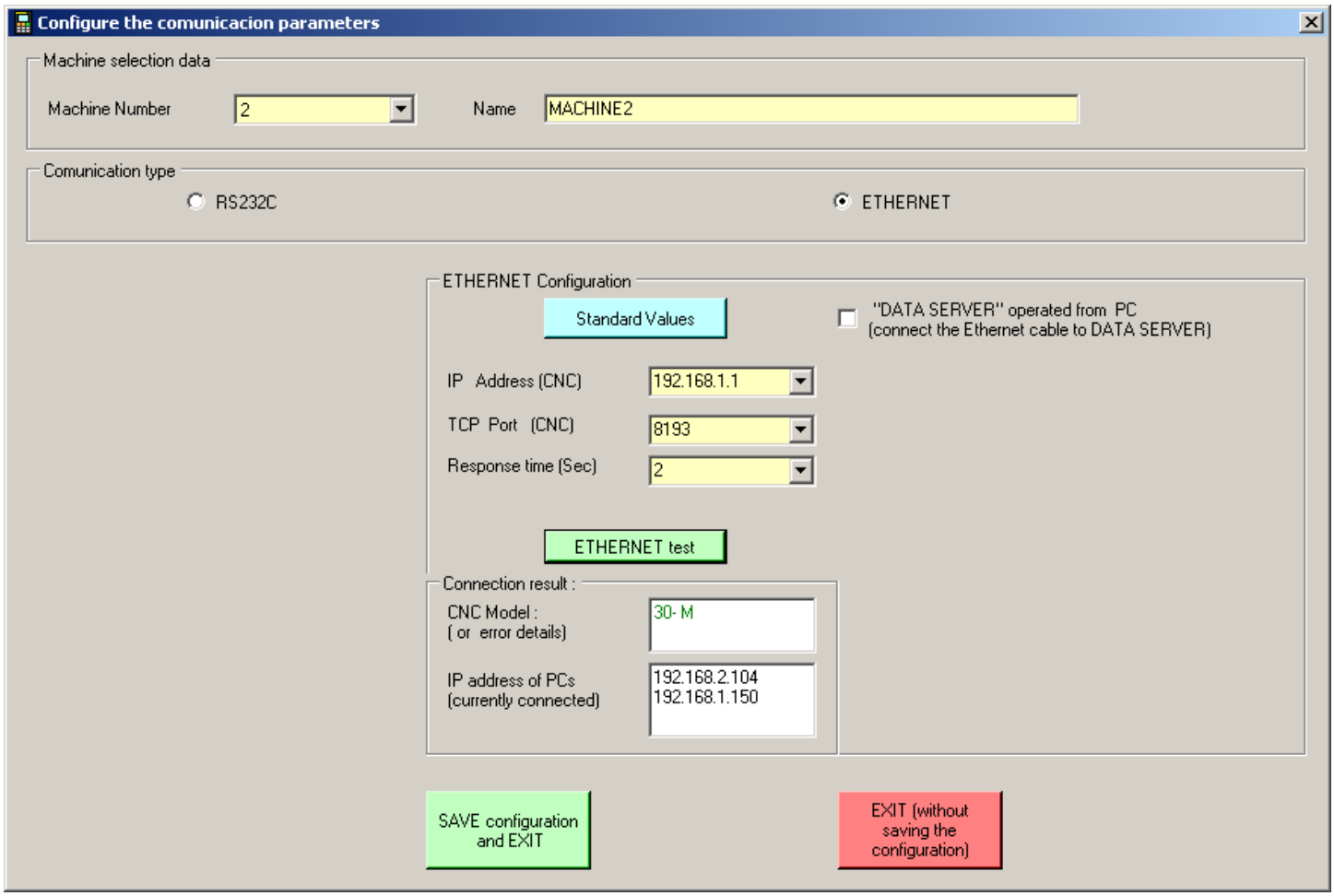
In this screen you only need to adjust the IP address of DATA SERVER: 192.168.1.1, it must coincide with the one adjusted in the “Configuration” screen of OPEN COMMUNICATION application.
The typical value of mask is: 255.255.255.0

Pressing **[FOCAS2]** the next selection appears:



It is sufficient to select the TCP port : 8193, it must coincide with the TCP port adjusted in the “configuration” screen of OPEN COMMUNICATION application.

IMPORTANT:
The adjustment described, is sufficient to upload and download programs in the CNC memory from your PC by using the “OPEN COMMUNICATION” application through the Ethernet connection.



If the answer to “Ethernet test” is correct, the system is ready to transfer programs and other data in the CNC from your PC.
Look at the instruction Manual of the OPEN COMMUNICATION application.

Settings for program transfer with the memory card installed in the DATA SERVER (FTP)

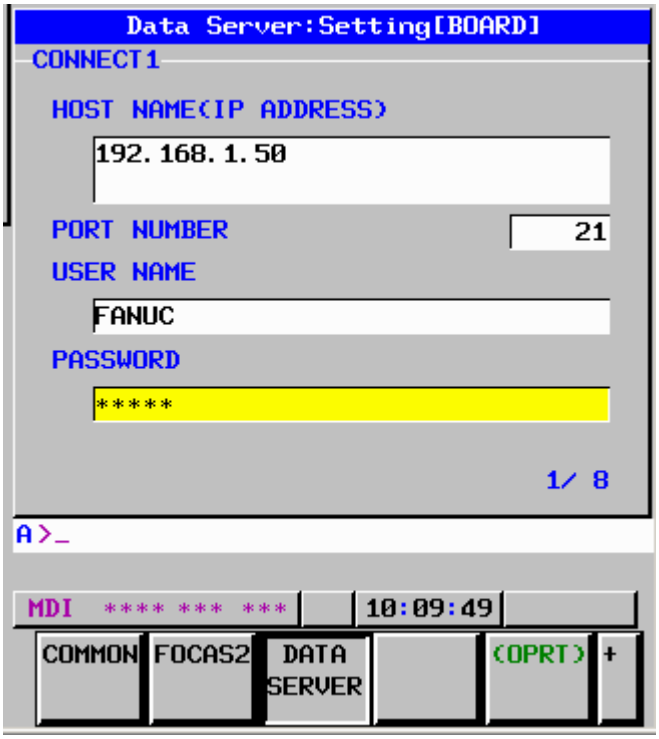
By pressing **[DATA SERVER]** is possible to configure the connection for file (part program) transfer to the memory card in the DATA SERVER by using FTP protocol.

IMPORTANT:
With this card, it is possible to operate from the PC (DATA SERVER in server mode) and also from the CNC (PC in server mode).
Following there is a description of the settings for both type of FTP transfer working modes:

Adjustments to operate from the CNC:

To work from the CNC , in the PC you must select "CNC Server" mode from the main menu of "OPEN COMMUNICATION" application. . It is important to emphasize that this adjustment is only necessary when it is going to work from the screens of CNC for loading, unloading, delete etc. the files in the PC, it is not necessary when the operation of sending, receiving programs, is from your PC.

The following is an example of adjustment to be operated from the CNC



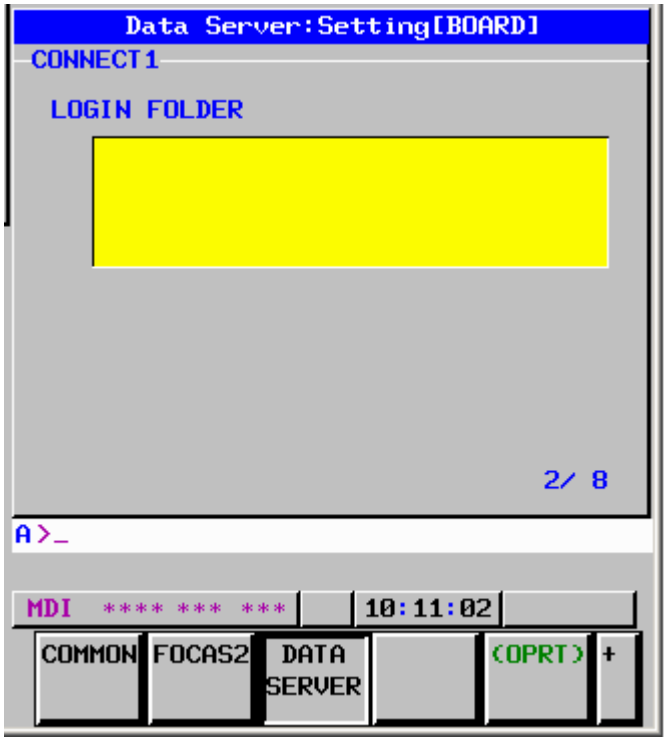
Enter the current IP address of PC connected to the network, for instance: 192.168.1.50.
The last number, in this case 50, must not coincide with the IP address set for the CNC. The rest of numbers (192.168.1), must be the same, if the adjustment of the mask has been set to 255.255.155.0 (more usual adjustment).

The port number 21 must coincide with the one established in the PC in the "CNC Server" menu of the OPEN COMMUNICATION program. If this port number is already used by another FTP application, there might be problems of communication. In that case it is possible to change it by other number but it must be the same as the port number set in the PC, that is in the "Server Mode" mentioned before.

Introduce any user name, for instance “FANUC”, the password is optional, in this example it has also been introduced as “FANUC”, but it would work even without password because, by default, the OPEN COMMUNICATION application, accepts FTP commands for all users (CNC) connected to the network..

Only in case of selecting the radio button “accept orders only from the list of users” in the “CNC Server” menu of “OPEN COMMUNICATION” application, you can limit the access to a defined list of users (CNCs) with its corresponding password.

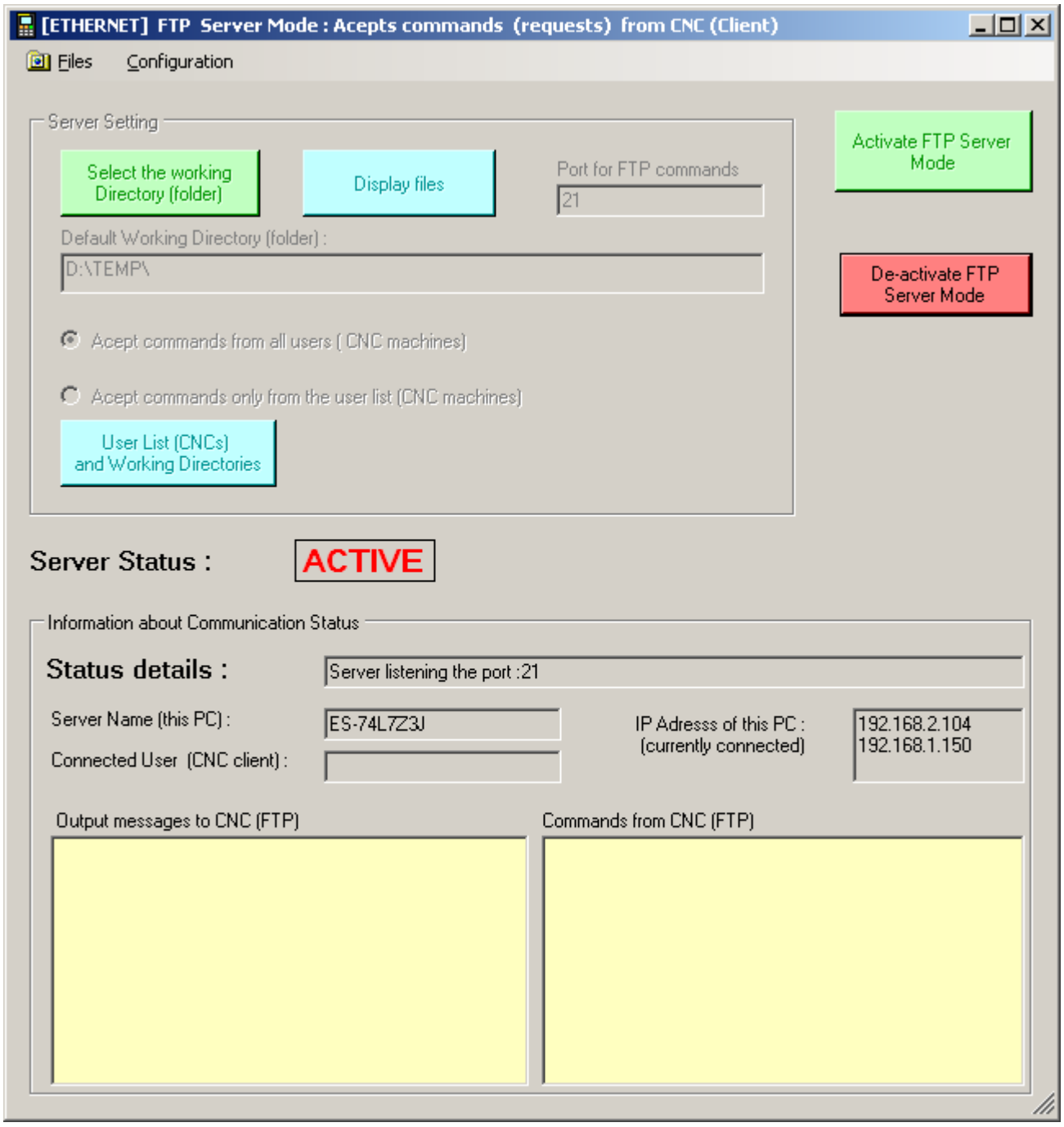
In the next page, it is not necessary to specify the working directory in the PC , because it is possible to do so from the “CNC Server” menu “OPEN COMMUNICATION” application.



You can set up to 3 FTP connections from the CNC, so it is possible to connect to 3 different PCs.
The connection is selectable from the CNC. [CONECT1], [CONECT2], [CONECT3].
In the case to connect with a single PC, it is not necessary the adjustments in the following pages. Normally only the (CONECT1) is set.

The following shows a possible adjustment of **“CNC Server”** menu of “OPEN COMMUNICATION” application in order to operate from the CNC for listing, loading, unloading, and erasing etc. the part programs stored in the working directory of PC.

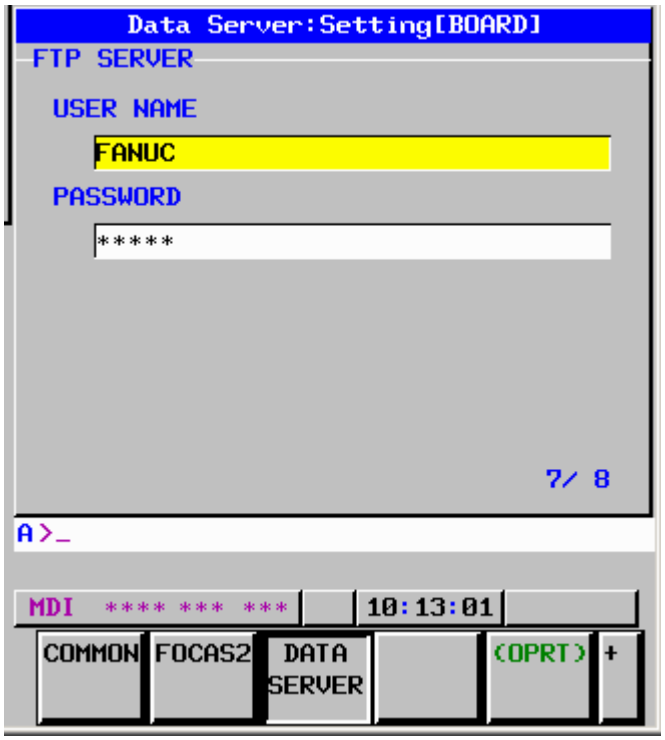
Look at the CNC manual for the procedure for such operations from the CNC.



Adjustments to operate with the files in the DATA SERVER from your PC:

From the PC, by selecting “DATA SERVER” in the main menu of “OPEN COMMUNICATION” application , it is possible to load and unload programs in the memory card (or hard disk) of DATA SERVER.

It is necessary, the following adjustments in the CNC:
In the “FTP SERVER” setting menu of CNC, you need to define the username and password of FTP Server , for example, user name: “FANUC” and password: “FANUC”.



The adjustment described is enough to handle the files in the memory card (or hard disk) in the DATA SERVER from your PC.
It is not necessary to adjust the home folder in the next page.

Following is a possible adjustment in the “Configuration” screen of the “OPEN COMMUNICATION” application in order to handle the files in the memory card (or hard disk) in the DATA SERVER from your PC.