OPERATION MANUAL

The aim of this application is to be able to send and receive part programs and other data with all models of "FANUC" CNC via RS-232C or ETHERNET connection.
This manual describes basically the operations to be done in this application to get mentioned communications.
Look also the additional manuals for connection and setting details in both CNC and PC.

0. – INTRODUCTION -

This application allows you to send and receive part programs and other CNC data (parameters, tool Offset etc.) with all “FANUC” CNC.
With other CNC makers the functioning is not guaranteed.

It is possible to use the following communication types:

1) RS-232C: It is usually available in all CNC (old and new).

2) ETHERNET: It is more powerful but it is only available in newer CNCs.

3) FTP: It uses same ETHERNET cable and it is useful to handle files (load, download, file list etc.) in both CNC memory and DATA SERVER (built-in HARD disk or memory card with Ethernet connection in it).

It allows you 2 working modes:

- Client Mode:
In this mode the files (CNC programs) in the CNC and DATA SERVER are handled from the PC.
With this application you can load, download, delete, rename etc. the programs in the CNC and DATA SERVER from the PC.

- Server Mode:
In this mode it is possible to handle the files in the PC from the CNC.
For instance from the CNC you can request a part programs in the PC to send it into the CNC or into the DATA SERVER.
It is also possible to list in the CNC the file list (part programs) in the PC.

From the main Menu you can select the following Basic functions:

1)" Files":
From this menu you can:
a) Edit programs or any other text file in a very simple way and afterwards send it into the CNC or DATA SERVER.
b) Display the programs in the CNC (Only with ETHERNET connection).
c) Display the files in the DATA SERVER (Only with ETHERNET connection).

2) "Configure":
From this menu you can make the necessary settings in order to get the connection with the CNC or the DATA SERVER integrated in it.
You can select the RS232C or ETHERNET connection.
You can select and save different configurations for different machines (CNCs).

3) "Send to CNC":
From this menu you can send programs or other data in the PC into the CNC memory.
You can send the data directly from a file or from the text editor in this screen menu.

It also allows you to make the CNC work in DNC mode, that is the CNC is executing the command while receiving the program from the CNC. This way you can execute part programs of any length, even the ones that are too big to store them in the CNC memory.
It works with both RS-232C and ETHERNET connections.

Before trying this operation it is necessary to select the machine communication from the “Configuration” menu.

4) "Receive from CNC":
From this menu you can receive programs or other CNC data from the CNC memory and store them in a PC file.
It works with both RS-232C and ETHERNET connections.

Before trying this operation it is necessary to select the machine communication from the “Configuration” menu.

5) "CNC Server":
By activating this mode, the operator can “request” (send commands) from the CNC to the PC.

From the CNC it is possible, for instance, to request the file list in the PC and display them in the CNC.
It is also possible from the CNC to request a part program stored in the PC and make it to send to the CNC.
It works with both RS-232C and ETHERNET connection but the working procedure is rather different. Please refer to the operation manual for the details.

Before trying this operation it is necessary to select the machine communication from the “Configuration” menu

6) "DATA SERVER " :
In this menu you can display the file list stored in the hard disk or memory card of the DATA SERVER integrated in the CNC by using FTP commands.
You can load and download the files (programs) in/from the DATA SERVER and also to rename, delete etc. the files and directories in the DATA SERVER memory.
It only works with ETHERNET Communication and it is necessary to connect the cable directly in the DATA SERVER.

Before trying this operation it is necessary to select the machine communication from the “Configuration” menu.

7) “Information” :
In this screen you can get information about the version and serial number for this application.
You can introduce the license number to get full operation version without limitations.

1. - “RS232C” COMUNICATION -

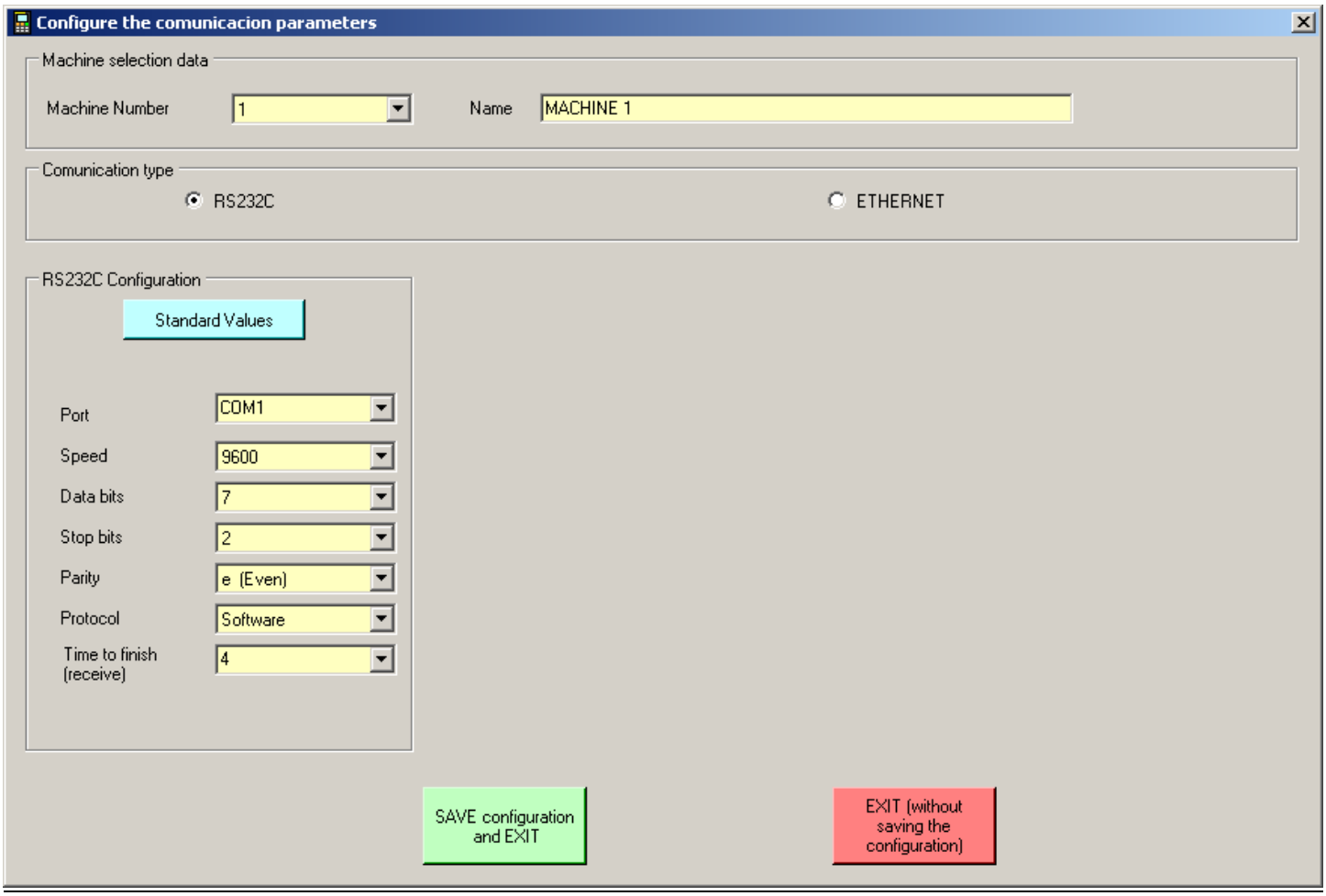
1.1 Configure the “RS232C”comunication

Before establishing a communication it is necessary to configure the communication parameter.
For that purpose, select ***"Configure"*** from the main menu of this application,.

Select the radio button ***“RS232C***” , the number and name of machine (anyone) and the communication parameter, that is:
Port number in the PC, speed(bauds), bits of data, bits of stop, type of parity, protocol, and time (seconds) without receiving to consider the end of data receiving.

The speed(baud) must be adjusted in accordance with the one adjusted in the CNC.
In the CNC you have to select the channel (I/O CHANNEL) =0.1 for the RS232C communication.
Look at the attached document “RS232C_setting_in_the_CNC” or the owner's manual of CNC for more details.

An example of configuration could be the following:



Once that is sure that the configuration is correct and coincides with the configuration in the CNC, click **“Save settings and exit”.**

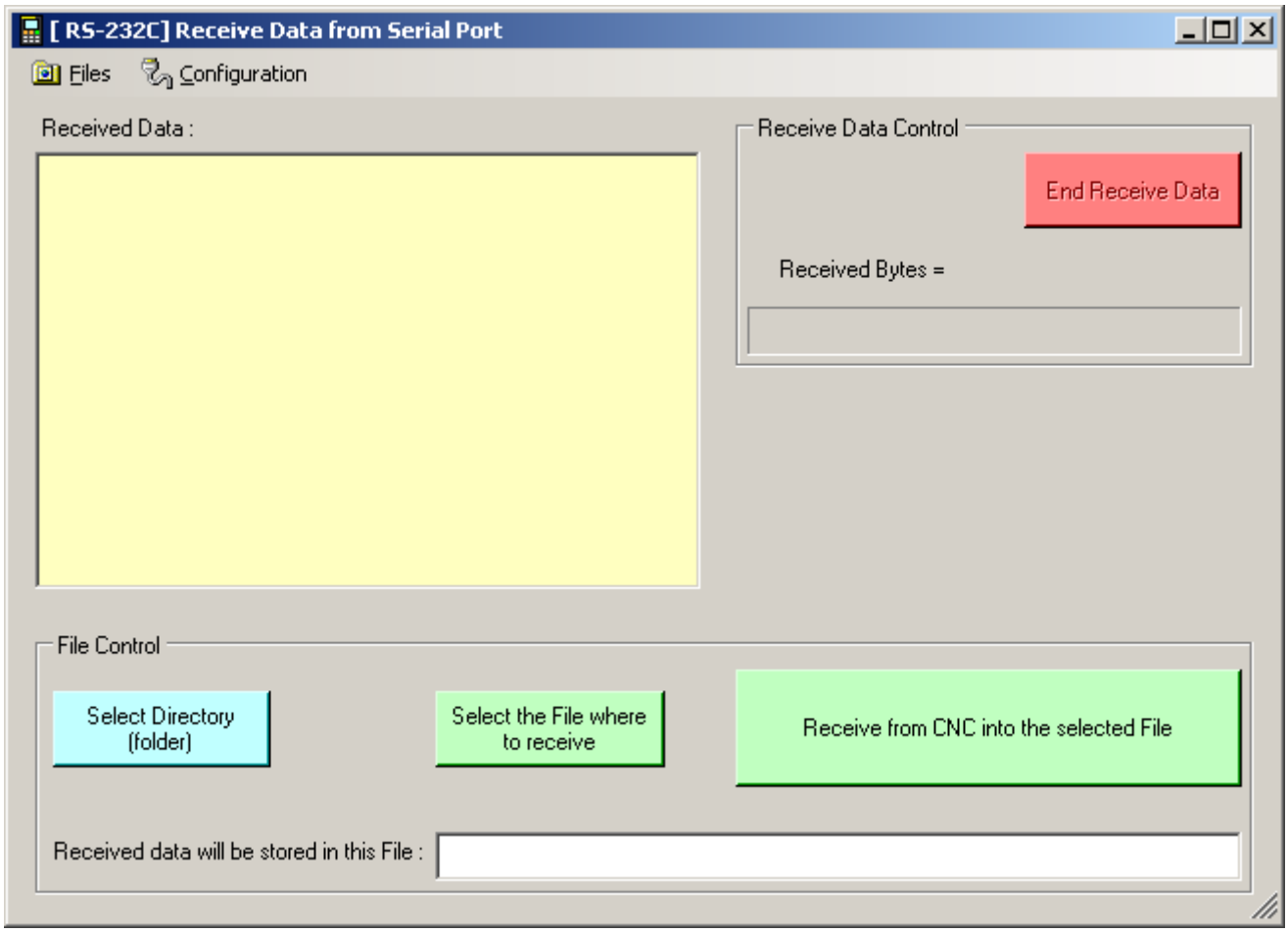
1.2 Receive data from the CNC to the PC by RS232C (normal mode)

Make sure that the last communication configured or selected is RS232C and corresponds to the machine (CNC) from where we receive or transfer data to the PC.

To receive programs or data from the CNC to the PC by RS232C, first the PC application must be ready to receive data.

For that purpose, from the main menu of this application select ***"Receive data_from_CNC"***

If the last communication configured or selected is RS232C, the following screen appears:

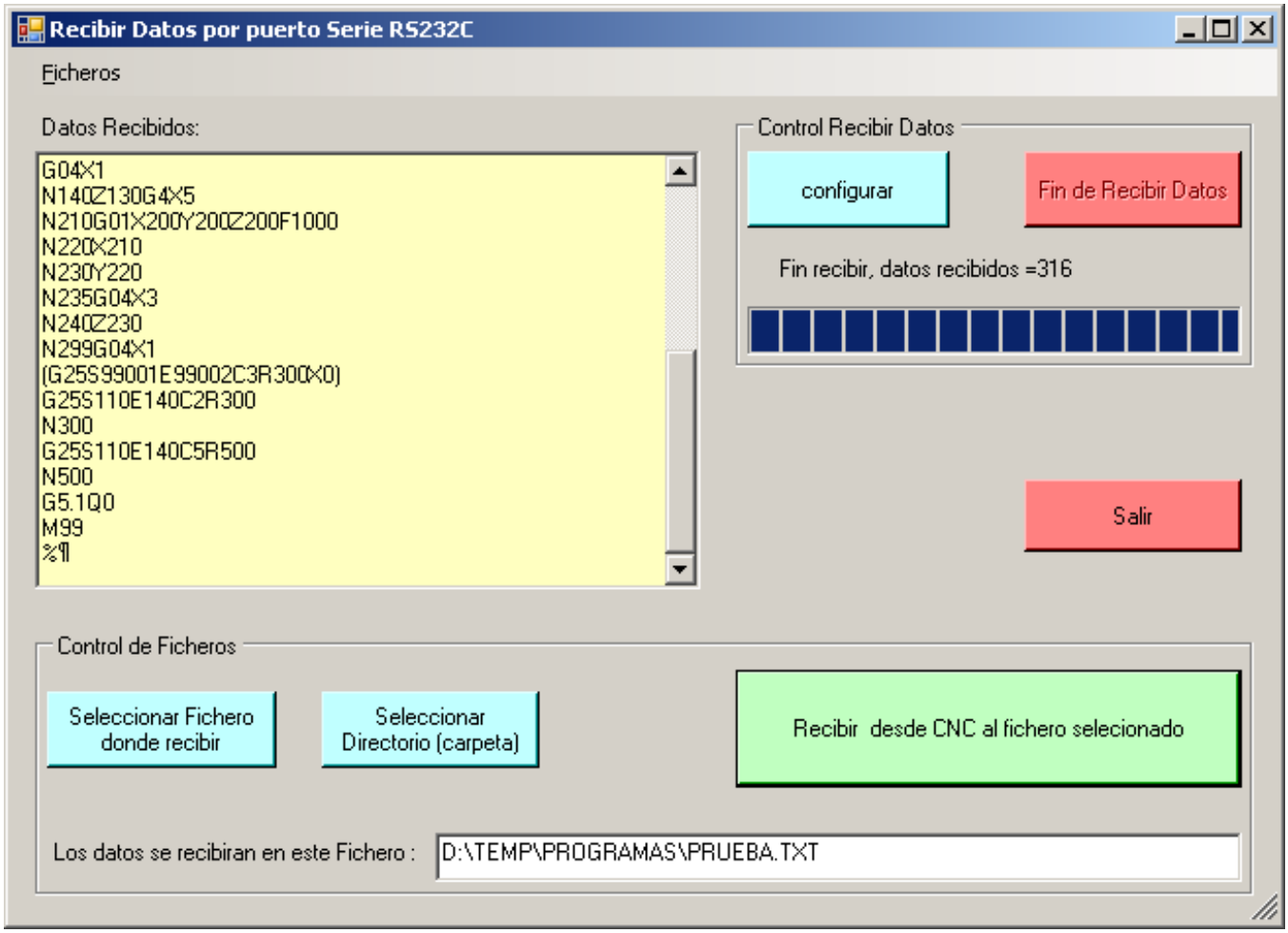


Click ***"Select file where to receive"*** and write the name of the file where you want to store the program sent from the CNC.

After selecting the file name, click ***"Receive from CNC into the selected file***" and the application will be kept waiting to receive data from the CNC.

Then operate in the CNC and send the desired part program.
For that purpose, normally select the EDIT mode in the CNC, select the program number and press the key OUTPUT or PUNCH from the keyboard (MDI) of CNC.
Consult the owner's manual of CNC.

If it has been operated properly, the program will be displayed as in the following example:



NOTE: To edit or modify this program and send back to CNC, you have to leave this menu and go back to the main menu.

1.3 Send Programs from the CNC to the PC by RS232C:

Make sure that the last communication configured or selected is RS232C and corresponds to the machine (CNC) from where you are going to send or transfer data.

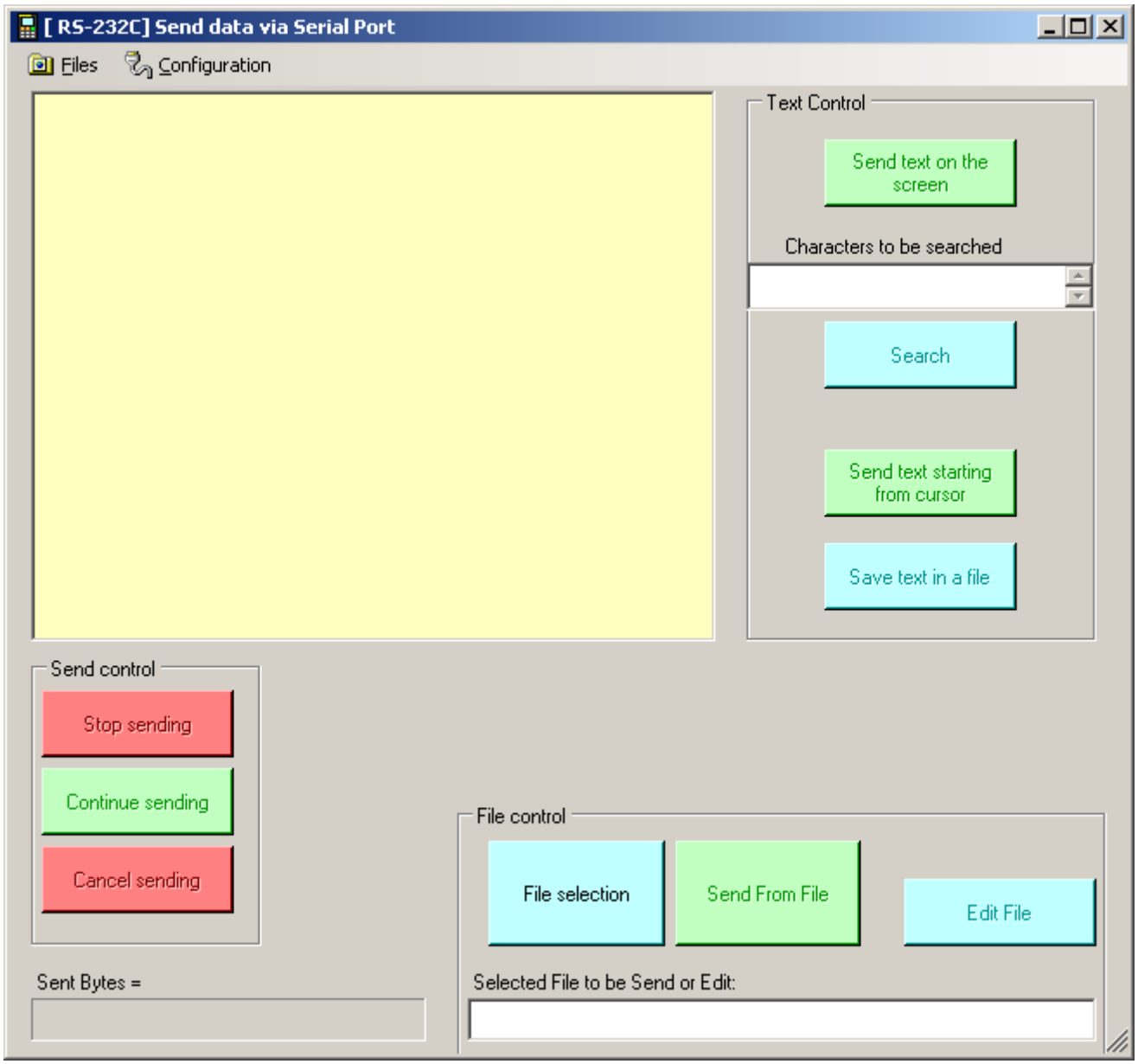
To send programs or data from the PC to the CNC, you have to prepare first the CNC to receive data.

In the CNC, normally you have to select EDIT mode and press the INPUT or READ and then “EXEC” in the part program menu of CNC.
A flashing “LSK” indication will be displayed in the CNC to show that the CNC is ready to receive data.

Look at the manual of CNC for details.

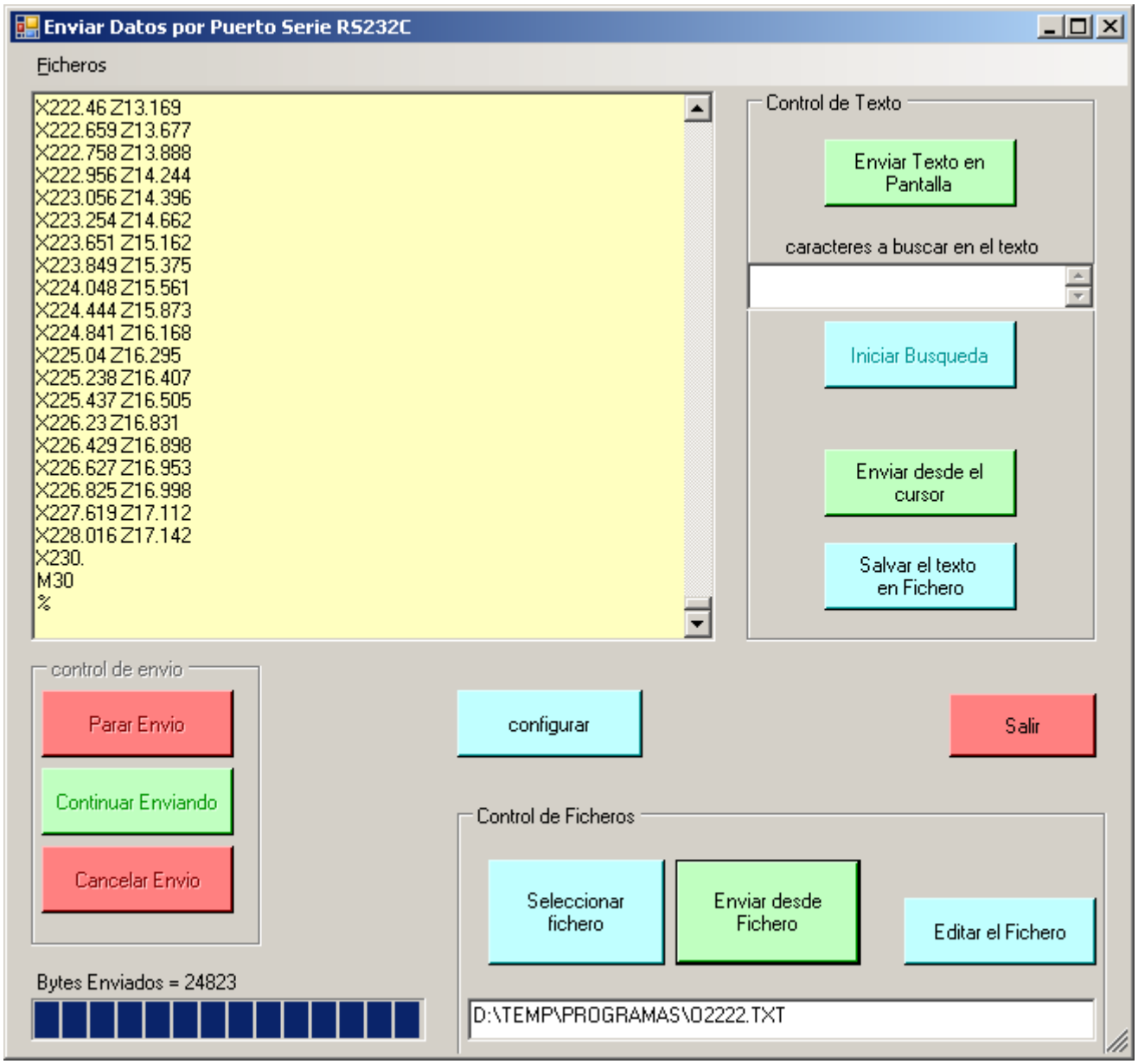
Once the CNC is ready to receive, from the main menu of this application select ***“Send_to_CNC”***

If the last communication configured or select is RS232C, the following screen appears:



Click "***File selection"*** to select the file that contains the program to be send to CNC. After selecting the file, press ***"Send from File.***

If the file has been sent correctly, the sent data will be displayed on the screen. For example:



IMPORTANT NOTE:
If the receiving process in the CNC is interrupted (by an alarm, Reset etc.), in order to establish a new communication you have to click ***"Cancel Sending".***

From this menu it is also possible to edit and modify any file, or even sending an small part of program to the CNC by pressing ***"Send Text on the screen "***or ***"Send from the cursor"*** .

1.4 Server Mode (Request data from the CNC to the PC by RS232C)

Make sure that the last communication configured or selected is RS232C and corresponds to the machine (CNC) from where you are going to send or transfer data.

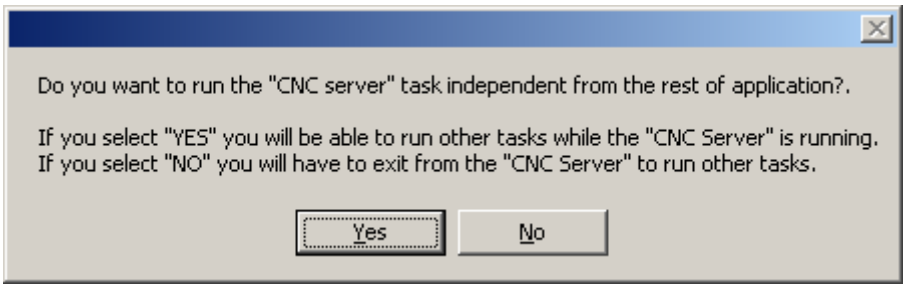
In this mode the CNC requests to the PC the desired program which is located in the PC.
To make such a request, you have to send from CNC a part program with an special format to indicate to the PC which file must be sent to the CNC.

After the PC has received the part program with the mentioned especial format and the adjusted time has elapsed, the PC will send the requested file to the CNC.
Before the mentioned time has elapsed, you have to prepare the CNC to enable to receive the program that will sent by the PC (file requested).

Operations on the PC:

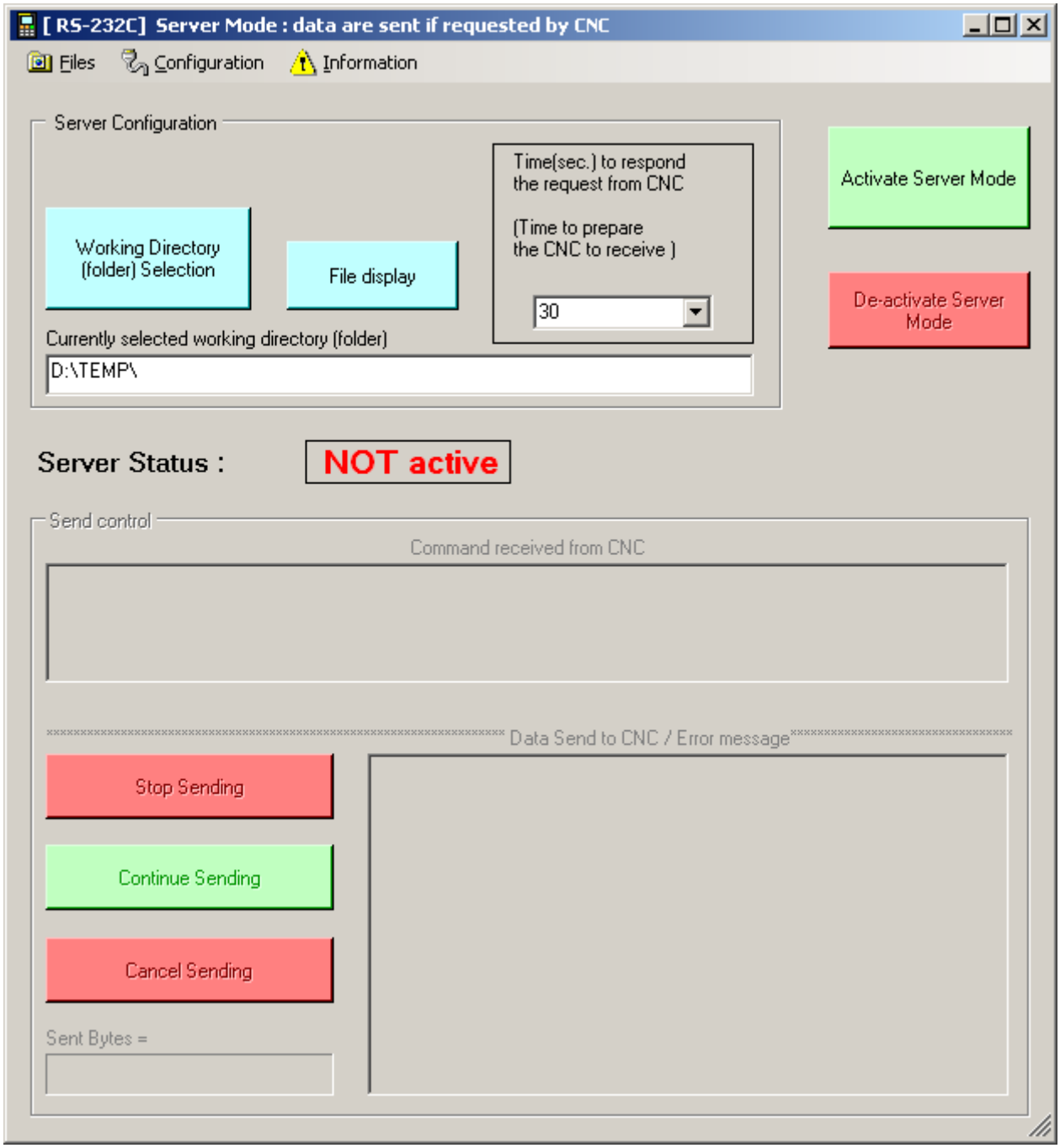
To work in this way you have to select ***"CNC Server"*** from the main menu:

The following message will be displayed:



In order to activate the "Server" mode and be able to operate with other tasks from the main menu, select "Yes" , otherwise select "No" .

In any case, if the last communication configured or selected is RS232C, the following screen appears:

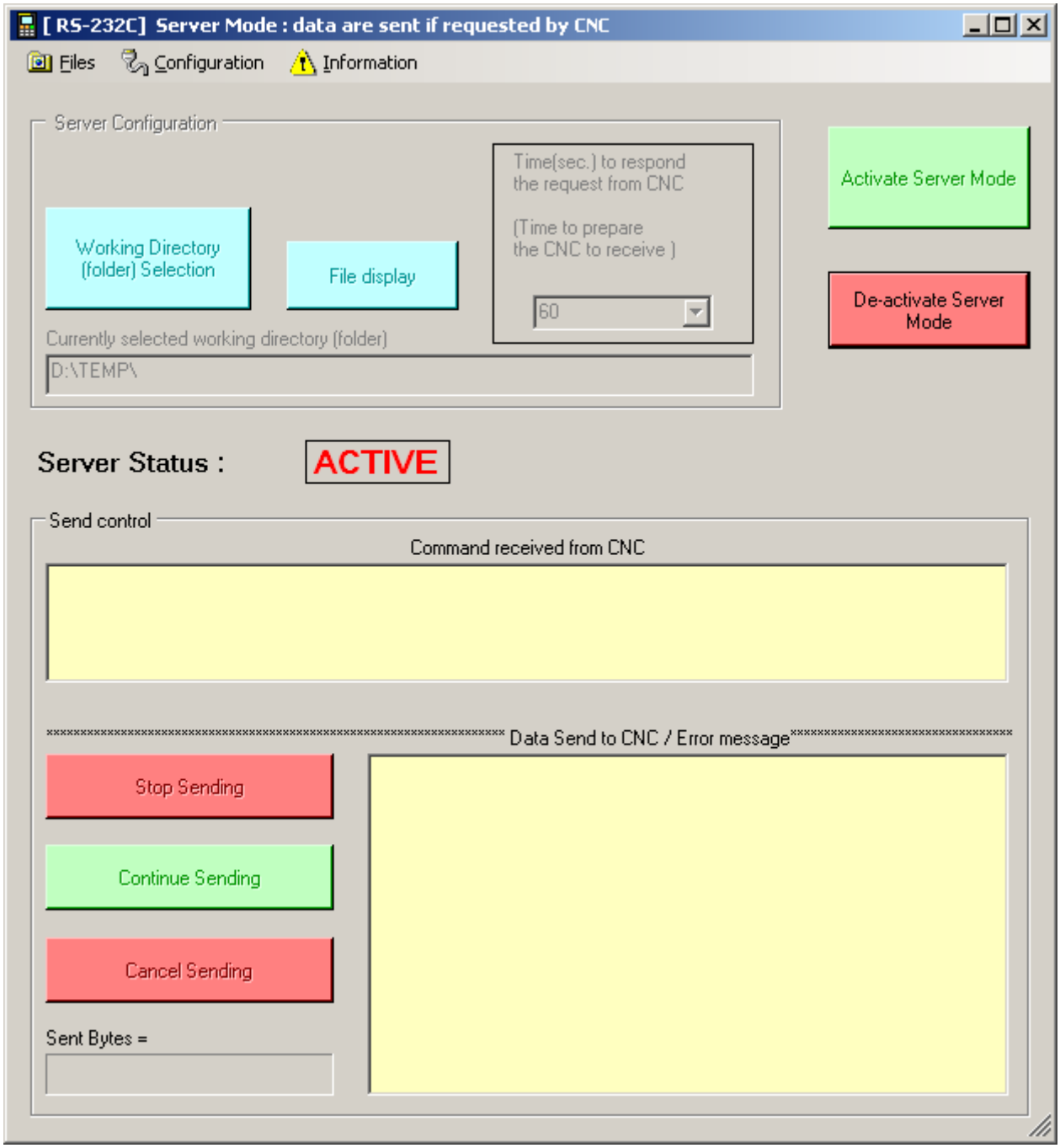


In this menu, you have to select the working directory, that is the directory where the files (part programs) are stored and from where they will be sent to the CNC.

Set the time after which the PC will send to the CNC the requested file (once the PC has received from CNC the special part program with the request).

Adjust the sufficient time to prepare the CNC and be able to receive the file when sent by the PC.
Initially it is advisable set a long time 30-60 sec which should be enough time to prepare the CNC before the server (PC) start sending the program. Once learned and be accustomed to the procedure, you can reduce the time.

ACTIVATE the Server mode by clicking ***"Activate Server mode",*** for instance:



In this mode the PC is prepared to receive the request from the CNC and respond to the request after the time established in the adjustment has elapsed.

Operations in the CNC (commands from the CNC to the PC)

From the CNC a part program must send to the PC (request program) with a special format that depends on the command that we submit to the PC:

a) Request the PC from CNC to send a desired file (program data)

Operate as follows:

Send a program from the CNC to the PC with the following content:
(R=xxxx.yyy) being "xxxx.yyy" the name of the file on your PC you want to receive in the CNC.

Example:
To request the PC to send the file O1417.TXT to the CNC, we will create a program in the CNC containing something like this:

%
O5555(R=O1417.TXT)
M30
%

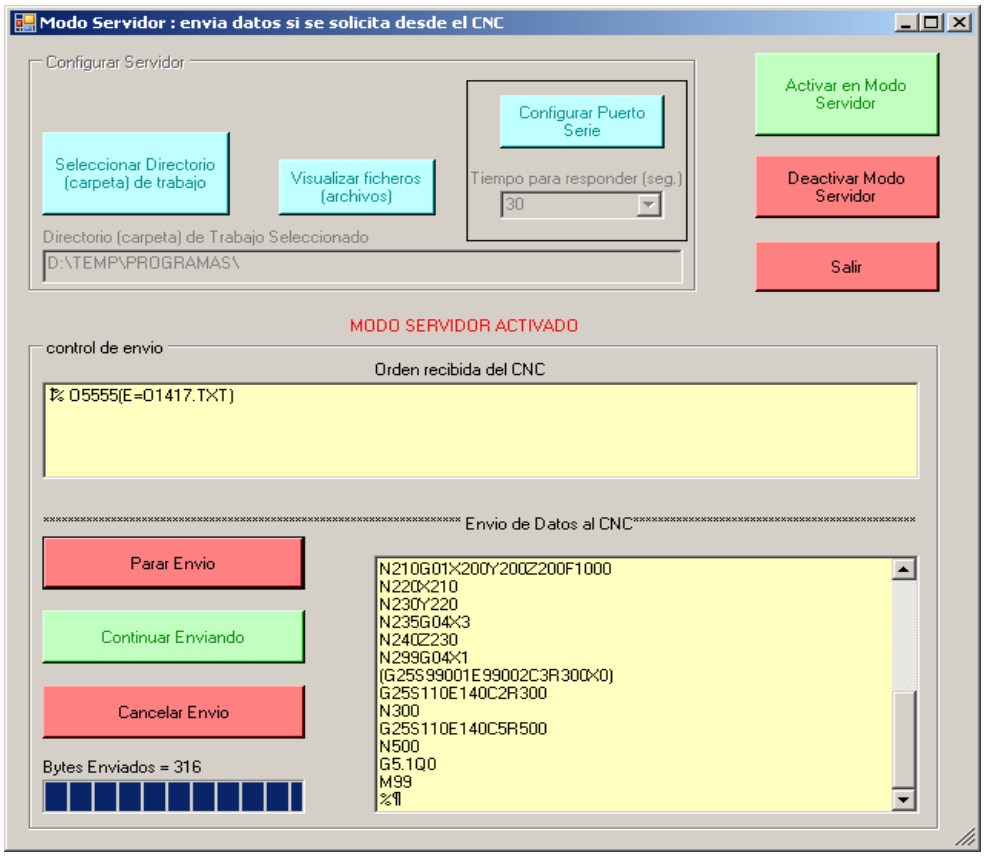
The number of request program (O5555 in the example) can be any number and the name of the file (O1417.TXT in the example) must be in the PC, in the working directory adjusted previously in the PC.
The name of the file on your PC can be any but must match exactly both in the name as in the extension.

Send this program from the CNC to the PC as indicated in paragraph: "Receive Programs from the CNC to the PC by RS232C":

Once sent the program from the CNC to the PC, prepare inmediatelly the CNC to receive programs (this operation should be done before the time established in the preceding paragraph).

On the screen of the CNC "LSK" must be flashing (indicating that the CNC is ready to receive data) before the PC start sending the program after the set time has elapsed.

After the set time has elapsed, the PC will send the file (O1417.TXT in the example) if this file is located in the working directory established in the preceding paragraph.
The program sent by the PC to the CNC will be displayed in both the CNC and the PC:



If the requested file is not in the PC (in the working directory in the preceding paragraph), or there has been a mistake in the requester part program, the PC will send the following program to CNC:

```
%
O0000(ERROR IN THE COMMAND)
M30
%
```

NOTE:
If the communication is interrupted when receiving the program data in the CNC (by an alarm, Reset etc.), to re-establish a new communication just send a new order to the server (PC) or click “Cancel Sending” in this application.

b) Request the PC to send the list of files in the working directory of PC

To request the PC to send the list of files in the working directory (established in the preceding paragraph), operate as follows:

Send a program from the CNC to the PC with the following content:
(L=) .

For example, edit next program in the CNC:

%
O6666(L=)
M30
%

Send this program from the CNC to the PC as indicated in paragraph: “Receive Programs from the CNC to the PC by RS232C”:

Once sent the program from the CNC to the PC, prepare inmediatelly the CNC to receive programs (this operation should be done before the time established in the preceding paragraph).

On the screen of the CNC “LSK” must be flashing (indicating that the CNC is ready to receive data) before the PC start sending the program after the set time has elapsed.

After the set time has elapsed, the PC will send the list of files in the working directory established in the preceding paragraph.
The file names of the list will be displayed as comments (in parentheses) of ISO program in the O0000 part program.

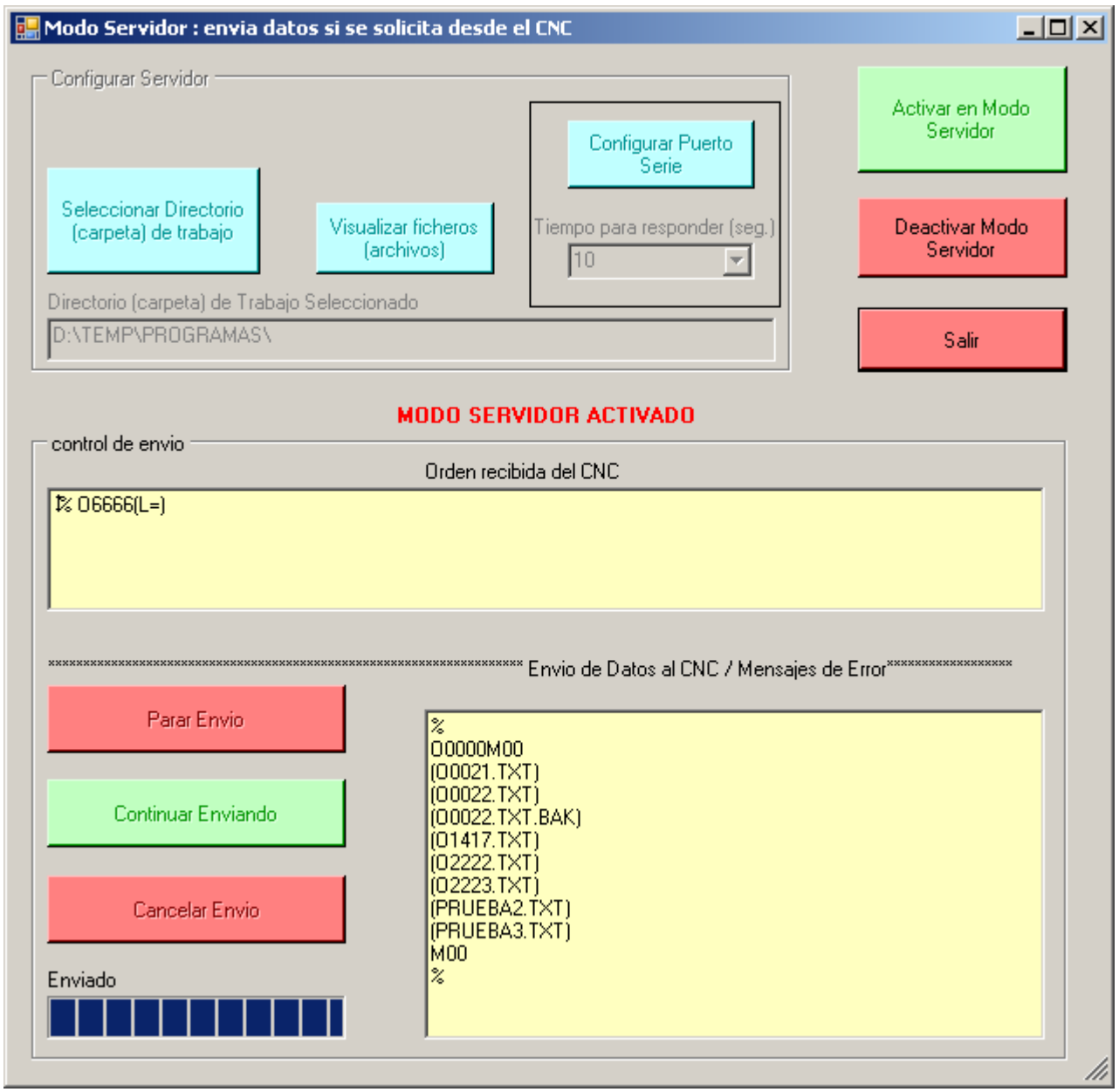
The sent list will be displayed in both the CNC and the PC:

If the requested file is not in the PC (in the working directory in the preceding paragraph), or there has been a mistake in the requester part program, the PC will send the following program to CNC:

```
%
O0000(ERROR IN THE COMMAND)
M30
%
```

NOTE:
If the communication is interrupted when receiving the program data in the CNC (by an alarm, Reset etc.), to re-establish a new communication just send a new order to the server (PC) or click “Cancel Sending” in this application.

The received commands and the sent list of files will be displayed in the PC application.



c) Send to the PC from the CNC a program to save it in the working directory of PC

In this mode (server mode), before sending the program that we want to save it in the PC, you have to tell the PC the name of the file where to save the program.
For that purpose another program with a special must be sent from the CNC to PC in advance.
This command program should contain **(S=xxxx.yyy)** where "xxxx.yyy" is the name of the file where you want to save the desired program in the PC.

For instance , edit the following program in the CNC:

```
%
O7777 (S=O1447.TXT)
M30
%
```

Send this program from the CNC to the PC as shown in the paragraph: "Receive programs from the CNC to the PC via RS232C":
Once sent this program with mentioned special format, then send the program that you want to save in the PC (this operation must be done before the time set in the previous section).

The PC will save the received data in a file whose name is mentioned above, O1447.TXT in this example.
The name of the file can any name.

NOTE1 :
If the communication is interrupted (by an alarm, Reset, etc.), send a new command to the server (PC) to re-establish the communication .

NOTE2 :
Be careful with the name of the file (S=xxxx.yyy), because in case there is another file with same name, the old file will be re-written and its content will be lost.

d) Delete file in the PC from the CNC

In this mode (server mode), it is possible to delete files in the working directory of the PC from the CNC.
For that purpose a program with a special format must be sent to the PC.

Once the server mode has been activated in the PC, send a program from the CNC with the following content: **(D=xxxx.yyy)** , "xxxx.yyy" should be the name of the file you want to delete.

For example, edit the following part program in the CNC:

%
O8888(D=O1447.TXT)
M30
%

Send this program from the CNC to the PC as shown in the paragraph: "Receive programs from the CNC to the PC via RS232C".

Once the program has been sent and received in the PC, the server will delete the file in the working directory of the PC.
In this example the "O1447.TXT" file will be deleted.

NOTE: Be careful when writing the command to delete the file (D=xxxx.yyy), because the file will be deleted without any further advise.

e) Rename a file in the PC from the CNC

In this mode (server mode), it is possible to change the name of files in the working directory of the PC from the CNC.
For that purpose a program with a special format must be sent to the PC.

Once the server mode has been activated in the PC, send a program from the CNC with the following content: **(N=xxxx.yyy , uuuu.vvv)**, "xxxx.yyy" should be the name of the file you want to change its name and "uuuu.vvv" , the new name of the file.

Important: both file names should be separated by a comma **","**

For example, edit the following part program in the CNC:

```
%
O7788(N=O1447.TXT, O6887.TXT )
M30
%
```

Send this program from the CNC to the PC as shown in the paragraph: "Receive programs from the CNC to the PC via RS232C".

Once the program has been sent and received in the PC, the server will change the name of the file in the working directory of the PC.
In this example the name of the file "O1447.TXT" file will be changed by "O6887.TXT".

f) Copy a file in the PC from the CNC

In this mode (server mode), it is possible to make a copy of a file in the working directory of the PC from the CNC.
For that purpose a program with a special format must be sent to the PC.

Once the server mode has been activated in the PC, send a program from the CNC with the following content: **(C=xxxx.yyy , uuuu.vvv)**, "xxxx.yyy" should be the name of the file you want to change its name and "uuuu.vvv" , the new name of the file.

Important: both file names should be separated by a comma **","**

For example, edit the following part program in the CNC:

```
%
O7788(C=O1447.TXT, O6887.TXT )
M30
%
```

Send this program from the CNC to the PC as shown in the paragraph: "Receive programs from the CNC to the PC via RS232C".

Once the program has been sent and received in the PC, the server will make a copy of the file in the working directory of the PC.
In this example a new file "O6887.TXT" will be created with the same content as "O1447.TXT" file.

1.5 DNC by RS232C

Make sure that the last communication configured or selected is RS232C and corresponds to the machine (CNC) from where you are going to send or transfer data.

DNC mode is used to execute (run) the part program in the machine while it is received for serial port RS232C. With this application it is possible to work in DNC Mode in two ways:

a) <u>Normal DNC Mode:</u>

Prepare the CNC in DNC Mode in order to receive a part program from RS232C port.
Normally on the operator's panel of the machine there is a push button or switch that indicates "DNC" or "REMOTE". Please consult with the machine tool builder.
Select this mode and push "START CYCLE" button.

In low part of CNC screen, should appear "RMT" to indicate that CNC is in DNC (REMOTE) mode and "LSK" should be flashing to indicate that CNC is ready to receive data from RS232C.
Afterwards send from the PC the desired part program to be machined as indicated in paragraph:
"Send Programs from the PC to the CNC by RS232C".

NOTE:
If the communication is interrupted when receiving the program data in the CNC (by an alarm, Reset etc.), to re-establish the communication, just click "Cancel Sending" in this application.

b) <u>DNC in Server Mode:</u>

Send a part program from the CNC to the PC with the following content: (E=xxxx.yyy) being the xxxx.yyy the name of the file on your Pcyou want to run.

Example:
To request the PC to send the file O1417.TXT to the CNC to be executed in DNC mode, we will create a program in the CNC containing something like this:

%
O5555(E=O1417.TXT)
M30
%

Send this program from the CNC to the PC as indicated in paragraph: "Receive Programs from the CNC to the PC by RS232C":

Once sent the program from the CNC to the PC, prepare inmediatelly the CNC to receive programs in DNC mode as described before (this operation should be done before the time established in the preceding paragraph).
If CNC is ready to receive data in DNC mode (see above chapter), program will start running as soon as the PC send the requested file data.

c) To request the PC to send the list of the files in the working directory(in DNC mode)

It is also possible to receive the list of files in the working directory of PC in DNC mode in the same way as described before.

For example, edit next program in the CNC:

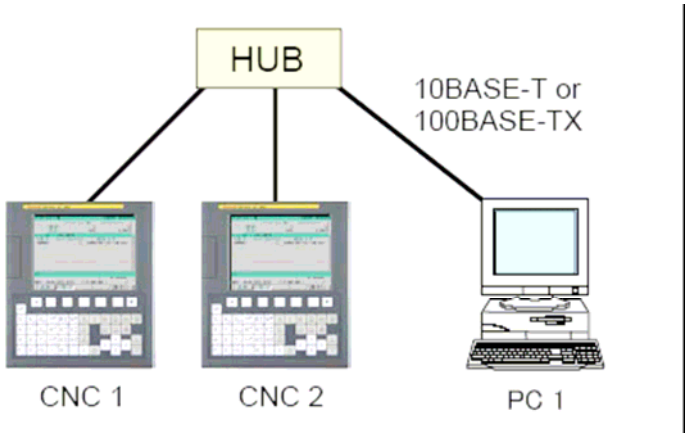
%
O6666(L=)
M30
%

Send this program from the CNC to the PC as indicated in paragraph: “Receive Programs from the CNC to the PC by RS232C”:
Once sent the program from the CNC to the PC, prepare inmediatelly the CNC to receive programs in DNC mode as described before (this operation should be done before the time established in the preceding paragraph).

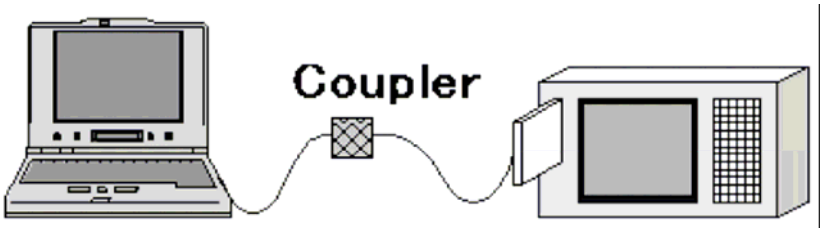
2. - “ETHERNET” COMUNICATION-

2.1 How to configure the “ETHERNET” communication

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:



In the case of a direct connection point to point it would be by using a coupler converter (female-female) RJ45 . In this case we would normally use a crossover cable.



See “Ethernet_connection_cable” document for details.

After the physical connection has been done correctly, it is necessary to configure the Ethernet connection parameter in both the CNC and the PC.

Operations in the CNC:

The FANUC CNC usually allow 3 possibilities for 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 LAN 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.

It is possible to connect to any of them, by connecting the cable in the proper place and configuring the Ethernet port by setting the IP address, the subnet mask and the number of TCP port,

Example of adjustment in the CNC:

IP address: 192.168.1.1
Subset mask: 255.255.255.0
Port Number TCP: 8193

See the attached “Ethernet_setting_CNC” manual for details.

Operations in the PC:

In the PC it is also necesary to set a proper IP address, the subnet mask and the number of TCP port.

Example of adjustment in the PC:

IP address: 192.168.1.2
Subset mask: 255.255.255.0

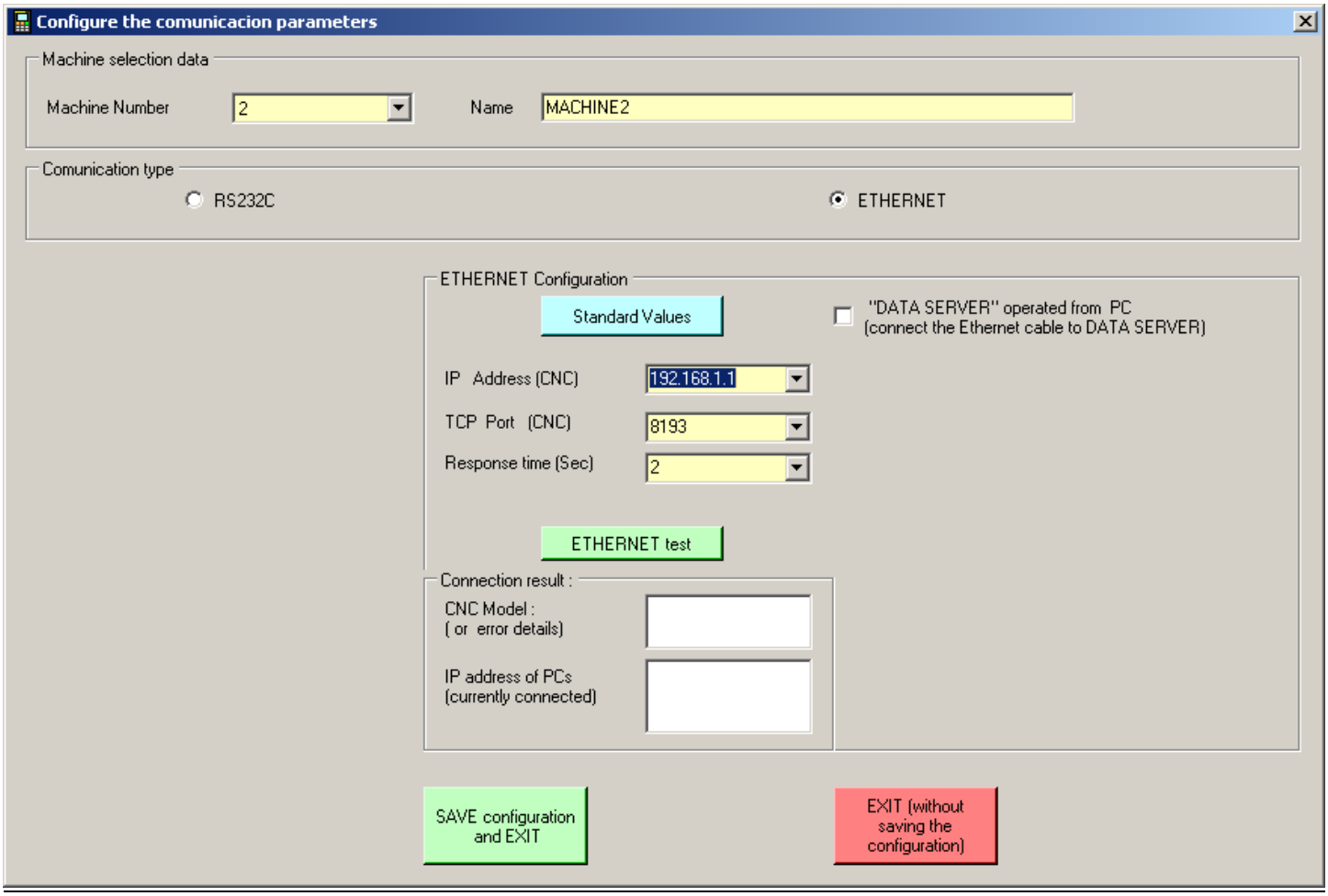
NOTE: The IP address (IP address) defined in the CNC cannot be equal to that of the PC. In the previous example the number at the end must be different, the rest of them should be the same.

See the attached “Ethernet_setting_in_the_PC” manual for details.

Once the Ethernet networks is connected and working, select “Configure” from the main menu of this application:

Select the radio button ETHERNET, the number and name of machine (anyone) and the communication parameters:
In this screen write the IP address, subnetmask and TCP port defined in the CNC.

An example of configuration could be the following:



It is possible to test whether the communication is correct by clicking **"ETHERNET Test"** button:
If the result is satisfactory appears OK and in parentheses appear the model of CNC connected.
For example OK (16- (M) to indicate that the communication is correct and the model of CNC a FANUC model 16-M .

If there is no connection is probably because the cable connection is not the proper one or the configuration is not correct, in that case an error is shown in the "connection result", for instance ERROR -16
Once the configuration and result is correct, click **"Save configuration and EXIT**" .

NOTE :
Although the Ethernet cable has been connected to the DATA SERVER, it is not necessary to select the radio button "DATA SERVER operated from PC" to operate with the CNC. This selection is used only in order to work with the hard disk (or memory card) in the DATA SERVER from the PC.

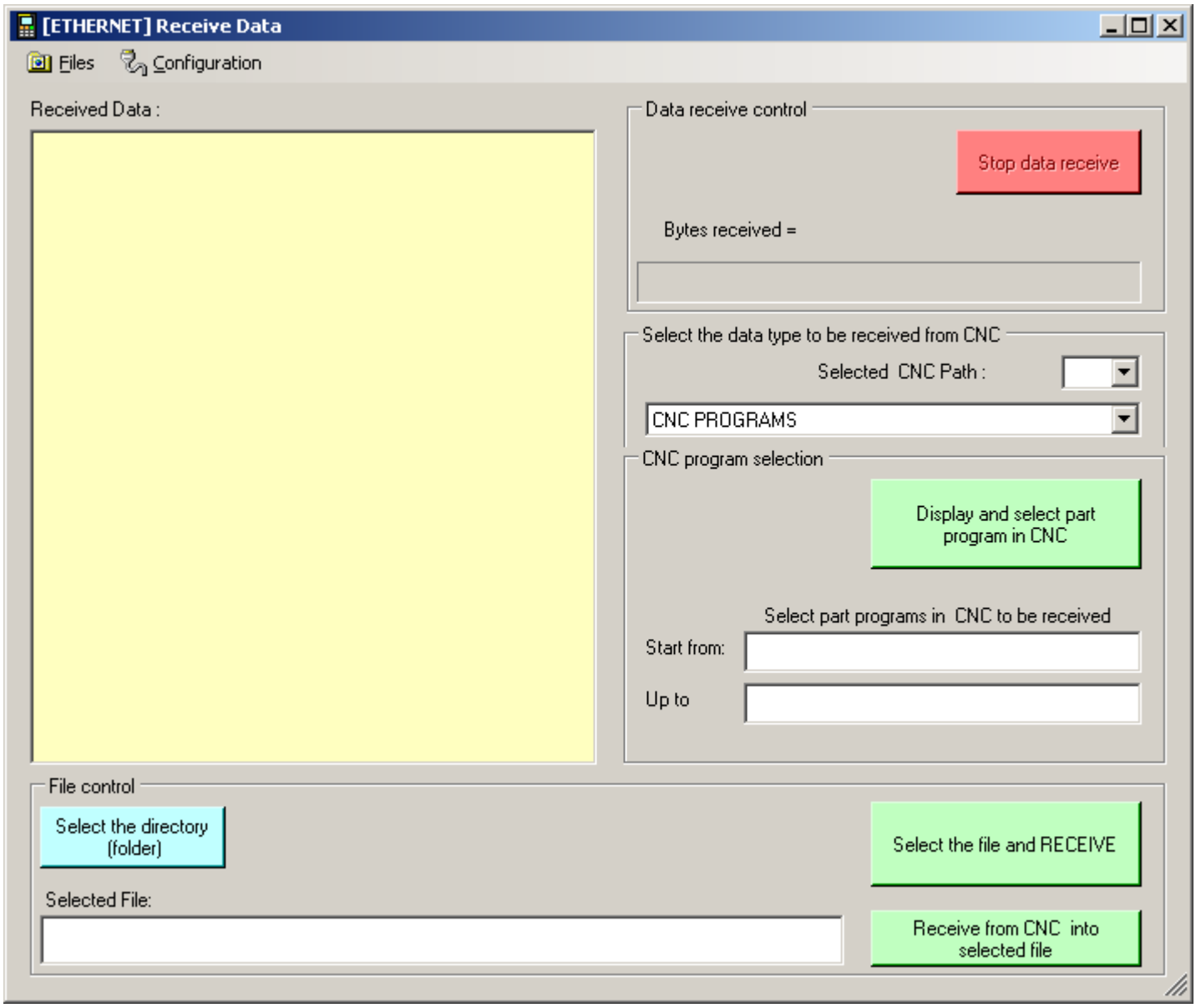
In that case follow the instructions of paragraph 3. - COMMUNICATION WITH DATA SERVER -

2.2 Receive data from the CNC to the PC by ETHERNET

Make sure that the last communication configured or selected is ETHERNET and corresponds to the machine (CNC) from where we receive or transfer data to the PC.

From the main menu select **“Receive_from_CNC”**

If the last configured communication or selected is ETHERNET, appear the next screen:

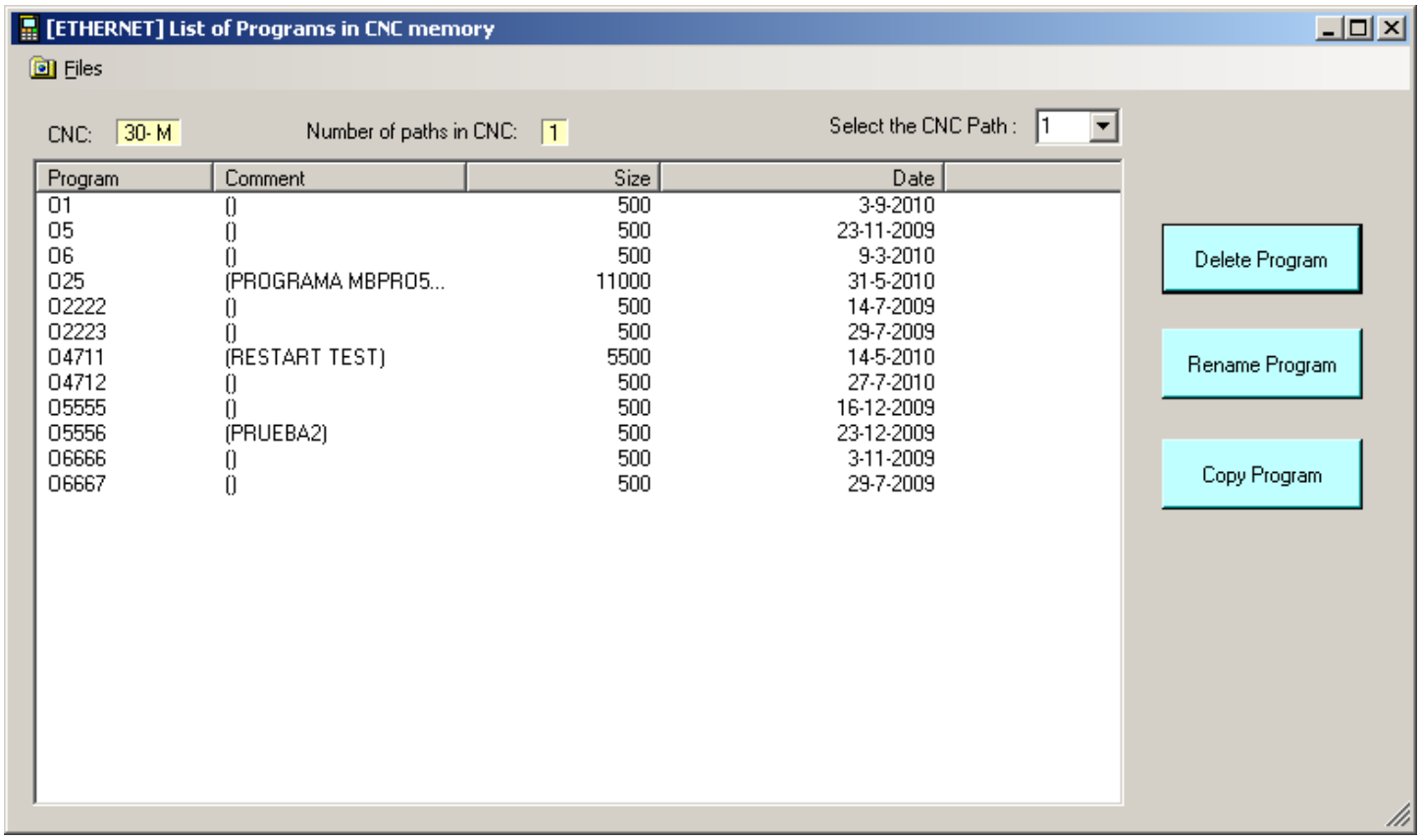


In this screen you have to select the CNC path. Normally the CNC will have a single path and automatically selects the path 1.
On the other hand select the type of data we want to read or receive (CNC Part Programs, Tool Offset, Work Coordinate shift, CNC Parameters...).

If you click **"Display and select part program in CNC"**, you will be able to see the part programs in the CNC.

NOTES:
Only the part programs with a number Oxxxx will be displayed.
Only part programs of the currently selected folder will be displayed.

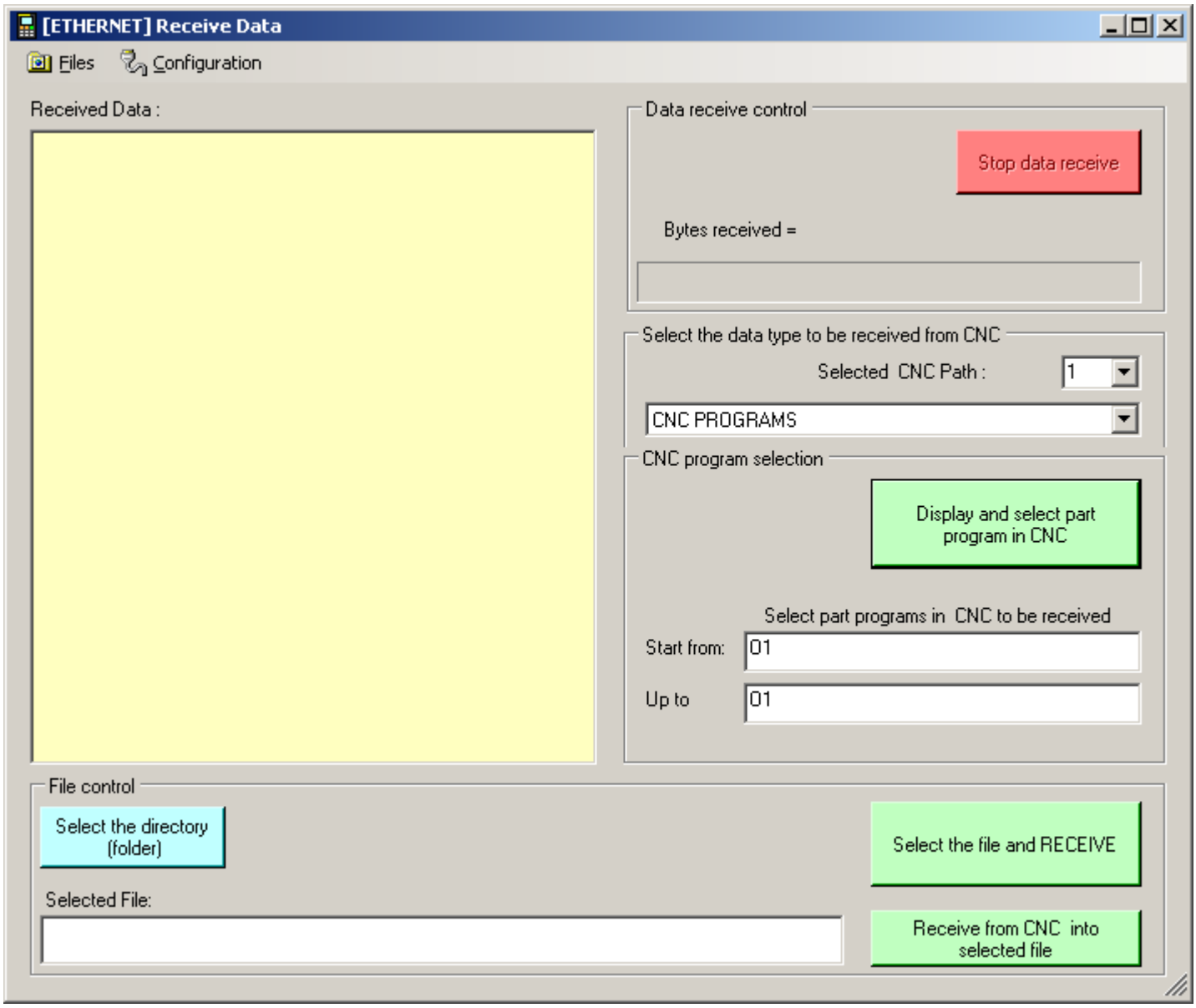
Example:



Then select with the mouse the program that you want to read or transfer to PC and click “Select Program” .

It is also possible select it with a double click with the mouse .

If you select for example, the program O1:

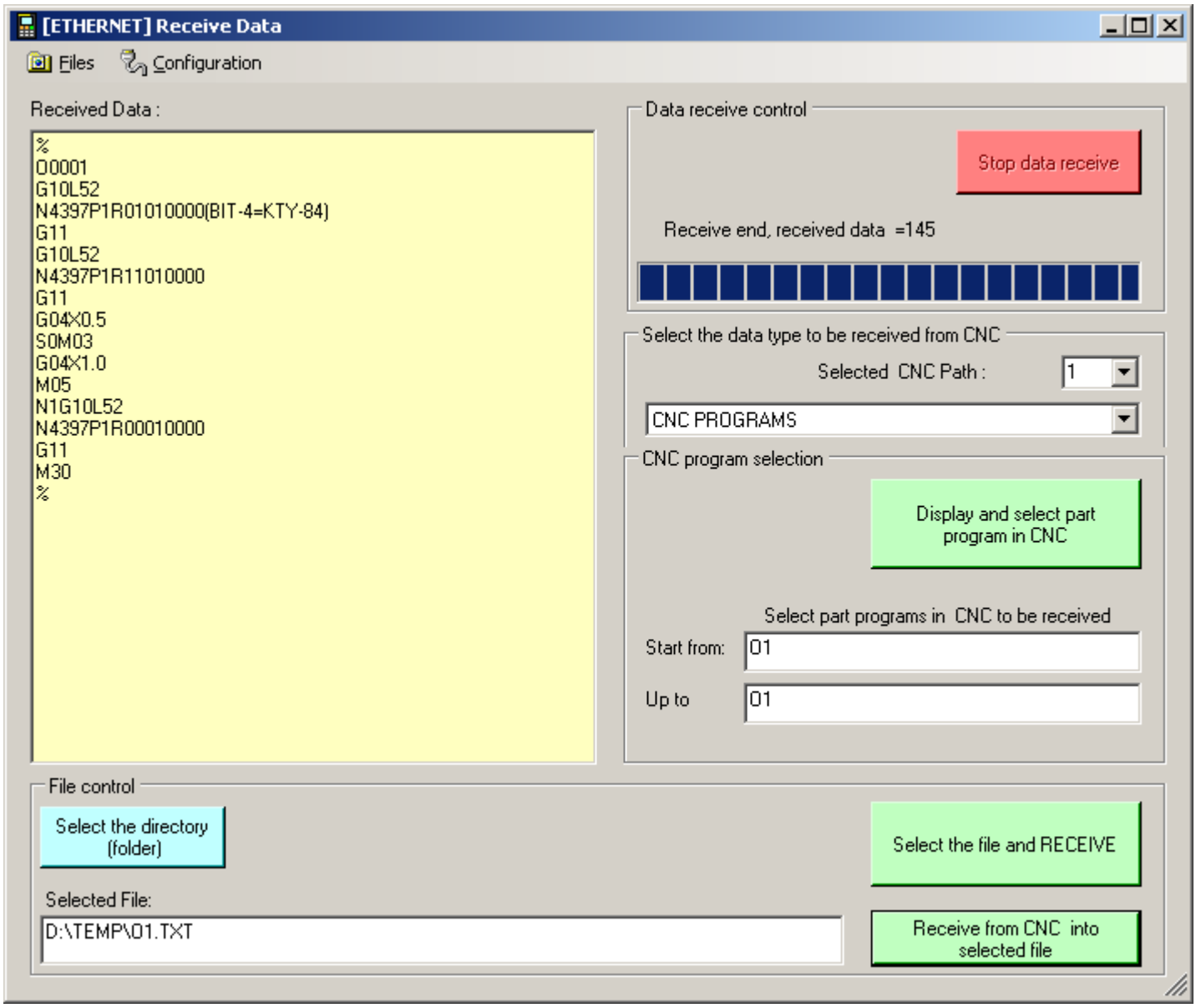


Click "**Select file and RECEIVE"** and write the name of the file where you want to store the program sent from the CNC. By default the name of the file is the same as the program number, but it is possible to define any file name for the program to receive.

It is also possible to write directly in the field below, but it should contain the complete directory.
Then click **"Receive from CNC into selected file"** and in that case the selected program will be transferred to the file selected in the PC.

NOTE: The program selected in the CNC should not the active program selected in the CNC otherwise we would get an ERROR message.

If it has been operated properly, the program will be read displayed as in the following example:



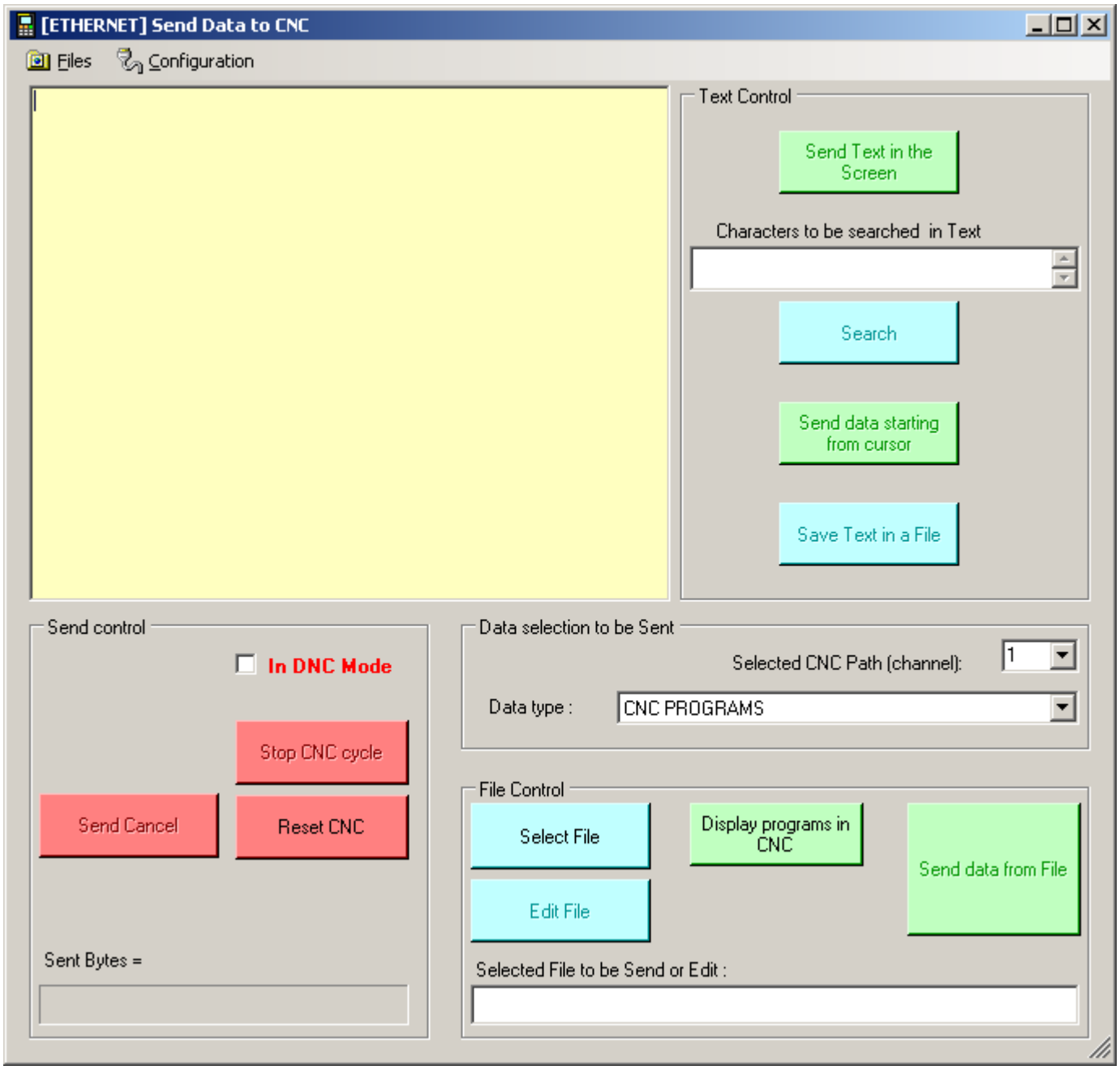
To edit or modify this program or others you have to leave this menu and from the main menu select:
Files -> Edit , then select the desired file.
It is also possible to Edit the files from the menu **“Send to CNC”**

2.3 Send Programs from the CNC to the PC by ETHERNET

Make sure that the last communication configured or selected is ETHERNET and corresponds to the machine (CNC) from where we receive or transfer data to the PC.

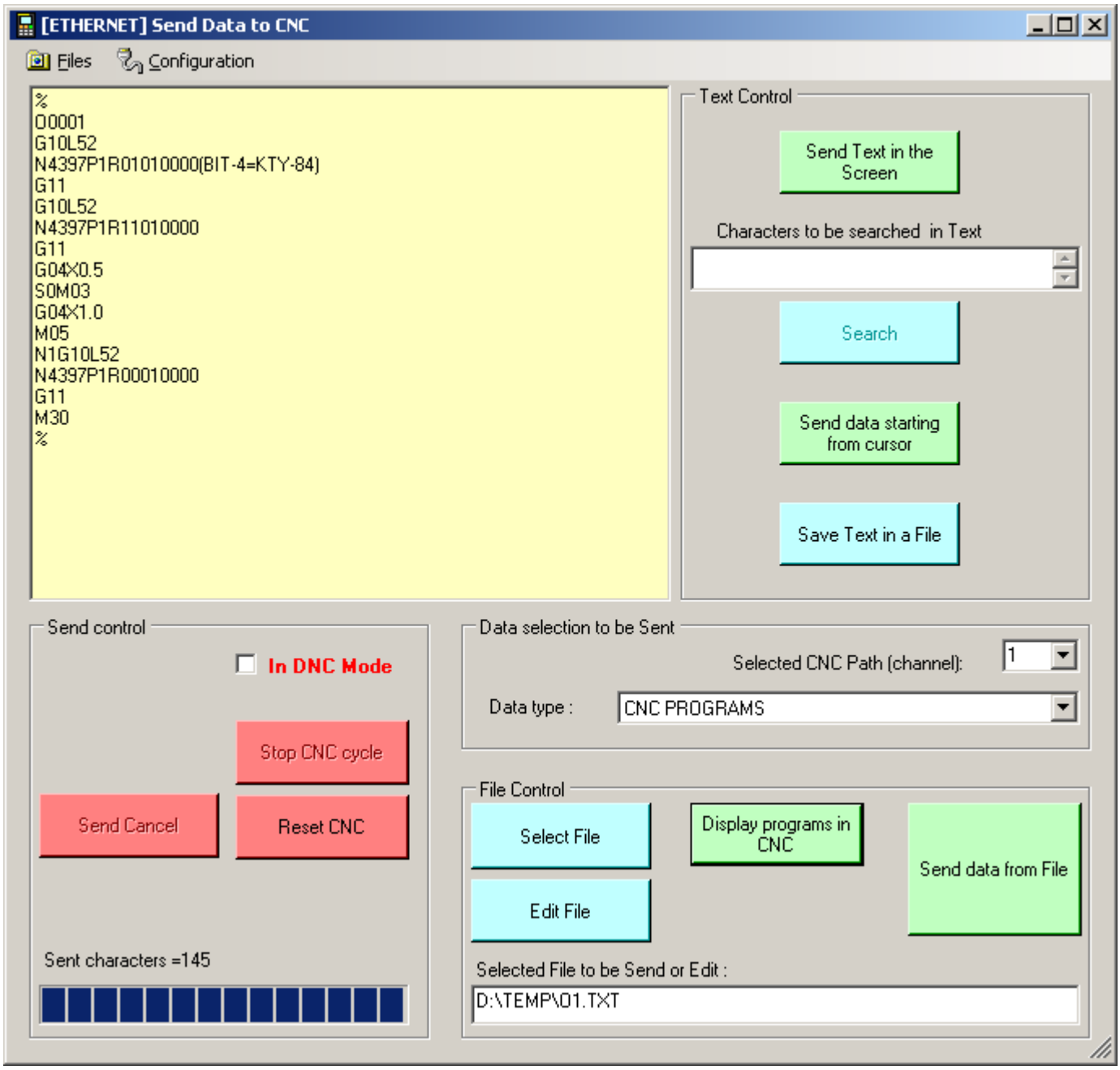
From the main menu select **“Send_to_CNC”**

If the communication selected is ETHERNET, the next screen will be displayed:



In this screen you have to select the CNC path. Normally the CNC will have a single path and automatically selects the path 1.
On the other hand select the type of data we want to send (CNC Part Programs, Tool Offset, Work Coordinate shift, CNC Parameters...).

Click **“Select file”** and select the file containing the data you want to send to the CNC. After selecting the file to send , press **“Send from File”** . If the file has been sent correctly, it will be displayed on the screen.
For example:



In the case of CNC programs, it is possible to verify that the transfer has been correct by viewing the list of programs in the CNC.
For that click “Display programs in CNC” .

From this screen it is also possible edit and modify any file, even sending the program or part of the program to the CNC by clicking **“Send Text on the screen”** or **“Send data starting from cursor”**.
NOTE: the programs should begin by a **%** followed by number of program and finished by a **M30 or 'or M99 and a %** at the bottom.

Example:
%
O4444(TEST)
.....
M30
%

2.4 Server Mode (Request data from the CNC to the PC by Ethernet)

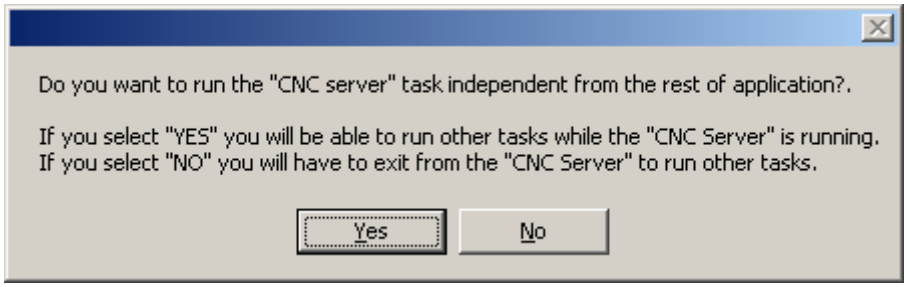
Make sure that the last communication configured or selected is ETHERNET and corresponds to the machine (CNC) from where we receive or transfer data to the PC.

In this way the CNC requests to the PC using FTP commands.
Thus in this mode the PC behaves as FTP server.

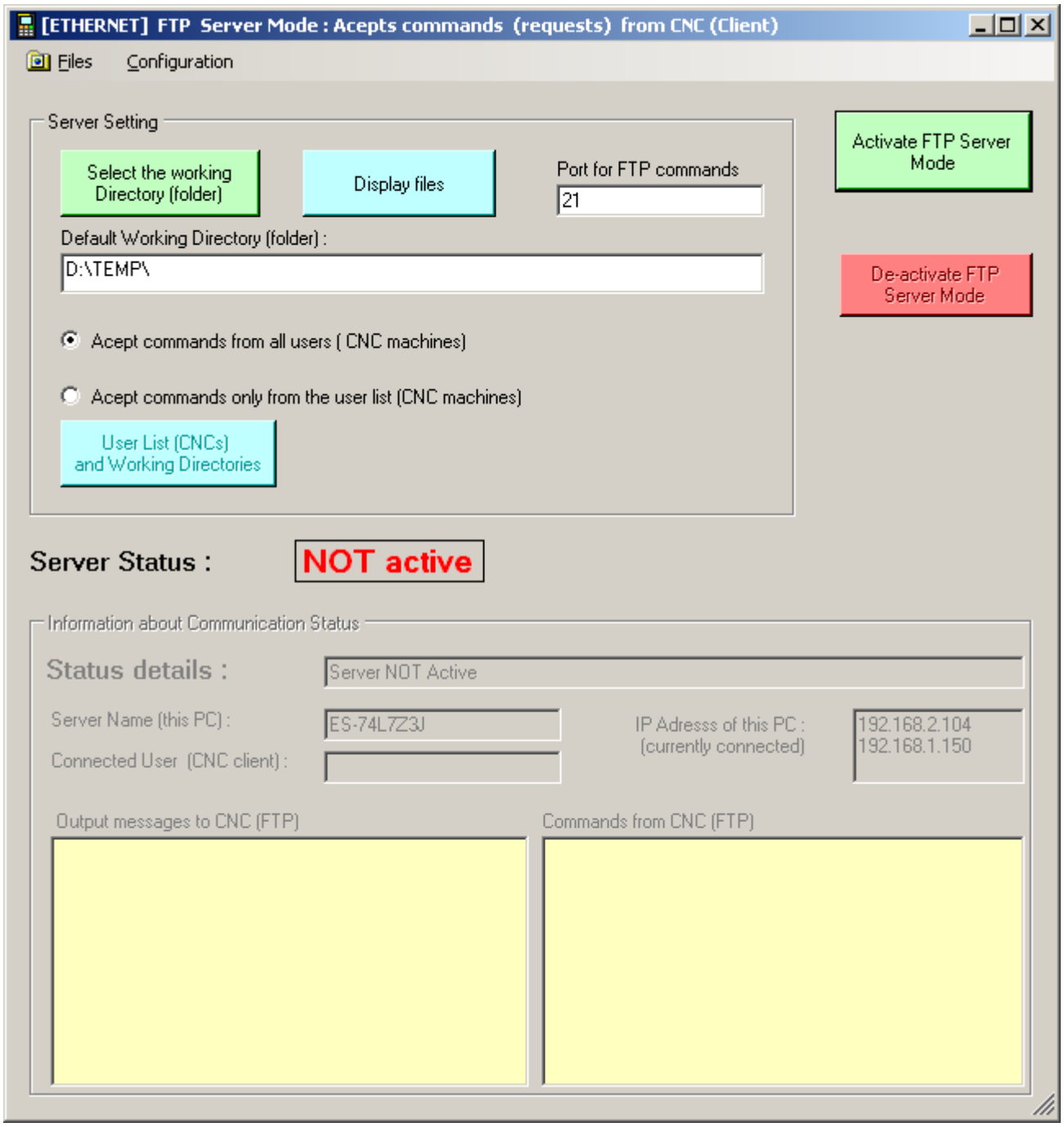
Adjustments in the PC:

To work in this way you have to select **"CNC Server Mode"** from the main menu:

The following message will be displayed:



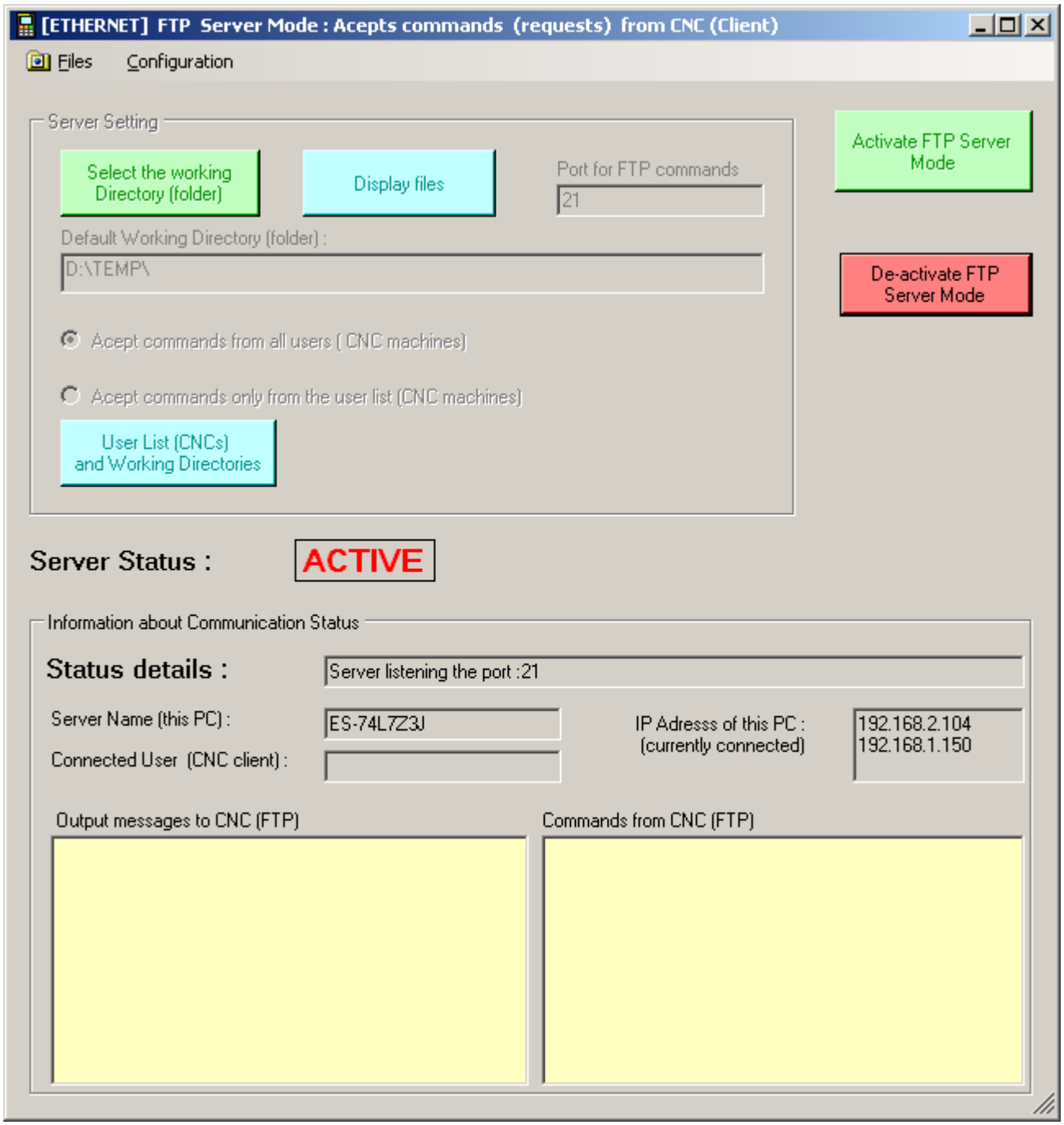
In any case, if the last communication configured or selected is ETHERNET, the following screen appears:



In this screen, you have to select the working directory where the files(CNC programs) are stored and from where they will be sent to CNC etc.

By default, orders (FTP commands) from any CNC machine (user) will be accepted, but it is also possible to select the CNC machines (users) who have will access to the server. This way it also possible to define a working directory for each machine.

Turn on the FTP server mode by clicking **“Activate”.**
Example:



This way the PC, in this case by the port 21, is ready to receive FTP c commands from the CNC that is to send and receive files, delete files, list the directory etc. from/to the selected working directory.

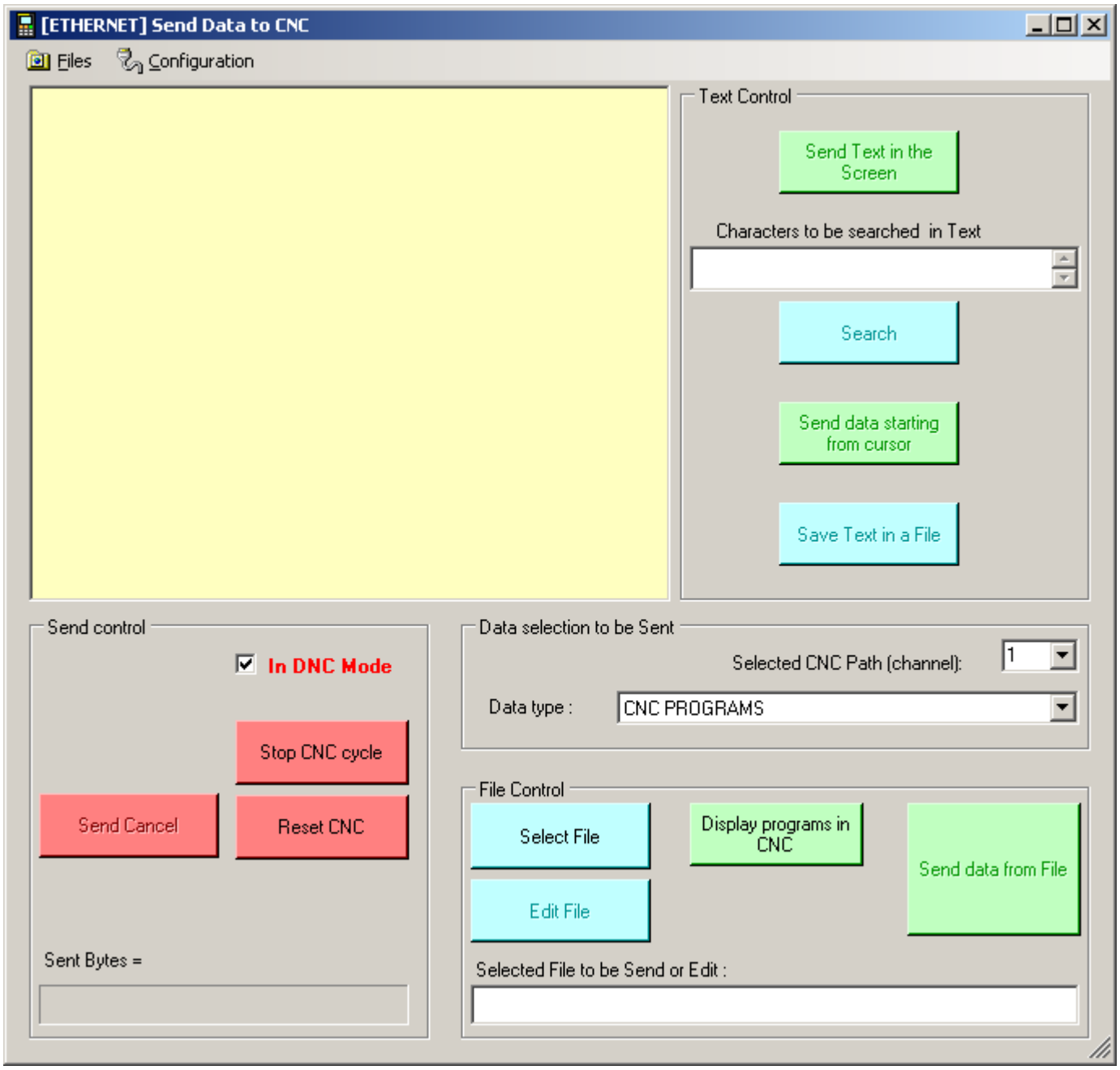
2.5 Send programs to CNC in DNC Mode by ETHERNET

Make sure that the last communication configured or selected is ETHERNET and corresponds to the machine (CNC) from where we receive or transfer data to the PC.

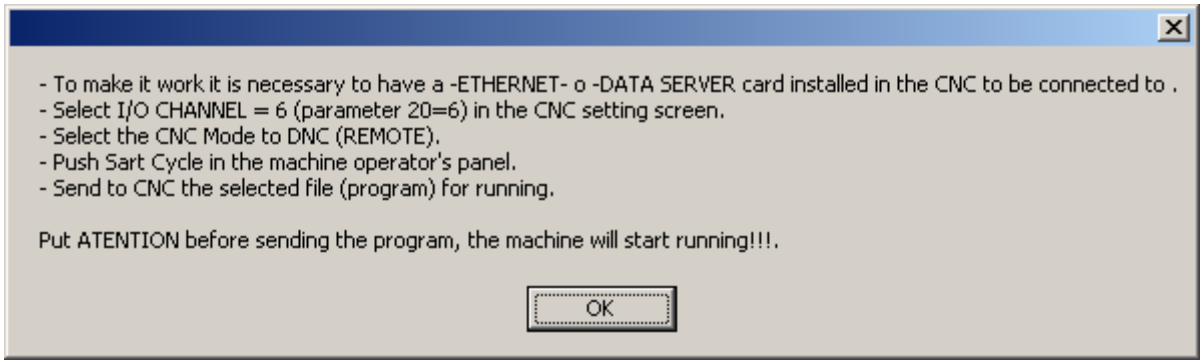
DNC mode is used to execute (run) the part program in the machine while it is received from the ETHERNET cable.

From the main menu select **“Send_to_CNC”**

Select **“In DNC Mode”** as it appears in the next screen:



A message comes up to show the conditions for DNC via ETHERNET:



Click “Select the file” and select the file that contains the program to send to the CNC for running.
After selecting the file to send, press **“Send from File**” .
The program will run in the CNC while receiving from the PC.

Before making such an operation it is necessary to prepare the CNC in DNC (REMOTE) mode (CNC screen should show “RMT” to indicate that it is in DNC or REMOTE mode) and push “CYCLE START” in the CNC.

From this screen you can stop the program running, cancel the sending process or reset the CNC.

3. - COMMUNICATION WITH DATA SERVER -

3.0 Introduction:

The DATA SERVER is a device that can be installed in the CNC as an option and contains a high capacity memory (hard disk or a memory card) in addition to an Ethernet connection.

From the CNC you can load/download part programs in the hard disk or a memory card. You can also run directly the part programs from the hard disk or call them as a sub-program by M198Pxxxx.
Look at the manual of the CNC or DATA SERVER for more details.

For loading / download programs in the hard disk or memory card of DATA SERVER from an external PC, an Ethernet cable is used.

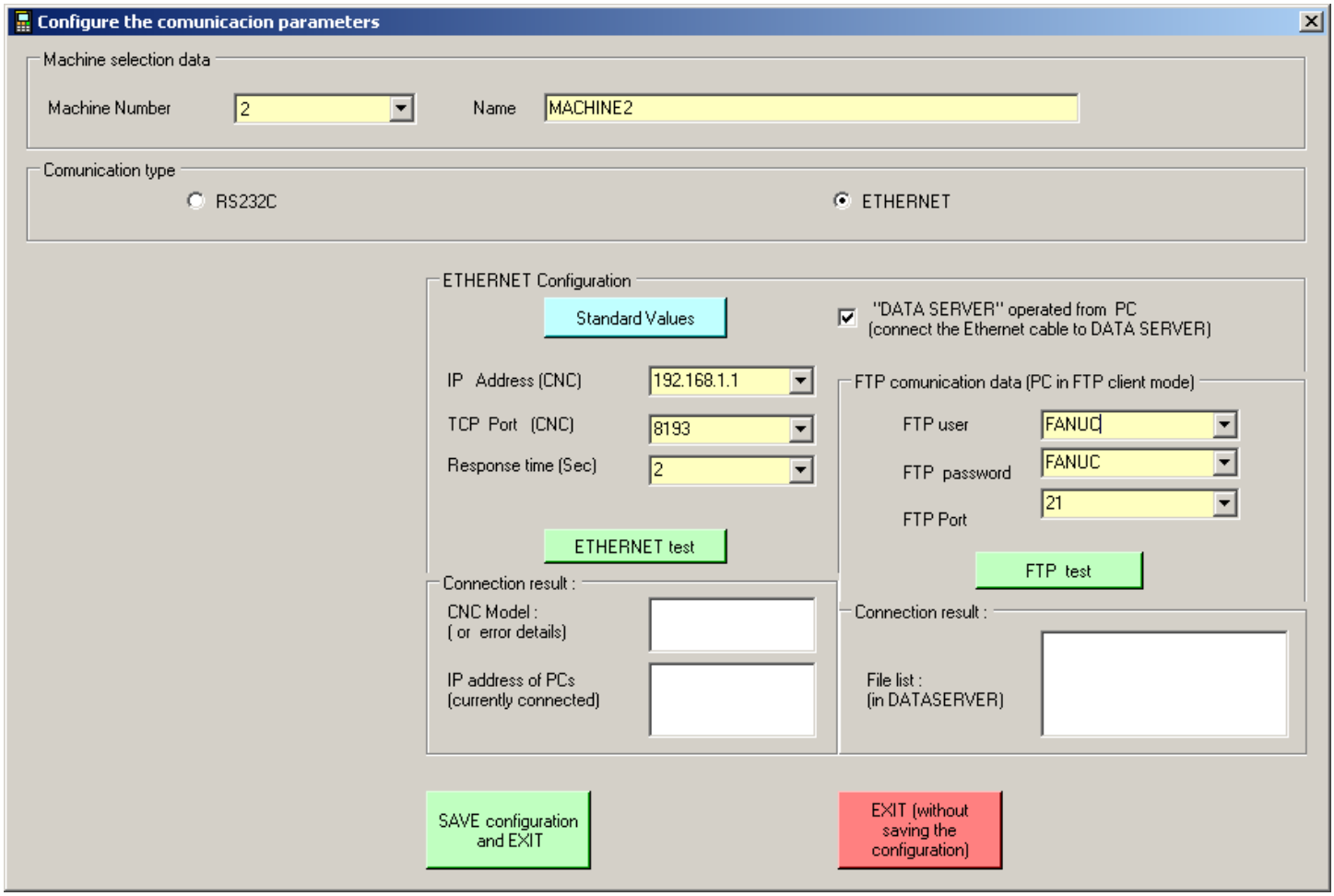
The protocol used for loading / download programs is FTP.

The DATA SERVER can be operated from the PC or from the CNC. This section describes the operations from the PC, that is the DATA SERVER works as FTP server and the PC as FTP client.
This operation mode is selected from main menu by clicking “DATA SERVER” described below.

NOTE:
From the CNC it is also possible to upload/download programs in the hard disk or memory card of DATA SERVER but this operation mode is not described here.
For mentioned operation you have to set **“CNC Server Mode”** from main menu of this application. Look at the corresponding chapter of this manual.

3.1 Adjustments in the program:

In the Configuration select DATA SERVER(FTP)



You have to set the FTP server user name., password and port number.
The FTP username and password must be exactly the same as the one set in the CNC for the DATA SERVER even the type of letter (usually capital letters).
The standard number for the FTP port is 2l but you can change it as long as you use same number in the CNC as in this application.

In the CNC you can set or check the settings by pressing [DATA SERVER] on the [ETHERNET BOARD] menu in the system settings.
You have to check on the [FTP SERVER] page that the fields USER NAME and PASSWORD coincide exactly.
It is possible to test the FTP communication by clicking “FTP test”, if the operation is correct, the list of files in the DATA SERVER will be displayed. If the FTP communication is not correct a message will be shown after a while.

3.2 Adjustments in the CNC:

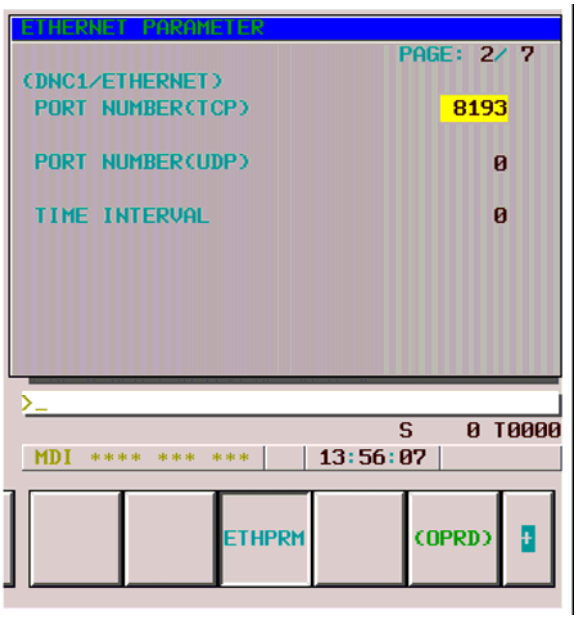
The following describes an example of adjustment for a CNC 16/18/21i.
For other models the adjustment is similar:

- Select he CNC in MDI Mode
- Press the function key [SYSTEM]
- Press the most right softkey to select the “following menu page” several times until [ETHPRM] is seltable.
- Pressing [ETHPRM] screen appears “Ethernet parameter " screen.
- If the parameters have been already registered, the current setting will be shown.
    - Enter or update the data through the keys MDI or the softkeys.
    -

Example:
To specify the IP Address "192.168.0.1" and mascara 255.255.255.0:

- Move the cursor to "IP address"
- Enter "192.168.0.1" through the keys MDI
- Press the softkey [INPUT] or the function keys to fix the data.
- Make the same operation with the mascara 255.255.255.0

In the next page adjust the TCP port normally to the value 8193 .
This value must coincide with the adjusted in this application in order to operate with the CNC memory , but it is not really needed to operate with the DATA SERVER.
It is not necessary to adjust the UDP port nor the time interval .



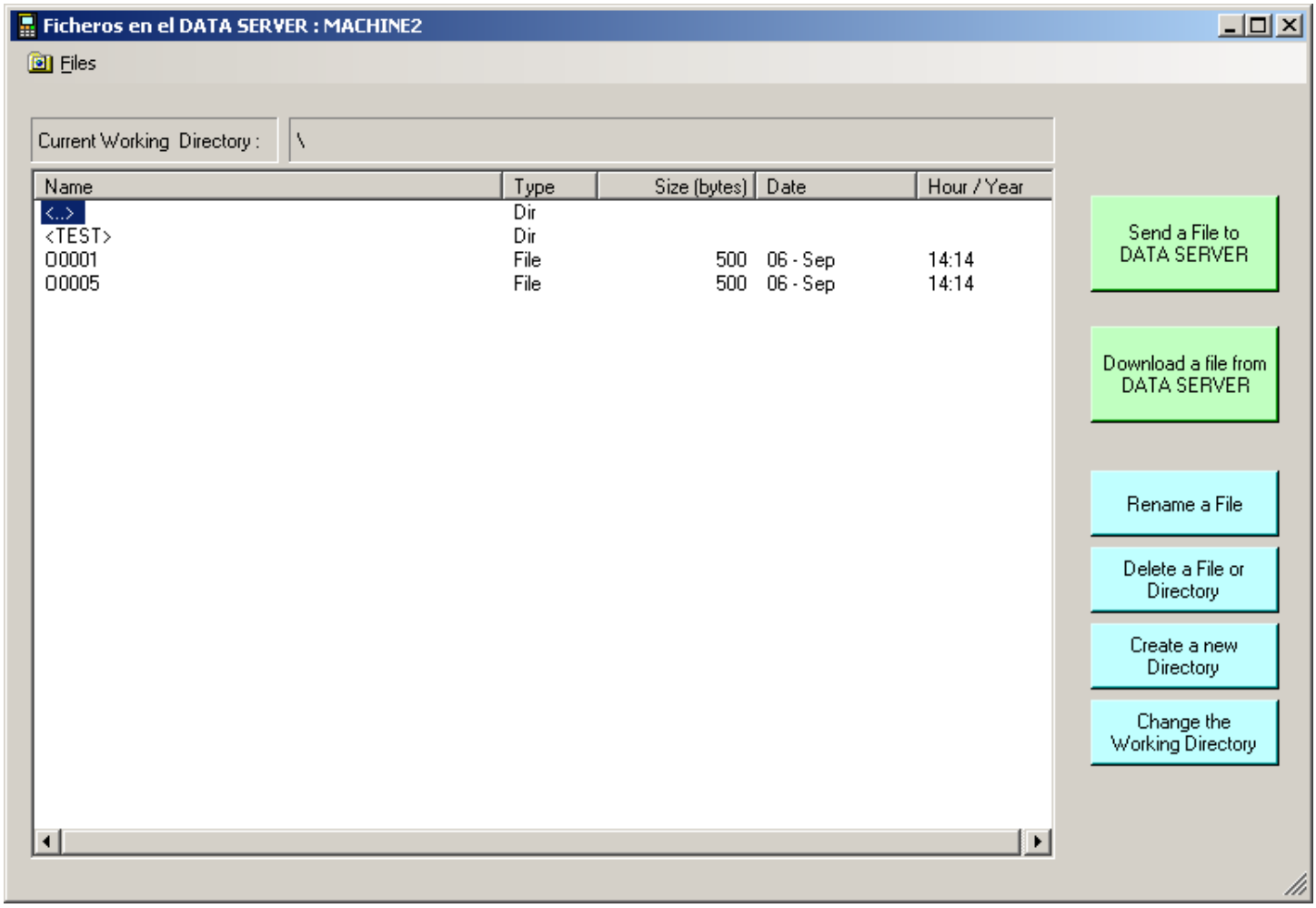
Adjust the USER NAME and PASWORD in the “FTP SERVER” page.
They should match with the one specified in the configuration screen of this application.

It is not necessary to specify LOGIN DIR .

3.3 Uploading and Downloading of files in the DATA SERVER.

Click DATA SERVER in the main menu:

If the communication is correct and the adjustments of FTP (user, password...) are correct the file list on the hard disk or memory card of DATA SERVER will be shown.



From this menu it is possible very easily to operate with files in the DATA SERVER (uploading, downloading the files, rename, delete etc.)

NOTES:

With the left mouse you can select the desired file.
With a double-clicking on a directory you can change the directory automatically.
With a double-clicking on a file you can select the sending menu automatically.
With the right mouse it is possible to make same operations as with the pushbuttons.