

Setup software
for Series 300
positioning units

ONLINE3

Version 1.0

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**Proposals
Improvements**

ONLINE3

Edition: a000 July 93
Doc. no. 212.953/DGB 07.93

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1 General description

The ONLINE3 program is designed for setting up BERGER LAHR Series 300 controllers (e.g. WDP5-318, WDP3-337). For this purpose, ONLINE3 has the following features:

- Execution of controller functions.
- Indication of controller states, inputs/outputs and flags on the screen.
- Recording, graphical representation and archiving of the signal sequences of inputs and outputs as well as limit switches for error diagnosis.
- Recording, graphical representation and archiving of movement sequences for setting controllers for AC servo motors (e.g. WDP3-337).

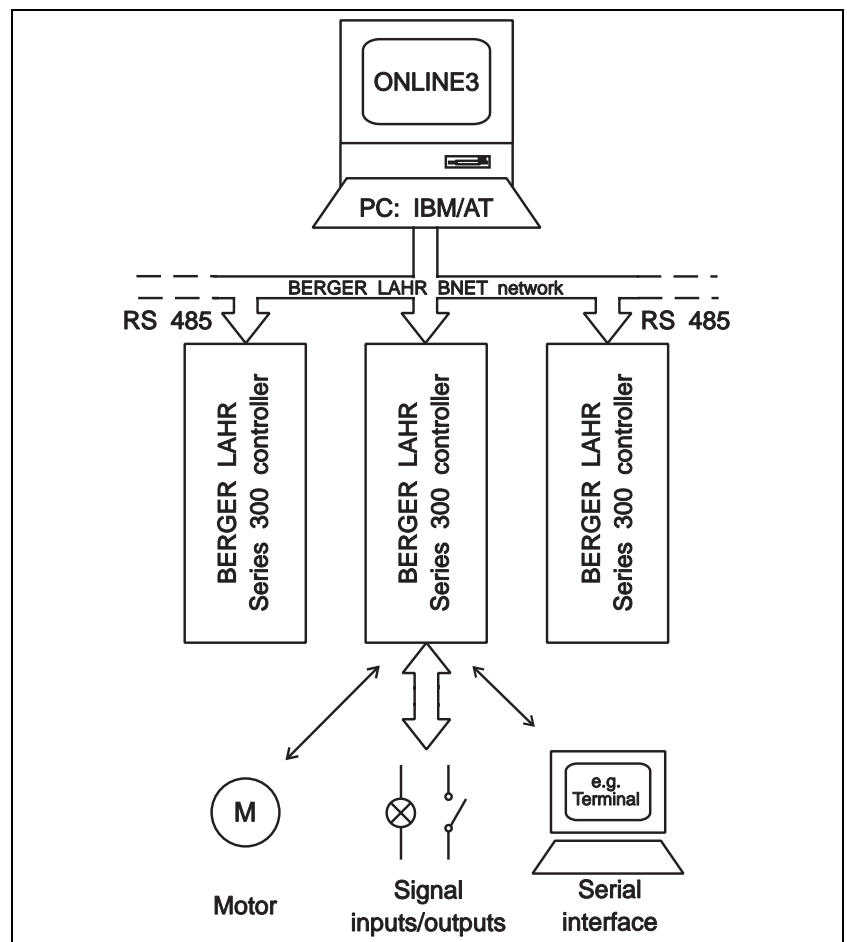


Fig. 1-1 BERGER LAHR network with Series 300 units

1.1 Reference documentation

This manual includes information on installation and operation of the ONLINE3 setup software.

The BPRO3 Operating Manual includes information on installation and operation of the BPRO3 programming system and its editors.

The BPRO3 Programming Manual contains all information required for developing a control program.

The controller manual of the unit in question contains controller-specific information.

1.2 Contents of the software package

The software package includes the following files:

- ONL3.EXE operating program
- BNET2.EXE memory-resident network driver
- UBNET.EXE to remove the BNET2.EXE network driver
- ONL3.HLP integrated help texts
- ERROR.SYS error messages
- HFK_SORT.SYS controller library functions
- PLC_SORT.SYS controller system constants
- EA_KONF.SYS controller input/output configuration
- Acceleration and master curves for ramp adjustment (for more information on master curves, see BPRO3 Programming Manual, chapter 3.3.1). These files have the extension ACC.
- MSHERC.COM memory-resident driver for Hercules graphics card.

1.3 Purpose

The ONLINE3 program is designed for setting up BERGER LAHR Series 300 controllers (e.g. WDP5-318, WDP3-337).

1.4 Menue structure

The ONLINE3 program features two menue levels:

- Main menue
- Recording menue

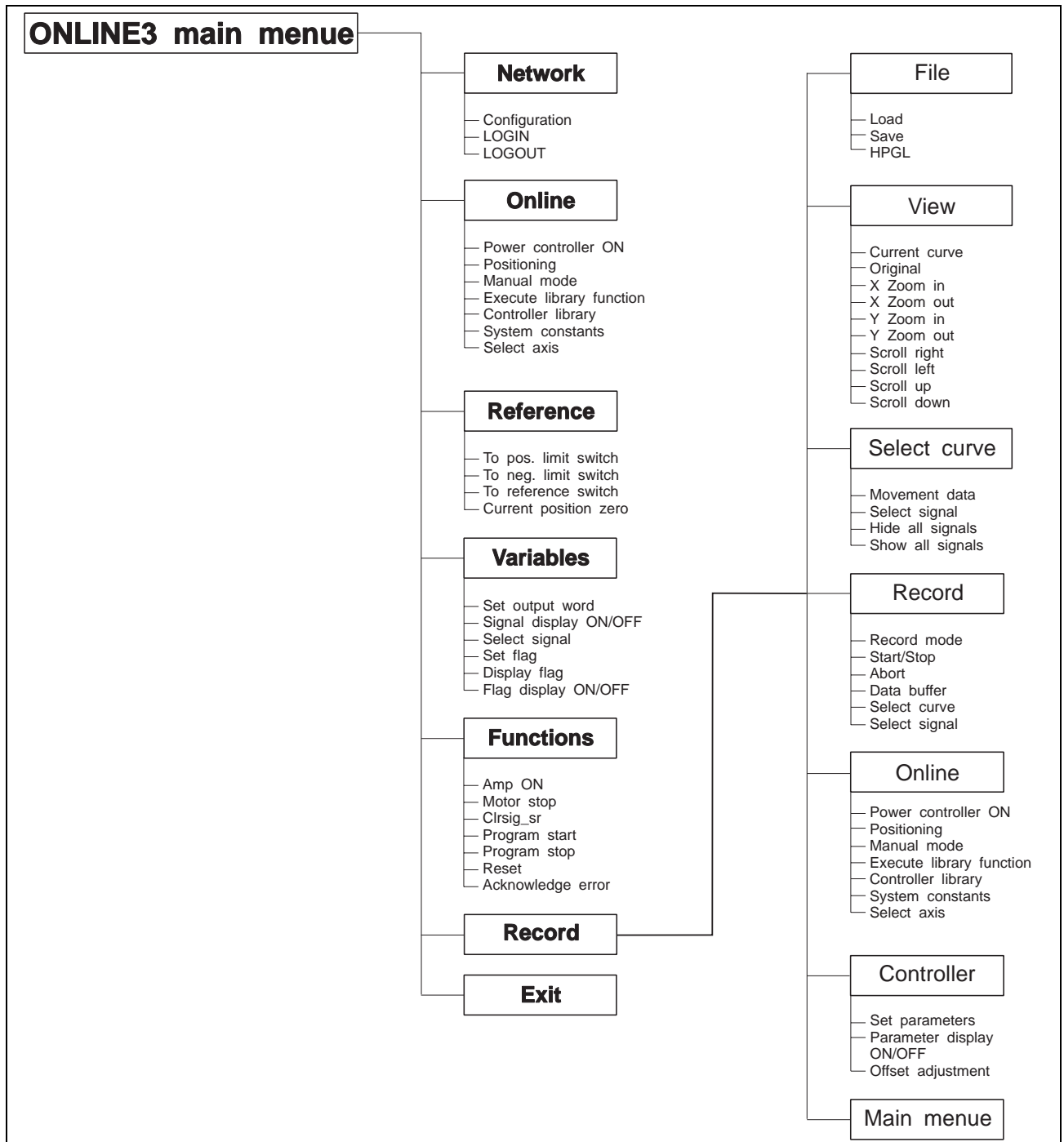


Fig. 1-2 Menue structure

General description

1.4.1 Main menu

The main menu is displayed automatically after program start and includes a display area with information on signals and axis states. All actions are executed from the main menu.

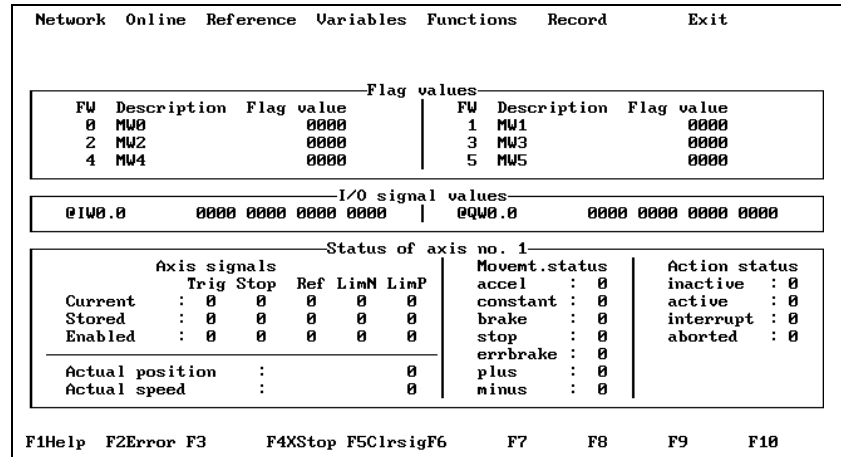


Fig. 1-3 Main menu

The following functions are available from the main menu:

- Network functions such as LOGIN
- Online commands, e.g. execution of library functions, reference movements etc.
- Display areas for controller states, input/output signals and flags.

1.4.2 Recording menu

The recording menu includes a graphic display area.

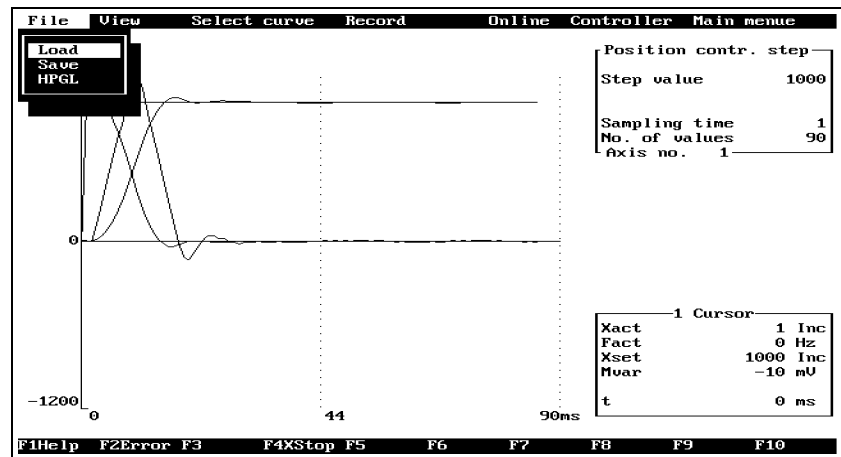


Fig. 1-4 Recording menu

The following functions are available from the recording menu:

- File operations, e.g. loading, saving files etc.
- Various options for recording and displaying movement curves
- Online commands, e.g. execution of library functions, modifying control parameters etc.

2 Installation

2.1 Scope of supply

The scope of supply must be checked for completeness.

The scope of supply comprises:

Qty.	Designation
2	Diskettes (one 3½" and one 5¼" diskette)
1	ONLINE3 documentation

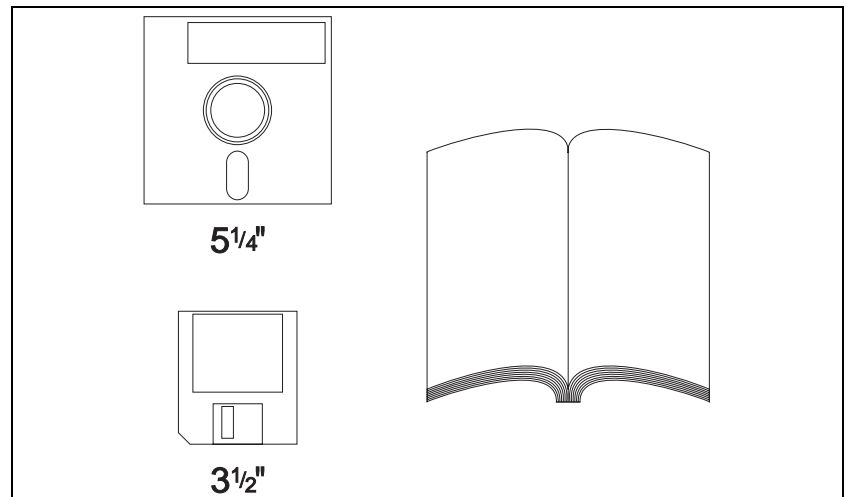


Fig. 2-1 Scope of supply

2.2 Accessories

The following optional accessories (for a description of accessories, see controller manual, chapter 6.2) are available and must be ordered separately:

Designation	Order number
Interface cable male/female	62501412xxx
Interface cable male/male	62501405xxx
MP 923 interface converter (RS 485/RS 232)	62020923000
MP 924 interface distributor	62020924006

2.3 System requirements

The following system requirements must be fulfilled in order to use ONLINE3 on the PC:

Hardware requirements

The following hardware requirements must be fulfilled:

- IBM XT/AT or compatible PC
- 640 KB RAM min.
- At least 1 diskette drive, 5¼" 1.2 MB or 3½" 1.44 MB
- Hard disk
- Serial interface RS 232 (V 24) or RS 422 defined as COM1 (I/O address 3F8, IRQ 4) or COM 2 (I/O address 2F8, IRQ 3)
- One of the following graphics cards and a suitable display screen:
 - EGA Enhanced Graphics Adapter
 - VGA Video Graphics Array
 - HERCULES graphics card
- Keyboard
- Interface cable for communication with the controller via the network.

Software requirements

- MS-DOS operating system Version 3.3 or higher
- ONLINE3 software package

Interface configuration

- The serial interface of the PC is configured automatically by ONLINE3.

2.4 Connections

Communication between PC and controller is effected by serial data transmission. Figure 2-2 illustrates the connections between the controller and the PC.



ATTENTION

When wiring the components check whether the controller is provided with an RS 485 interface (female connector) or an RS 232 interface (male connector).

If the controller has an RS 485 interface and the PC an RS 232 interface, an interface converter (e.g. MP 923) must be used.

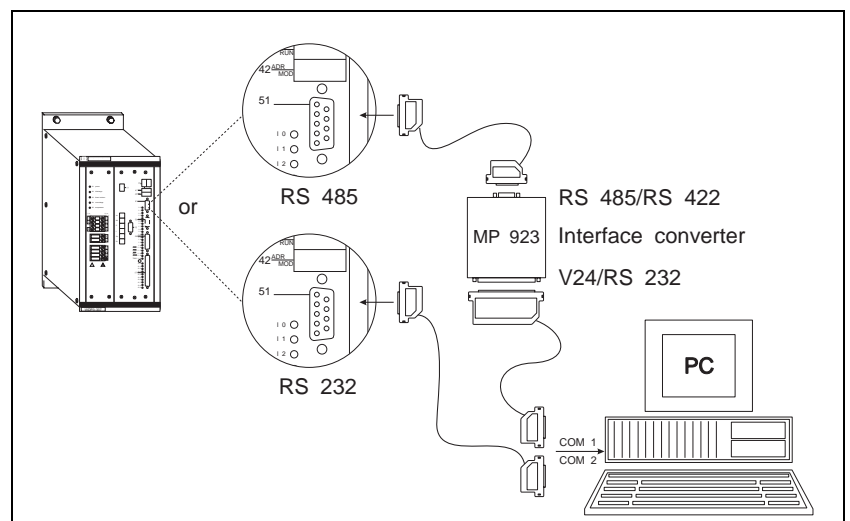


Fig. 2-2 Connections, e.g. with WDP3-337 controller



NOTE

The MP 924 interface distributor can be used with an RS 485 interface to establish a network (see controller manual).



NOTE

Networking is not possible with an RS 232 interface.



NOTE

Interface wiring is described in chapters 2 and 6 of the relevant controller manual.

2.5 Program installation

To install ONLINE3 on the PC proceed as follows:

1. Create a backup copy of the program diskette using the same diskette format (see MS-DOS manual for information on how to copy diskettes).



NOTE

Install ONLINE3 using the backup copy.

2. Insert the program diskette into the diskette drive.
3. Change to the drive where you inserted the program diskette by entering, for example:
A: <↵>
4. Start the installation program by entering:
INSTALL <↵>



NOTE

If no target drive and directory are specified, the installation program uses drive C: and the directory \ONL3 by default.

5. The further procedure is explained on screen during the installation process.

3 Operation

3.1 Starting the program

3.1.1 Requirements for program start

The following requirements must be fulfilled before program start:

- The ONLINE3 software package must have been properly installed on the hard disk (see chapter 2).
- PC and controller(s) must be properly interconnected (see chapter 2 and controller manual).
- The correct device address must be set on the controller (see controller manual).



NOTE

The setup software can also be executed without being linked to the controller (offline) for demonstration purposes (see chapter 3.1.2).

3.1.2 Program start parameters

The ONLINE3 program can be started with various parameters.

Parameter	Description
-d	ONLINE3 runs in demonstration mode after program start. A controller does not have to be connected. Any connected device is not addressed.
-m	Configuration for a monochrome display screen.
-1 or -2	Interface for communication between PC and controller. Enter -1 for COM1 or -2 for COM2.
-x318	WDP5-318 or WP-311 controller is connected.
-x337	WDP3-337 or WDP3-338 controller is connected.
-x3ma	WPM-311.004 controller is connected.



NOTE

If no parameters are specified when ONLINE3 is called, the parameters specified during program installation are used.

3.1.3 Program start

Enter the following command at the DOS prompt:

```
ONL3 [start parameter(s)]
```

Examples:

```
ONL3 -d -m <↵>      Demonstration mode and monochrome display
```

```
ONL3 -2 <↵>         Communication with the controller is effected
                    via the serial interface COM2 of the PC.
```

The following initial screen is displayed after program start:

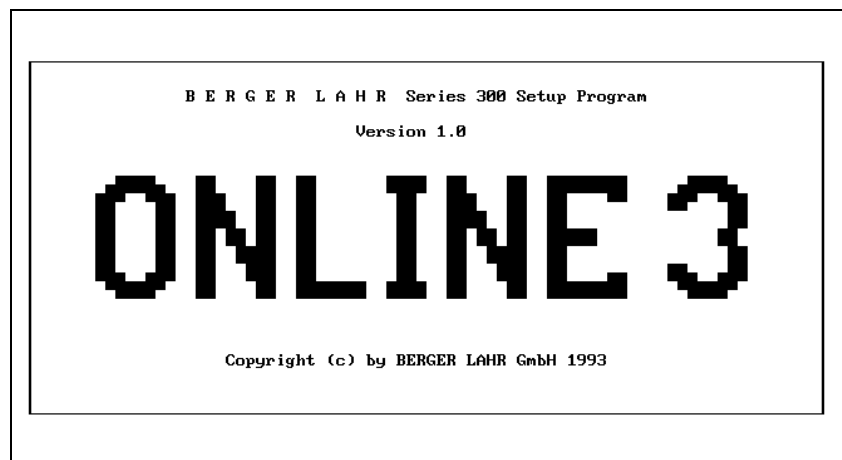


Fig. 3-1 Initial screen

After a short delay, the program automatically displays the main menu.

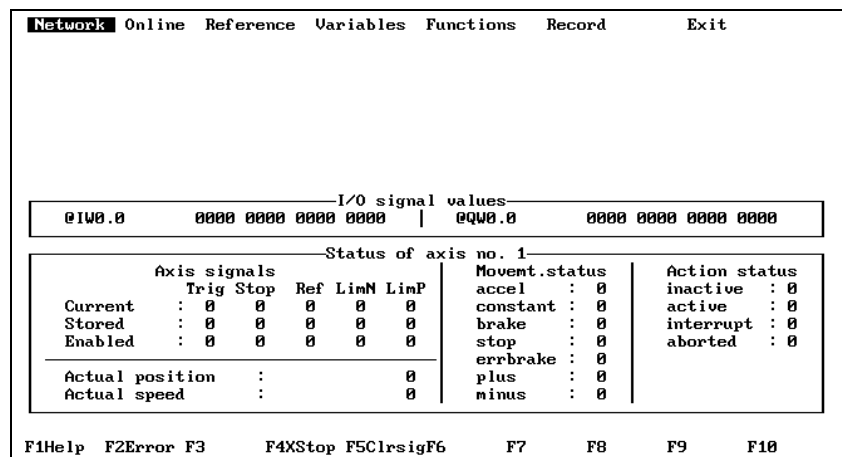


Fig. 3-2 Main menu



NOTE

A link to the controller is automatically established if one is connected. If the link should be disrupted, reestablish it using the menu option "Network/LOGIN".

Use the menu option "Network/Configuration" to set the network address.

3.2 User interface

This chapter describes general operating functions of the ONLINE3 setup software. Figure 3-3 illustrates the display screen areas of the ONLINE3 main menu and the most important keys used for operation.

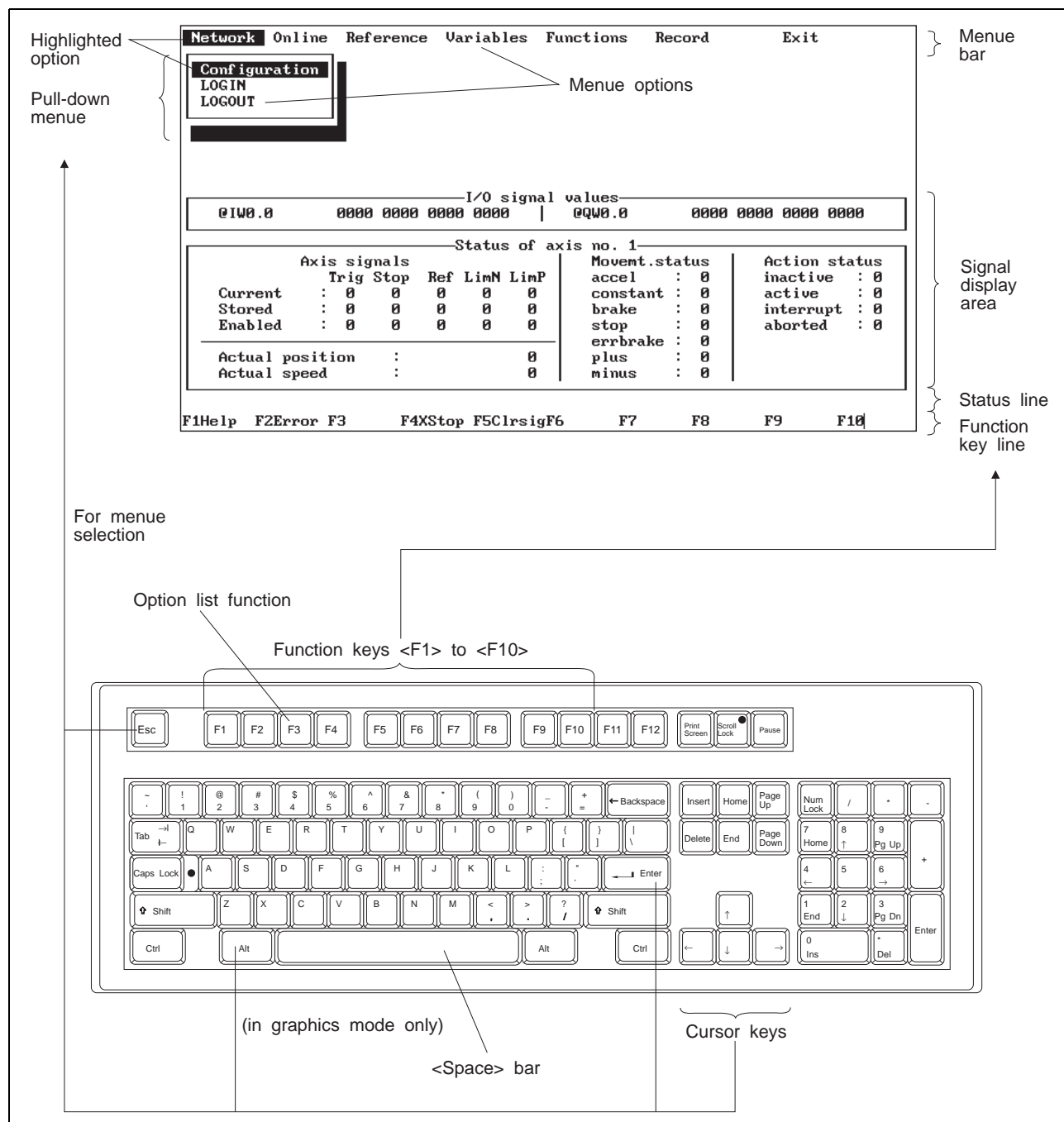



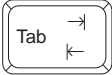

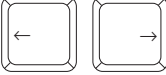










Fig. 3-3 User interface

Operation

3.2.1 Important keys

The following table lists the most important keys and explains their functions.

Key	Function
	To activate various program functions (see function key line on screen for assignment).
	Used together with a hot key to call the menu in record mode.
	To select the menu option currently marked by the cursor.
	To confirm any input.
	To open pull-down or pop-up menus.
	Toggles between cursor 1 and 2 in record mode.
	To close a pull-down menu.
	To exit the program.
	To return from an input field.
	To exit record mode and return to the main menu.
	To move the highlight or cursor in the direction indicated by the arrow.
	To move the highlight or cursor in the direction indicated by the arrow.
	To move the highlight or cursor in the direction indicated by the arrow.
	To open a pull-down menu.
	Toggles between insert and overwrite mode. In insert mode, the character at the cursor position is pushed to the right. In overwrite mode, the character at the cursor position is written over.
	To delete the character at the cursor position.
	To move the cursor to the beginning of a list.
	To move the cursor to the end of a list.
	To scroll one page up.
	To scroll one page down.

3.2.2 Help function

The help function is called by pressing <F1>. It provides context-sensitive help texts on the currently active menu option.

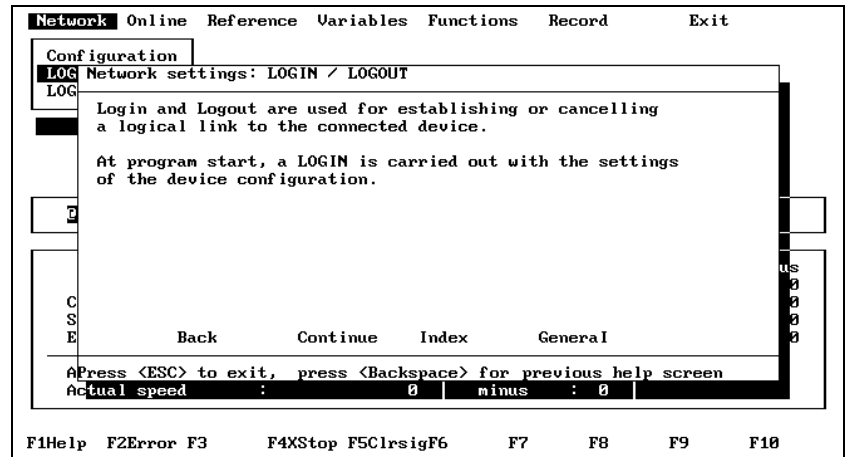


Fig. 3-4 Help function

Menu option	Description
Back	To return to the previous help window.
Continue	To proceed to the next help window.
Index	To display a list of keywords.
General	General description of input fields and input windows.

3.2.2.1 Using the help window

Proceed as follows:

1. Move the highlight to the desired menu option with the cursor keys or by pressing the initial letter of the menu option.
2. Press <↵>.

3.2.2.2 Keywords in the help text

In the help texts, keywords highlighted in colour or black can be selected in the same way as menu options to display more help information on the topic.

3.3 Main menu and display area

3.3.1 Screen structure The main menu has the following layout:

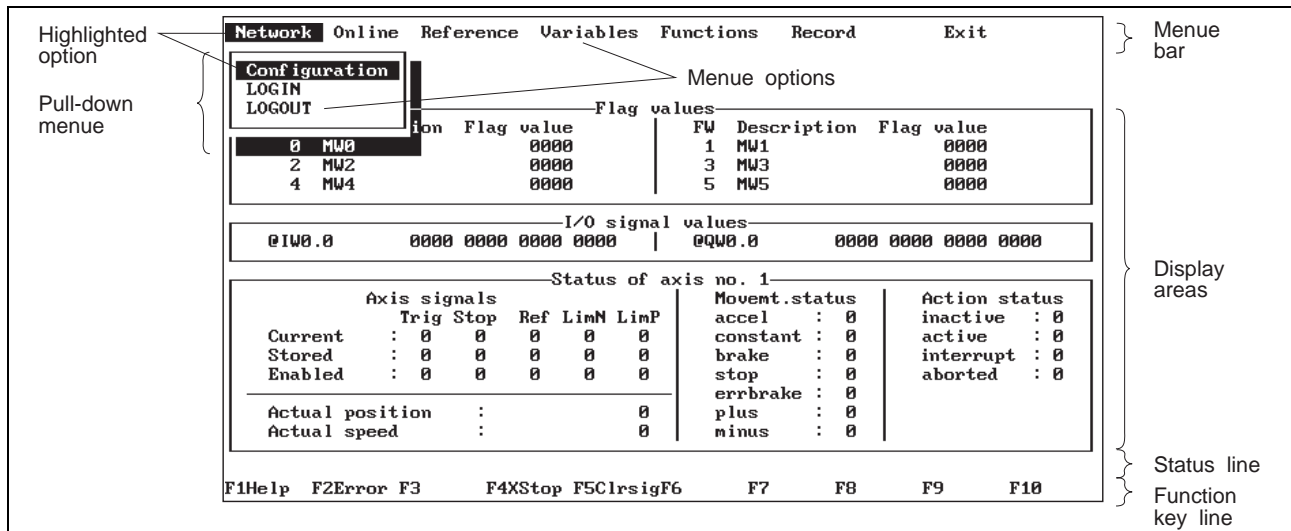


Fig. 3-5 Main menu structure

The screen is divided into 4 display areas:

- Menu bar for selecting individual menu options.
- Display areas for flags, inputs/outputs and axis states (see chapter 3.3.1.1).
- Status line to display messages, e.g. controller error messages.
- Function key line to display the function key assignment.

3.3.1.1 Display areas

The display areas are used for displaying the following controller information:

- Flag words of assignment list
- Signal values of inputs and outputs
- Axis signals (see BPRO3 controller functions "getsig", "getsig_sr", "getensig")
- Actual position of the shaft (see BPRO3 controller function "getpos")
- Actual speed of the shaft (see BPRO3 controller function "getvel")
- Movement status (see BPRO3 controller function "getstate"), e.g. acceleration
- Action status (see BPRO3 controller function "getstate action")



NOTE

For more information, see BPRO3 Programming Manual.

3.3.2 Using the main menu

The main menu can always be accessed directly after program start and after each function call.

Most of the menu options of the menu bar are assigned a pull-down menu which can be opened by pressing <↵> or <↓>.

There are several ways of selecting a menu option:






- Move the highlight to the desired option with the cursor keys and press <↵>.
- Press the corresponding hot key. The hot key of a menu option is the highlighted character; for example, to select "Network" press the character <N>.



NOTE

Some menu options may be disabled, depending on the connected controller or the current program step. Disabled menu options are grey on a colour screen and invisible on a monochrome screen.

Function key assignment

Function key		Assignment
	Help	To call the help function.
	Error	To acknowledge a controller error.
		In some input situations you can call the option list function by pressing <F3>.
	XStop	To stop the shaft.
	Clrsig	To clear the stored signals.

3.3.3 Pull-down menu "Network"

This menu is provided for configuring the network and establishing the link to the controller.

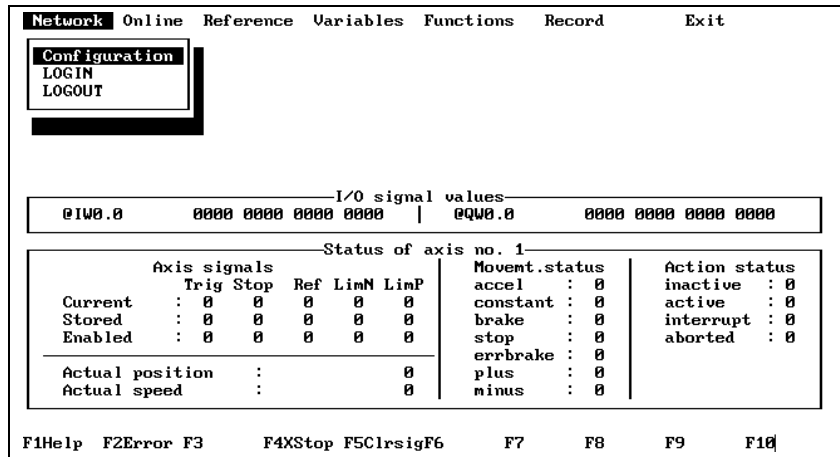


Fig. 3-6 Pull-down menu "Network"

Menu option	Description
Configuration	Select interface and network address (see chapter 3.3.3.1).
LOGIN	Establish the link to the controller.
LOGOUT	Terminate the link to the controller.



NOTE

The network must be configured before a LOGIN procedure can be carried out (see chapter 3.3.3.1).

3.3.3.1 Configuring the network

Select the interface and the network address from this menu.

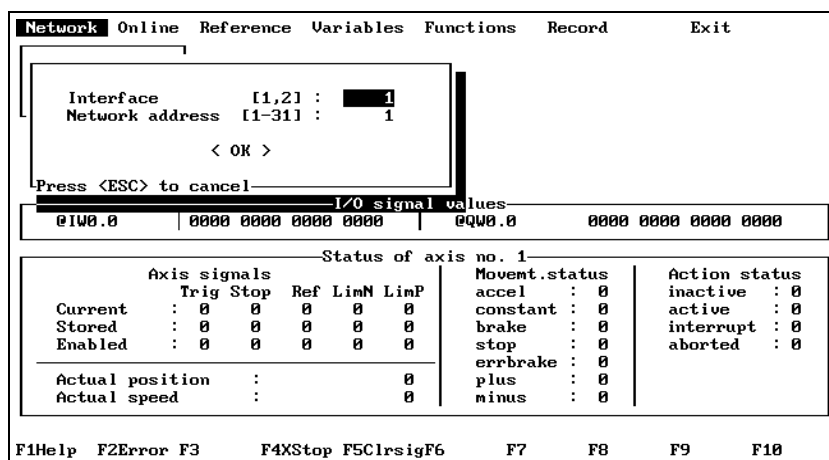


Fig. 3-7 Network configuration

Designation	Description
Interface	Interface to be used for communication between PC and controller: Enter 1 for COM1 or 2 for COM2.
Network address	Enter the network address (1 to 31) of the controller.



NOTE
A maximum of 31 controllers can be addressed via one interface (COM1 or COM2).

3.3.4 Pull-down menu "Online"

This menu provides options for operating the controller.

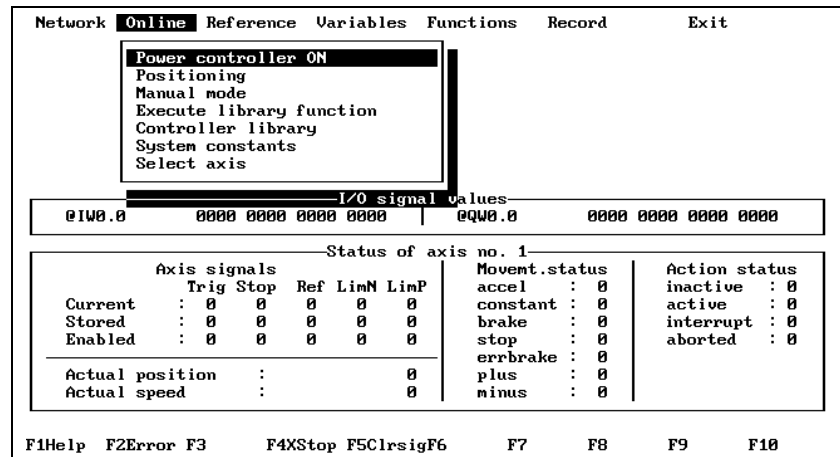


Fig. 3-8 Pull-down menu "Online"

Menu option	Description
Power controller ON	To switch on the power controller for the preselected axis. This is required so that a shaft is able to move.
Positioning	To position the preselected axis, where ramp number, set speed and the setpoint must be specified.
Manual mode	To move the shaft manually using the cursor keys. This can be done step by step with <←> or <→>, or continuously with <Shift> and <←> or <Shift> and <→>. Enter the desired speed in the input field "Manual frequency". The additional limit switch is disabled in this case (see chapter 3.3.4.1).
Execute library function	To execute a function from the controller library (see chapter 3.3.4.2).
Controller library	To display a list of functions of the controller library (see chapter 3.3.4.3).
System constants	To display a list of all system constants used (see chapter 3.3.4.4).
Select axis	Enter the number of the axis to be controlled (only for multi-axis controllers, see chapter 3.3.4.5).

3.3.4.1 “Online/Manual mode”

This menu option can be used to move the shaft manually.



NOTE

This menu option is only enabled if the controller is in “point-to-point” operating mode.



NOTE

The additional limit switch is disabled in manual mode.

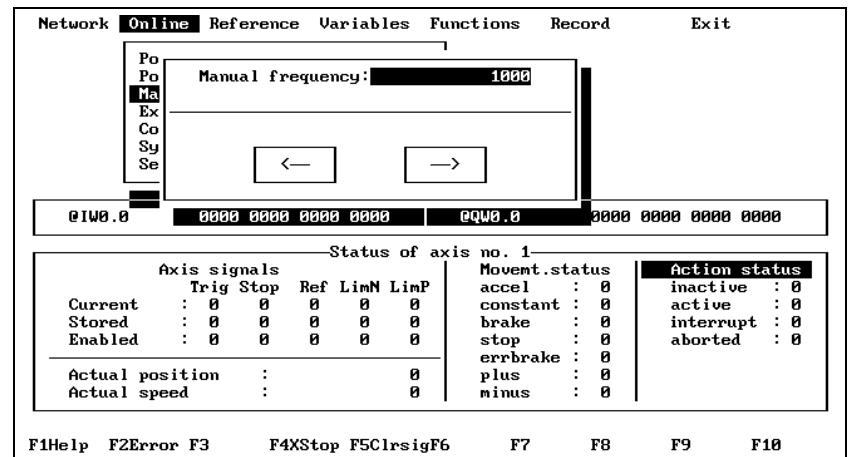


Fig. 3-9 Manual mode

Proceed as follows:

1. Select the menu option “Online/Manual mode”.
2. Enter the manual frequency (speed) and press <↵>.
3. Press the appropriate cursor key to move the shaft step by step.
4. Keep the <Shift> key pressed and press the appropriate cursor key to set the shaft into continuous motion.

3.3.4.2 “Online/Execute library function”

This menu option can be used to execute a function from the controller library. The library functions are described in the BPRO3 Programming Manual.

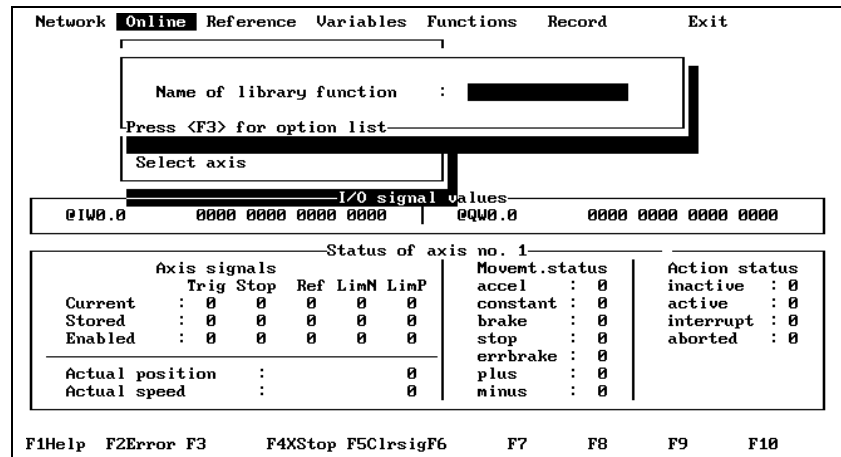


Fig. 3-10 Executing a library function

Proceed as follows:

1. Select the menu option “Online/Execute library function”.
2. Enter the name of the manufacturer-defined function either by typing it into the input field or by activating the option list function with <F3>:

Press <↓> or <↑> to select the desired option and press <↵>.



NOTE

When you press the initial character of the desired function, the highlight moves to the first function with the same initial character.

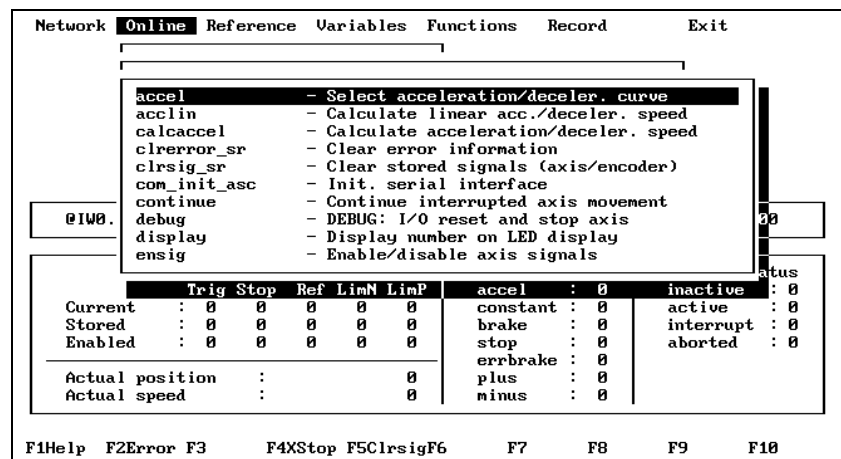


Fig. 3-11 Library function option list



NOTE

The functions which can be executed depend on the connected controller.

- Enter the required parameters. For parameters of type WORD, you can call an option list of the system constants by pressing <F3> (note the message on the bottom left of the input window: "Press <F3> for option list"). The value of the selected system constants is transferred to the input field.

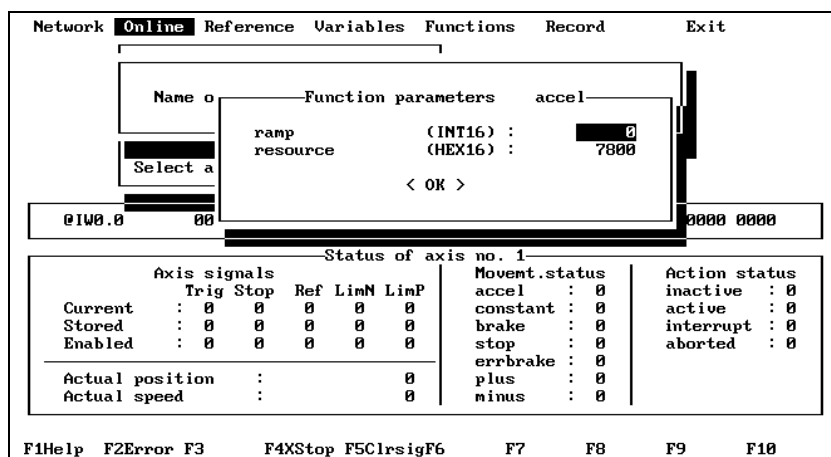


Fig. 3-12 Parameter input

- Move the cursor to the <OK> field by pressing <↓> or <↵> and confirm the input by pressing <↵>.

When the function has been executed by the controller, the result is displayed in another window.

When the result is confirmed by pressing <↵> or <ESC>, the window "Name of library function" is redisplayed.

If further library functions are called, ONLINE3 records the last 10 function calls with the specified parameters (this is only valid if you do not temporarily exit the menu "Online/Execute library function"). The function calls recorded can be retrieved by pressing the key combination <Ctrl> and <E> (press and hold <Ctrl>, then press <E>). Repeat this until the desired function appears in the input window.

3.3.4.3 “Online/Controller library”

This option outputs a list of the controller library functions on the screen. The library functions are described in the BPRO3 Programming Manual.



NOTE

The list may vary with the controller type connected.

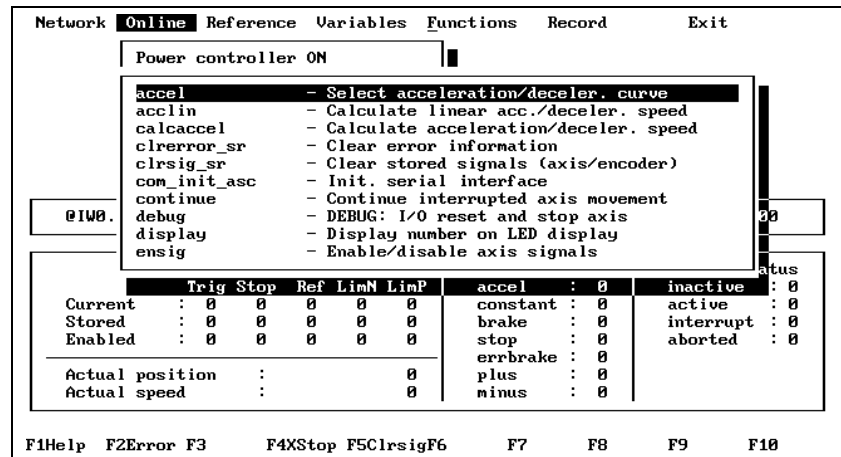


Fig. 3-13 Controller library

3.3.4.4 “Online/System constants”

This option outputs a list of the system constants on the screen. The system constants are described in the BPRO3 Programming Manual.



NOTE

The list depends on the connected controller.

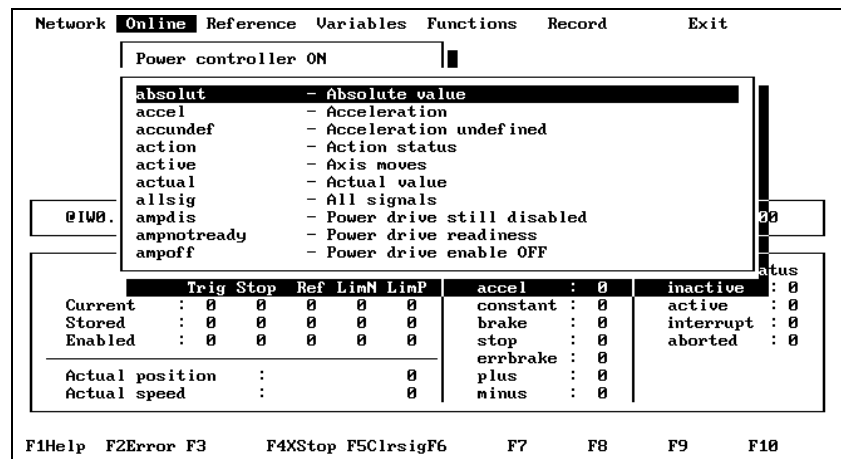


Fig. 3-14 System constants

3.3.4.5 “Online/Select axis”

This option can be used with multi-axis controllers (e.g. WPM-311.004) to select the axis to be controlled.

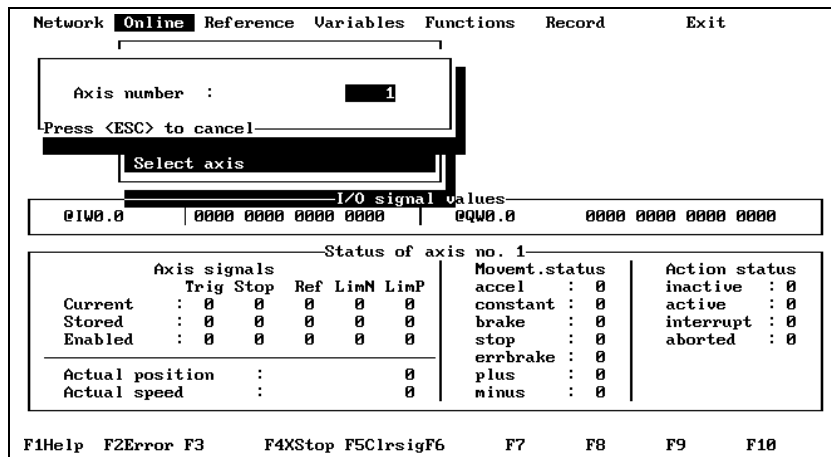


Fig. 3-15 Selecting an axis

3.3.5 Pull-down menu “Reference”

This pull-down menu includes various options for the execution of reference movements.

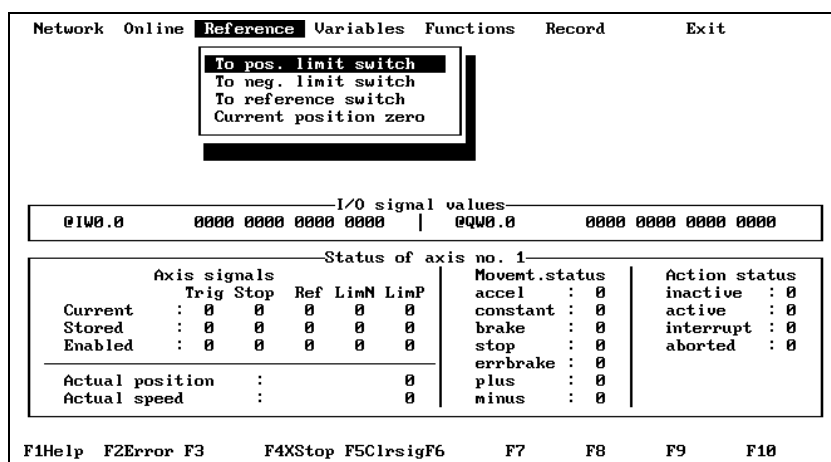


Fig. 3-16 Pull-down menu “Reference”

Menu option	Description
To pos. limit switch	Reference movement towards positive limit switch.
To neg. limit switch	Reference movement towards negative limit switch.
To reference switch	Reference movement towards reference switch.
Current position zero	To define the current position as the zero point.



NOTE
The reference movements are described in the BPRO3 Programming Manual.

3.3.6 Pull-down menu "Variables"

This menu is used for setting output words and flags, displaying flags, enabling/disabling signal and flag display and selecting the input/output signals to be displayed in the display area.

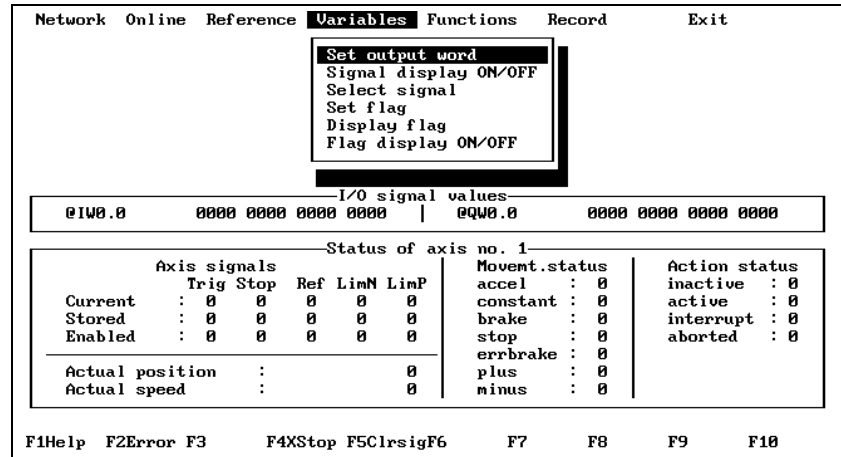


Fig. 3-17 Pull-down menu "Variables"

Menu option	Description
Set output word	To set the signal level of a specific output word (see chapter 3.3.6.1).
Signal display ON/OFF	To show or hide the window "I/O signal values" (see chapter 3.3.6.2).
Select signal	To select the input or output words to be displayed in the window "I/O signal values" (see chapter 3.3.6.3).
Set flag	To set the flags (see chapter 3.3.6.4).
Display flag	To display the flag addresses and display formats (see chapter 3.3.6.5).
Flag display ON/OFF	To show or hide the window "Flag display" (see chapter 3.3.6.6).

3.3.6.1 “Variables/Set output word”

This option enables you to set individual outputs of an output word.

Proceed as follows:

1. Select the menu option “Variables/Set output word”.

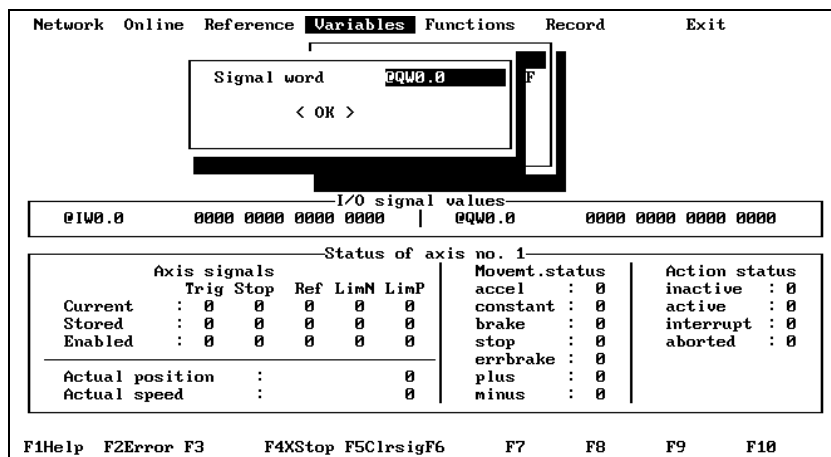


Fig. 3-18 Selecting an output word

2. Enter the desired signal word, e.g. @QW0.0 (see BPRO3 Programming Manual, chapter 1.4.2.5), and confirm by pressing <↵>.

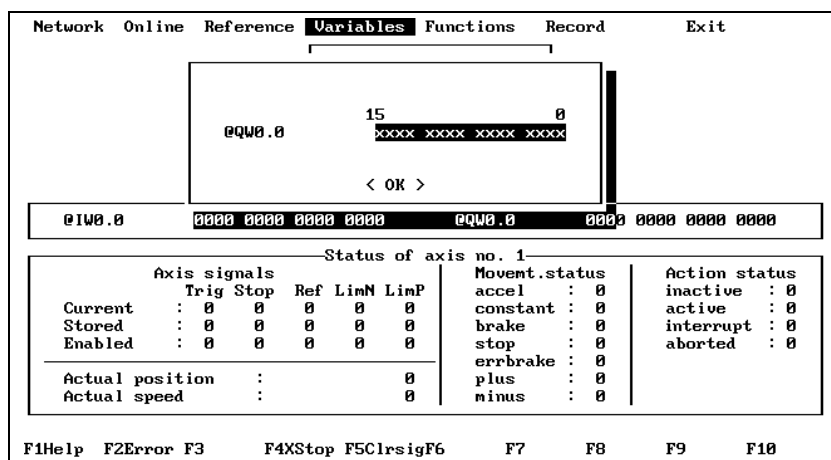


Fig. 3-19 Setting an output word

3. Move the cursor to the desired position by pressing <←> or <→> and press one of the following keys:

Value	Description
X	The output remains <i>unchanged</i> .
1	The output is <i>activated</i> .
0	The output is <i>deactivated</i> .

4. Move the cursor to the <OK> field by pressing <↓> or <↵> and confirm by pressing <↵>.

3.3.6.2 “Variables/Signal display ON/OFF”

This option allows you to show or hide the window “I/O signal values”.

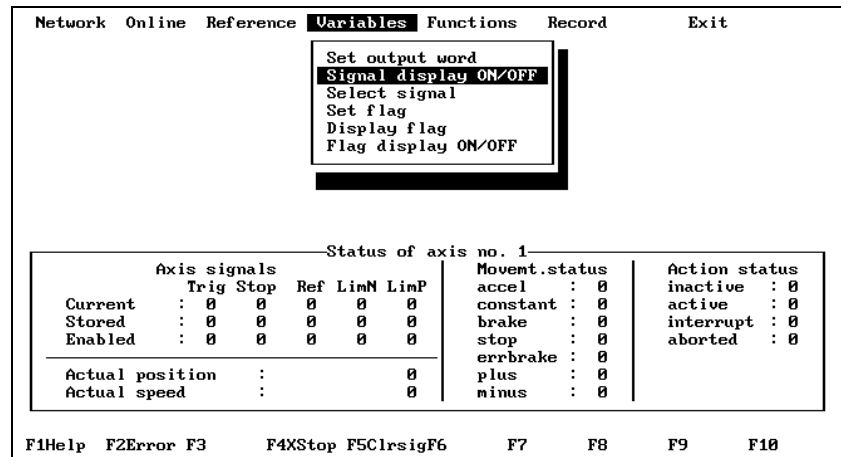


Fig. 3-20 Disabling signal display

Use the key <↵> to show or hide the window.

3.3.6.3 “Variables/Select signal”

This option allows you to select the input or output words to be displayed in the window “I/O signal values”.

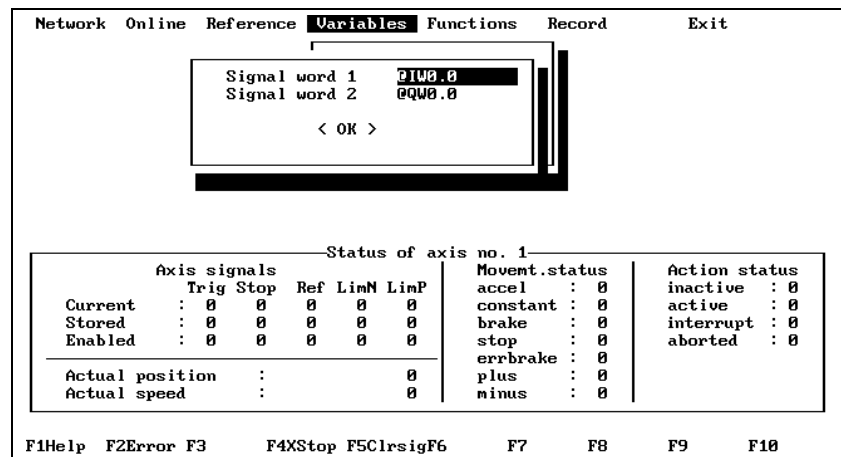


Fig. 3-21 Selecting signals

Proceed as follows:

1. Select the menu option “Variables/Select signal”.
2. Enter signal words to be displayed.
3. Move the cursor to the <OK> field by pressing <↓> or <↵> and confirm by pressing <↵>.

3.3.6.4 “Set flag”

This option can be used to set flags on the controller. You can select from a variety of formats. The flag to be changed is selected using the flag word number. The assignment of flags to variables used in the programming system is defined in the assignment list of the programming system.



NOTE

You can only set flag words in the range from 0 to 799 (the range above this is reserved for the system constant flag words).

Proceed as follows:

1. Select the menu option “Set flag”.

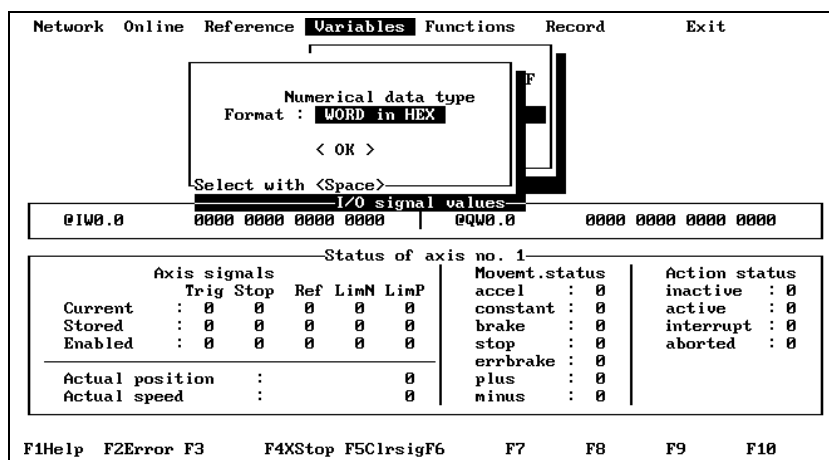


Fig. 3-22 Selecting a flag

2. Specify the format, e.g. WORD in HEX and confirm by pressing <↓>. Use the <SPACE BAR> to select a different format.

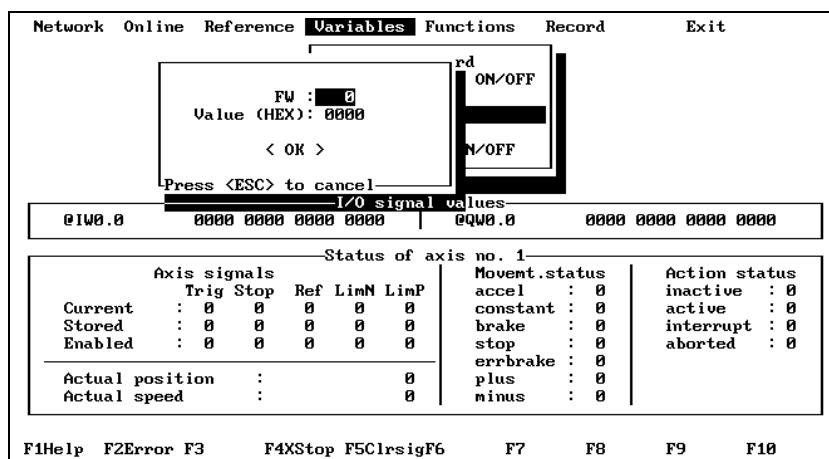


Fig. 3-23 Setting a flag

3. Enter the flag word number and the corresponding value.
4. Move the cursor to the <OK> field by pressing <↓> or <↵> and confirm by pressing <↓>.

3.3.6.5 “Display flag”

This menu option can be used to define flag addresses and the display format of flags on the screen. You can select from a variety of formats. The flag to be changed is selected using the flag word number. The assignment of flag words to variables used in the programming system is defined in the assignment list of the programming system. In addition, each flag can be provided with a comment.



NOTE

You can only set flag words in the range from 0 to 799 (the range above this is reserved for the system constant flag words).

Proceed as follows:

1. Select the menu option “Display flag”.

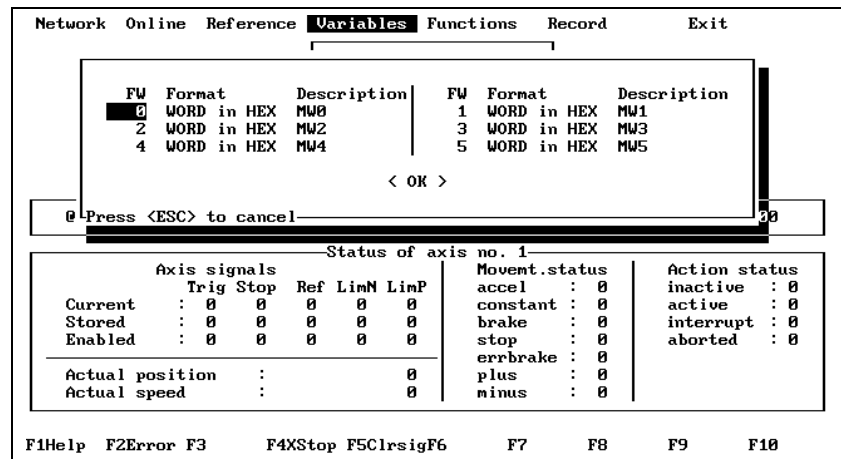


Fig. 3-24 Displaying flags

2. Select the flag word number with the cursor <↓>.
3. Specify the format, e.g. WORD in HEX and confirm by pressing <↵>. Use the <SPACE BAR> to select a different format.
4. Enter a comment, if necessary.
5. Move the cursor to the <OK> field by pressing <↓> or <↵> and confirm by pressing <↵>.

3.3.6.6 “Flag display ON/OFF”

This menu option can be used to enable or disable display of the flags defined via “Display flag”.

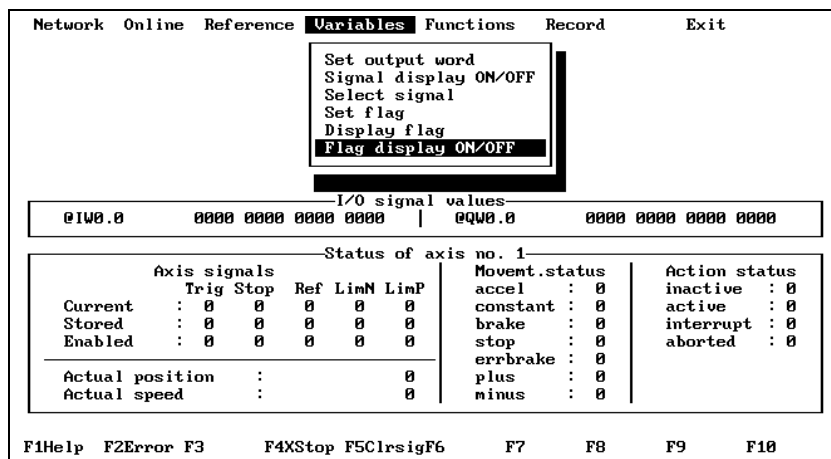


Fig. 3-25 Disabling flag display

Use the <↵> key to enable or disable the display.

3.3.7 Pull-down menu "Functions"

This menu provides several options for controlling the unit and a number of frequently used functions from the controller library. The library functions are described in the BPRO3 Programming Manual.

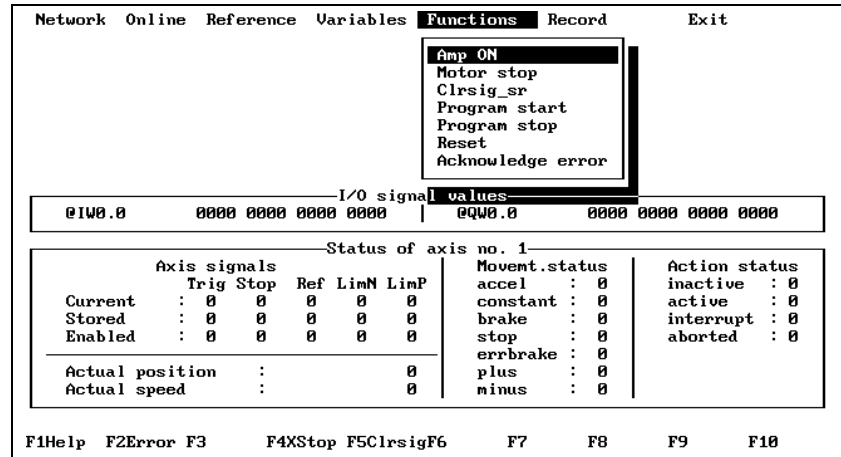


Fig. 3-26 Pull-down menu "Functions"

Menue option	Description
Amp ON	To switch on the power controller for the preselected axis using the "sethardware" function from the controller library.
Motor stop	To stop the preselected axis using the "stop" function (<F4>) from the controller library.
Clrsig_sr	To clear the stored signals of the preselected axis using the "clrsig_sr" function from the controller library.
Program start	To start an application program on the controller.
Program stop	To stop an application program on the controller.
Reset	To reset the controller.
Acknowledge error	To acknowledge a controller error (<F2>).



NOTE

The program start, program stop and acknowledge error functions correspond to those activated using the keys on the controller front panel.

3.4 Recording signals and shaft movements

The menu options provided in record mode can be used for setting up a Series 300 controller:

- Execution of controller functions.
- Recording, graphical representation and archiving of signal characteristics of inputs and outputs as well as limit switches for error diagnosis.
- Recording, graphical representation and archiving of movement sequences for controller adjustment; used with units for controlling AC servo motors (e.g. WDP3-337).

Network Online Reference Variables Functions Record Exit											
-----I/O signal values-----											
e1W0.0 0000 0000 0000 0000					eQW0.0 0000 0000 0000 0000						
-----Status of axis no. 1-----											
Axis signals					Movment.status			Action status			
	Trig	Stop	Ref	LimM	LimP	accel	:	0	inactive	:	0
Current	:	0	0	0	0	constant	:	0	active	:	0
Stored	:	0	0	0	0	brake	:	0	interrupt	:	0
Enabled	:	0	0	0	0	stop	:	0	aborted	:	0
-----						errbrake	:	0			
Actual position	:				0	plus	:	0			
Actual speed	:				0	minus	:	0			
F1Help F2Error F3 F4XStop F5ClrsigF6 F7 F8 F9 F10											

Fig. 3-27 Menu option "Record"

Operation

3.4.1 User interface

When the menu option "Record" is selected from the main menu, recording mode is activated.

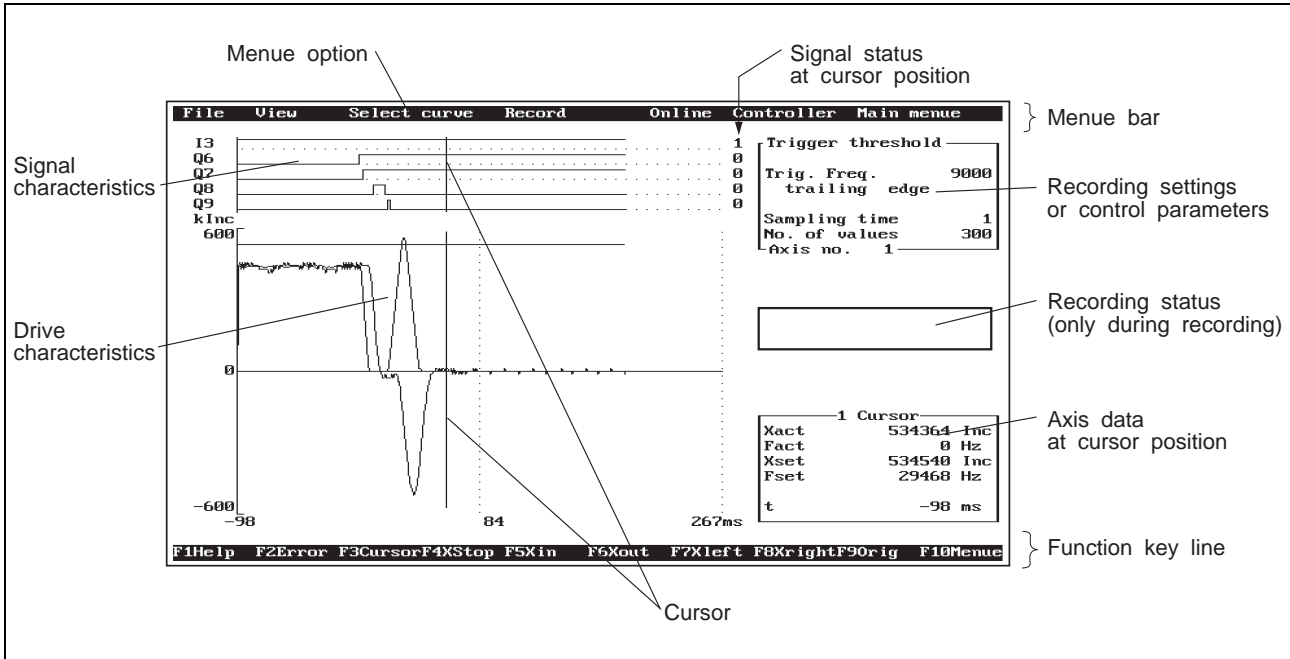


Fig. 3-28 User interface

3.4.1.1 Recording settings/control parameters

This window displays the current record mode and the corresponding parameter settings. If a unit with position controller for a servo motor (e.g. WDP3-337) is connected, this window can optionally be used for displaying the control parameters.

3.4.1.2 Recording status

This window displays the recording status, which is only displayed during recording.

3.4.1.3 Axis data at cursor position

This window is used for displaying the axis data at the cursor position. Proceed as follows:

1. To move the cursor in small increments, press <←> or <→>.
2. To move the cursor in large increments, press <Shift> and <←> or <Shift> and <→>.
3. To enable/disable a second cursor, press <F3>.



NOTE

When using two cursors, the differential values between cursor 1 and 2 are displayed in addition.

4. Toggle between cursor 1 and 2 by pressing <Tab>.

3.4.2 Operation

Menue

In record mode, the menue must be activated before you can select any options:

- Press and hold <Alt> and the appropriate hot key.
- Press <F10>.





To deactivate the menue, press <Esc> (if any pull-down or pop-up menues are displayed, press the key several times until all menues are closed and no option is highlighted).









NOTE













Some menue options may be disabled, depending on the connected controller or the current program step. Disabled menue options are grey on a colour screen and invisible on a monochrome screen.

Function key assignment with the menue activated

Key		Function
	Help	To call the help function.
	Error	To acknowledge a controller error.
		In some input situations you can call the option list function by pressing <F3>.
	XStop	To stop the shaft.

Function key assignment with the menue deactivated

Key		Function
	Help	To call the help function.
	Error	To acknowledge a controller error.
	Cursor	To activate or deactivate the 2nd cursor.
	XStop	To stop the shaft.
	Xin	Menue option "View/X Zoom in".
	Xout	Menue option "View/X Zoom out".

Key		Function
	Xleft	Menu option "View/Scroll left".
	Xright	Menu option "View/Scroll right".
	Orig	Menu option "View/Original".
	Menu	To activate the menu.
	Rstart	To start recording.
	Rstop	To stop recording.
	Rbreak	To terminate recording.
	Yin	Menu option "View/Y Zoom in".
	Yout	Menu option "View/Y Zoom out".
	Yup	Menu option "View/Scroll up".
	Ydown	Menu option "View/Scroll down".
	Login	Menu option "Network/LOGIN" of main menu.



NOTE

To use the <Shift> key combination, proceed as follows:

1. Press and hold <Shift>.
2. Press the appropriate function key.
3. Release both keys.

3.4.3 Pull-down menu “File”

This menu can be used for loading or saving graphics or exporting them in HPGL format (Hewlett Packard Graphic Language).

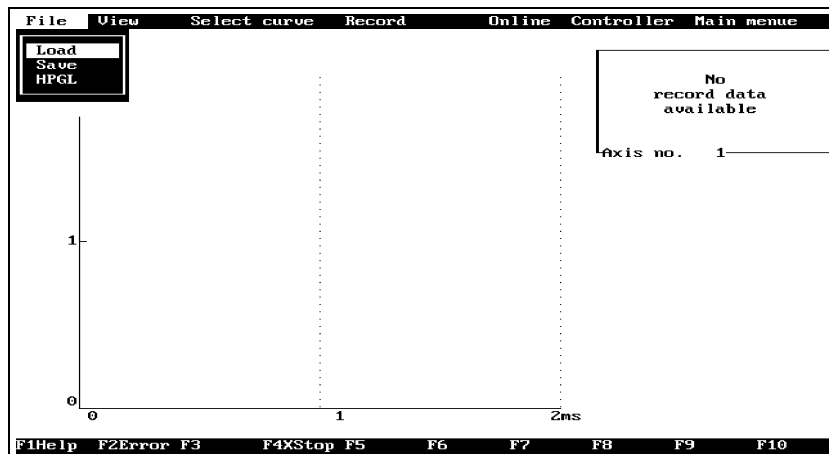


Fig. 3-29 Pull-down menu “File”

Menu option	Description
Load	To load a graphic file (see chapter 3.4.3.1).
Save	To save a recorded graphic into a file (see chapter 3.4.3.2).
HPGL	To export a recorded graphic into the HPGL format (Hewlett Packard Graphic Language, see chapter 3.4.3.3).

3.4.3.1 Loading a graphic file

With this option, you can load a graphic file and represent it graphically on the screen.

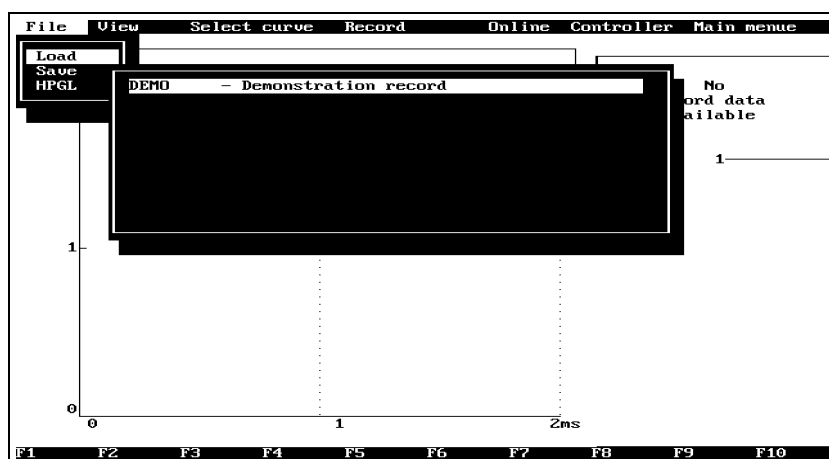


Fig. 3-30 Loading a graphic file

Proceed as follows:

1. Select the menu option “File/Load”. A selection window with the available graphic files is displayed (on DOS level, the files have the extension OL3).
2. Move the cursor to the graphic file to be loaded and press <↵>.

The graphic image is displayed on the screen.

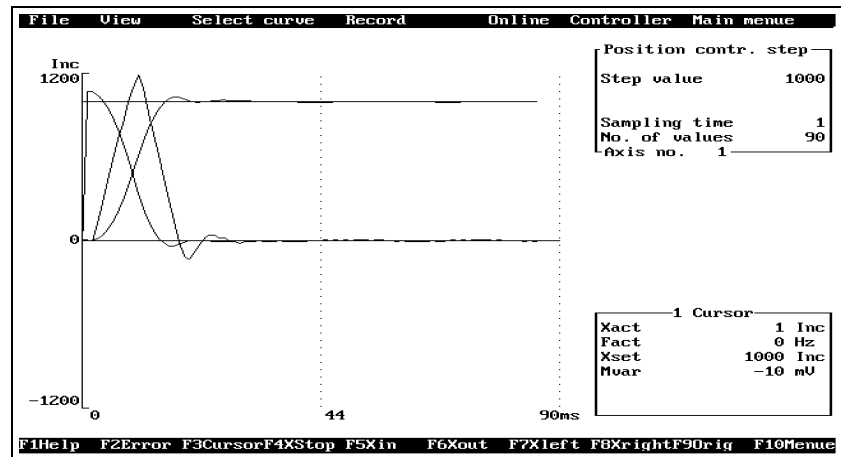


Fig. 3-31 Displaying a loaded graphic file

3.4.3.2 Saving a graphic image into a file

This function can be used to save the graphic image on the screen into a file on a storage medium.

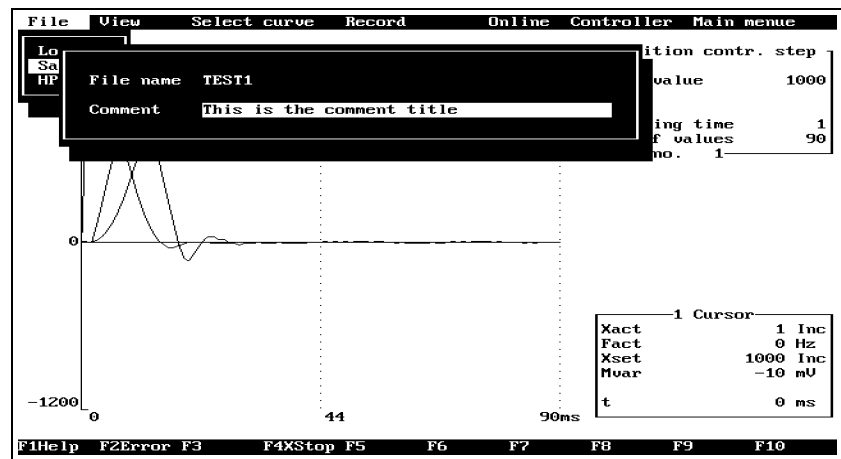


Fig. 3-32 Saving a graphic image

Proceed as follows:

1. Select the menu option "File/Save".
2. Enter the file name and press <↵>.
3. Enter a comment title and press <↵>.



NOTE

The comment title is displayed in the selection window "File/Load" next to the file name.

3.4.3.3 Exporting into HPGL format

The graphic image displayed on the screen can be exported into the HPGL format (Hewlett Packard Graphic Language).

Proceed as follows:

1. Select the menu option "File/HPGL".
2. Enter a file name and press <↵>.
3. Enter a comment title and press <↵>.



NOTE

The comment title is displayed in the exported image.

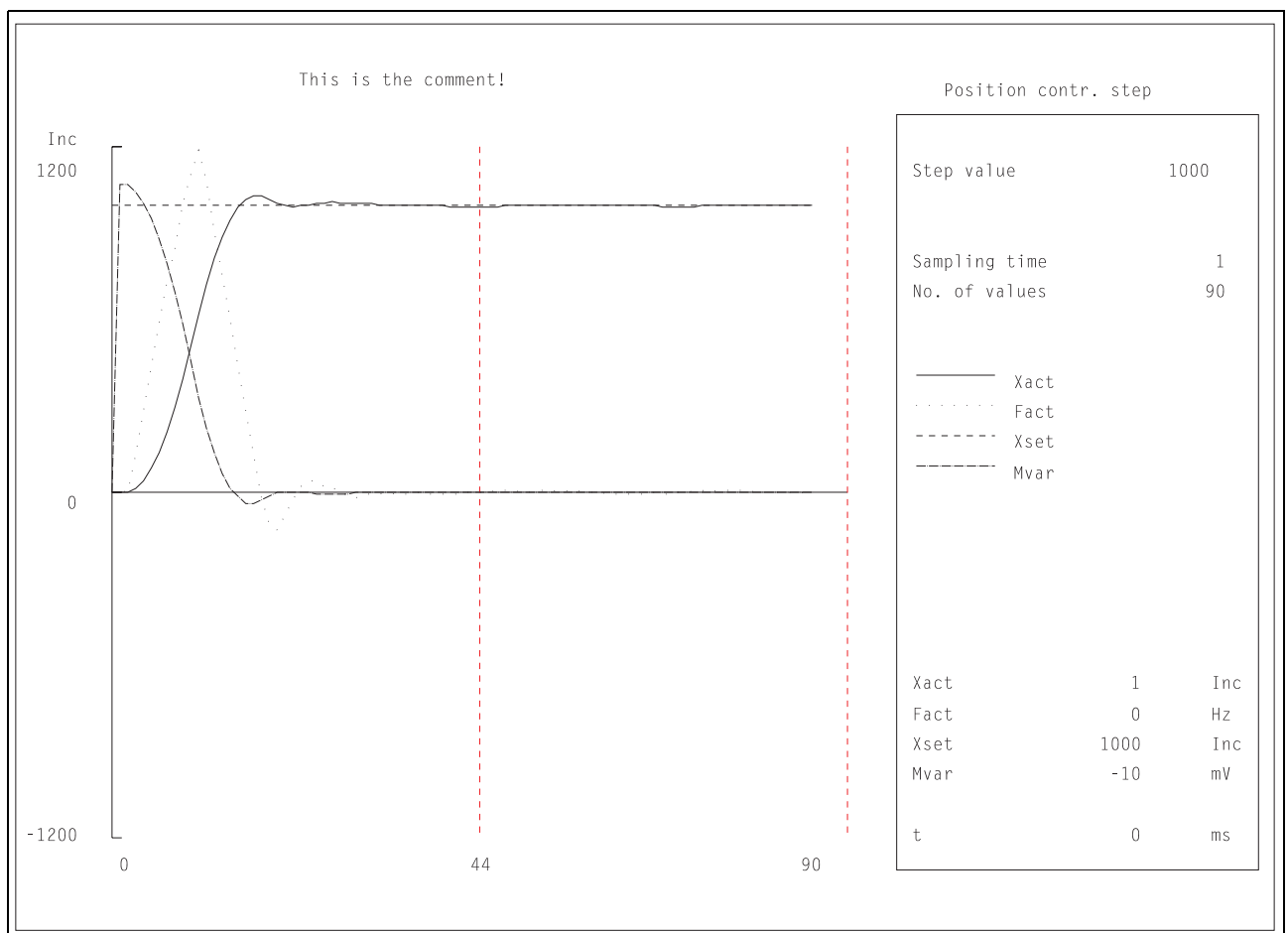


Fig. 3-33 Graphic image in HPGL format

3.4.4 Pull-down menu "View"

This menu provides options for manipulating the graphical representation.

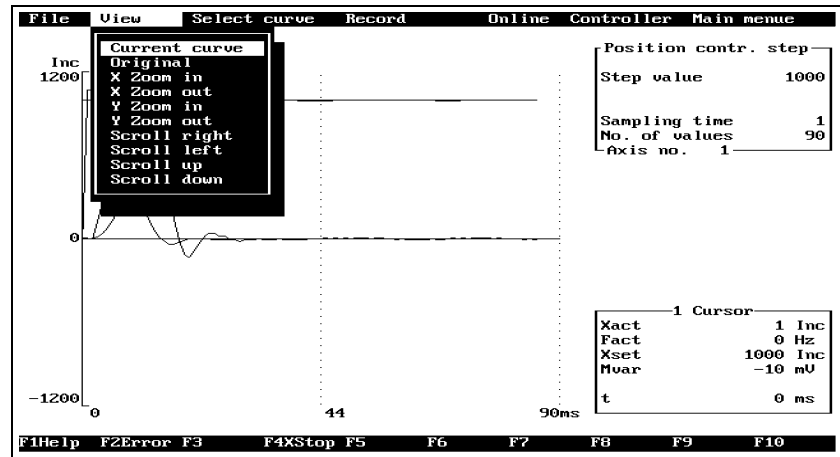


Fig. 3-34 Pull-down menu "View"

Menu option	Description
Current curve	To select the current curve from the curves displayed. The current curve determines the scale legending on the Y axis and the values displayed with two active graphic cursors. Use the <+> or <-> key to select the next or previous curve as the current curve.
Original	To restore the status which was valid when loading the curve.
X Zoom in	Enlarge the graphic image by the factor 2 along the X axis.
X Zoom out	Reduce the graphic image by the factor 2 along the X axis.
Y Zoom in	Enlarge the graphic image by the factor 2 along the Y axis.
Y Zoom out	Reduce the graphic image by the factor 2 along the Y axis.
Scroll right	Move the curve to the left.
Scroll left	Move the curve to the right.
Scroll up	Move the curve down.
Scroll down	Move the curve up.

**3.4.5 Pull-down menu
"Select curve"**

The curves to be displayed can be selected from this menu.

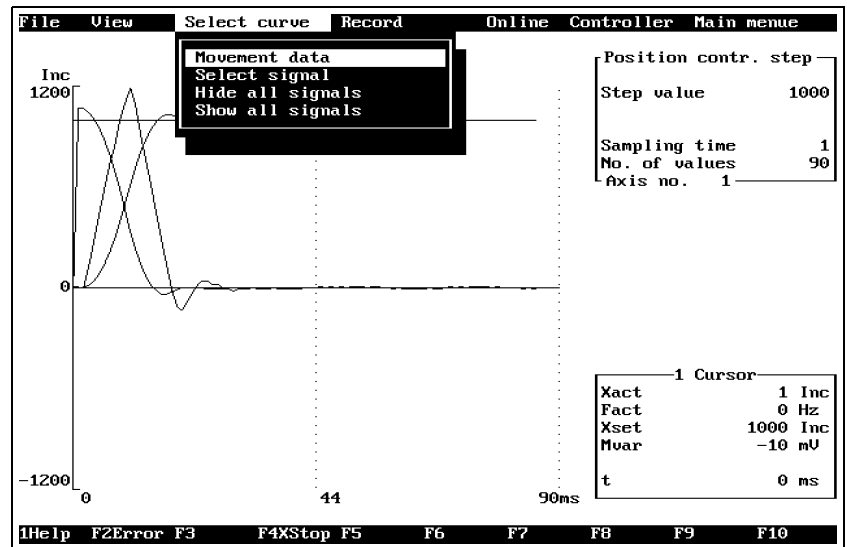


Fig. 3-35 Pull-down menu
"Select curve"

Menu option	Description
Movement data	To select the movement data to be displayed (see chapter 3.4.5.1).
Select signal	To select specific inputs/outputs for displaying the signal characteristic on the screen (see chapter 3.4.5.2).
Hide all signals	To disable signal characteristic display.
Show all signals	To enable signal characteristic display.

3.4.5.1 Movement data

ONLINE3 can display a maximum of 4 curves on the graphic screen. The curves can be selected at this point.

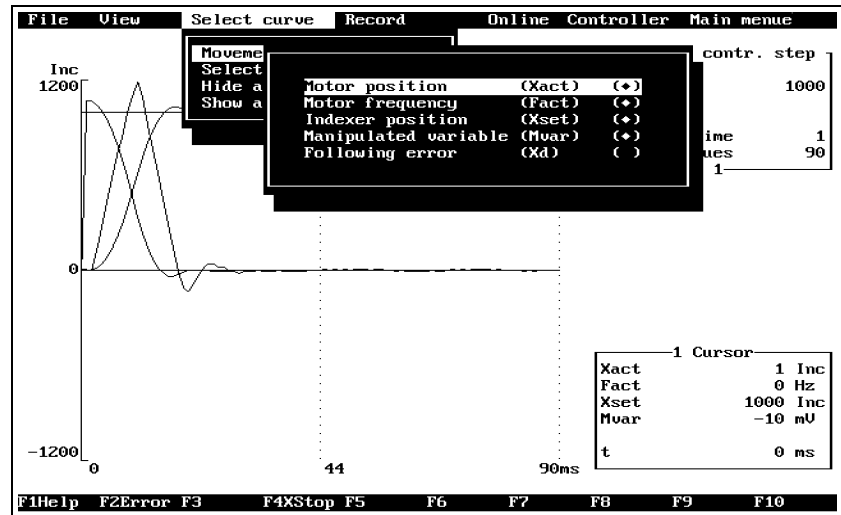


Fig. 3-36 Select curve

Proceed as follows:

1. Select the menu option "Select curve/Movement data".
2. Move the highlight with the cursor keys to the desired menu option.
3. Mark or unmark the option using the <SPACE BAR> (when the option is marked, the curve is displayed on the graphic screen after confirming the selection).
4. Confirm the selection by pressing <↵>.

3.4.5.2 Select signal

Apart from movement data, ONLINE3 can also record signal characteristics of inputs and outputs. These can be displayed on the screen together with the graphical representation of the movement data.

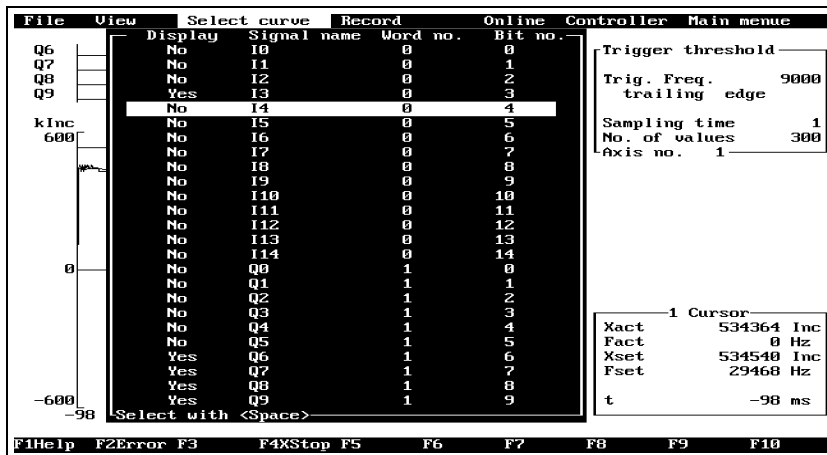


Fig. 3-37 Selecting signals

Proceed as follows:

1. Select the menu option "Select curve/Select signal".
2. Move the highlight with the cursor keys to the desired signal.
3. Toggle between "Yes" or "No" using the <SPACE BAR>.
4. When the appropriate signals have been selected, return from the selection window by pressing <Esc>. The selected signals are then displayed on the screen.

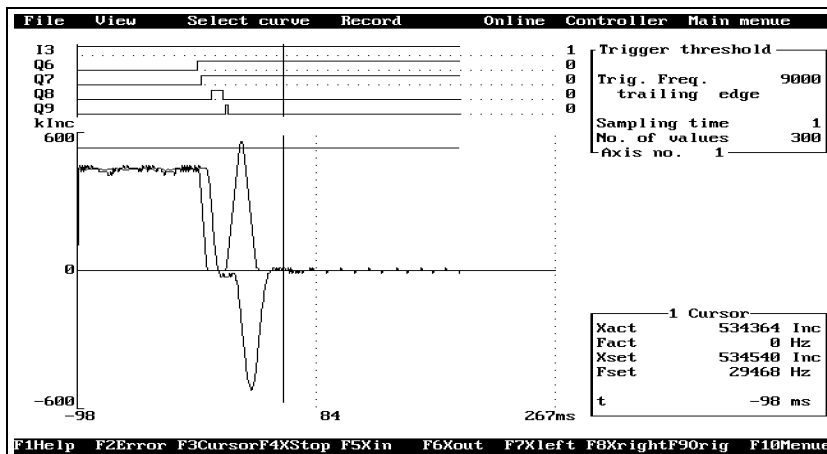


Fig. 3-38 Displaying signal characteristics

3.4.6 Pull-down menu "Record"

This pull-down menu comprises several options for recording movement curves and signal characteristics.

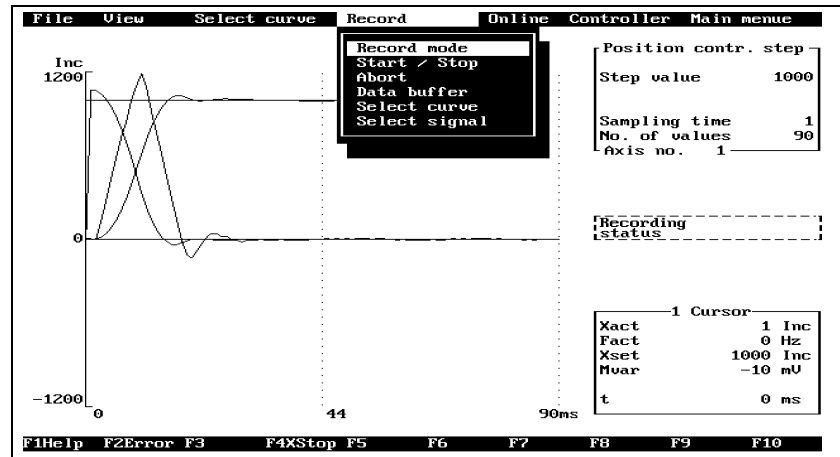


Fig. 3-39 Pull-down menu "Record"

Menu option	Description
Record mode	Determines the event which triggers recording and the reference variable (step or rectangular) used for setting a controller (see chapter 3.4.6.1).
Start/Stop	To start or stop recording.
Abort	To terminate a running recording process. The data recorded up to this point will be lost.
Data buffer	A buffer for recording movement data. Enter the interval between any two measurements and the number of measurement values (see chapter 3.4.6.2).
Select curve	To select the data to be recorded (see chapter 3.4.6.3).
Select signal	To enter signal words for signal triggering and recording (see chapter 3.4.6.4).



NOTE

Before starting a recording operation, the following settings should be made:

1. Select the "Record mode".
2. Adjust the "Data buffer", if necessary (default: 1 ms interval, 300 measurement values).
3. Adjust the "Select curve" setting, if necessary (default: setpoint/actual position, following error).
4. "Select signal", if necessary (only for record mode: "Signal trigger").
5. "Start" recording.
During recording (data transfer) the recording status is displayed in a window.

3.4.6.1 Pop-up menue
"Record mode"

After selecting the menu option "Record/Record mode" a pop-up menue with the available record modes is displayed.

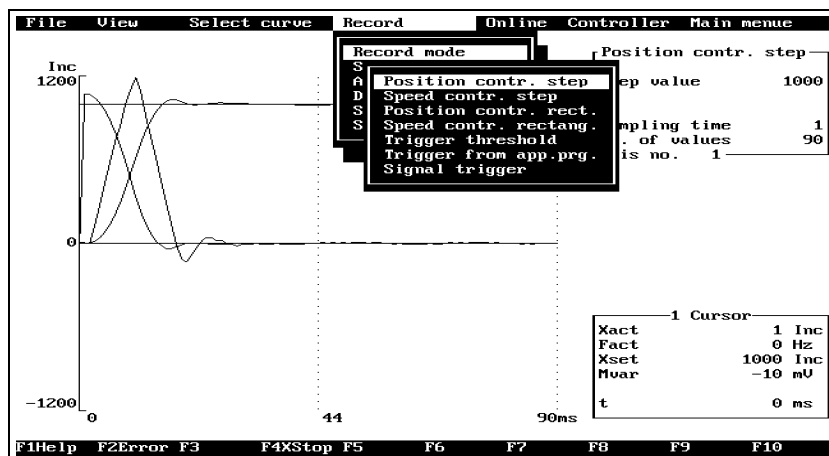


Fig. 3-40 Pop-up menue
"Record mode"

Menue option	Description
Position contr. step ¹⁾	Position controller voltage step, see controller manual.
Speed contr. step ¹⁾	Speed controller voltage step, see controller manual.
Position contr. rect. ¹⁾	Position controller rectangular voltage signal, see controller manual.
Speed contr. rectang. ¹⁾	Speed controller rectangular voltage signal, see controller manual.
Trigger threshold	Recording is triggered by a specific position or frequency value.
Trigger from app.prg.	Recording is initiated by the "record" function in the application program.
Signal trigger	Recording is initiated by specific input signal states.

1) Only for units with position or speed controller.



NOTE

The individual menue options are described in detail on the following pages.



ATTENTION

In speed controller rectangular voltage signal mode, the reversing position of the drive may shift.

Position or speed controller voltage step

Proceed as follows:

1. Select the menu option "Record/Record mode/Position contr. step" or "Record/Record mode/Speed contr. step".
2. Enter the step value and confirm by pressing <↵>.

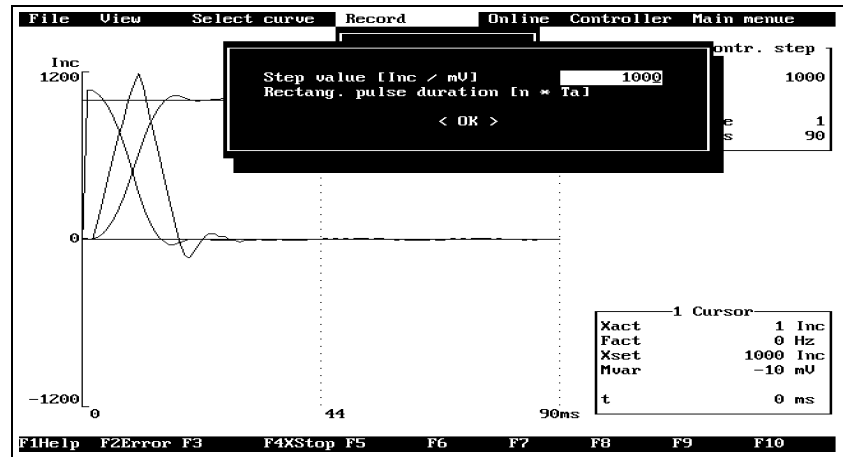


Fig. 3-41 Entering the step value

3. Confirm the <OK> prompt by pressing <↵>.

Position or speed controller rectangular voltage signal

Proceed as follows:

1. Select the menu option "Record/Record mode/Position contr. rect." or "Record/Record mode/Speed contr. rectang.".
2. Enter the step value and confirm by pressing <↵>.

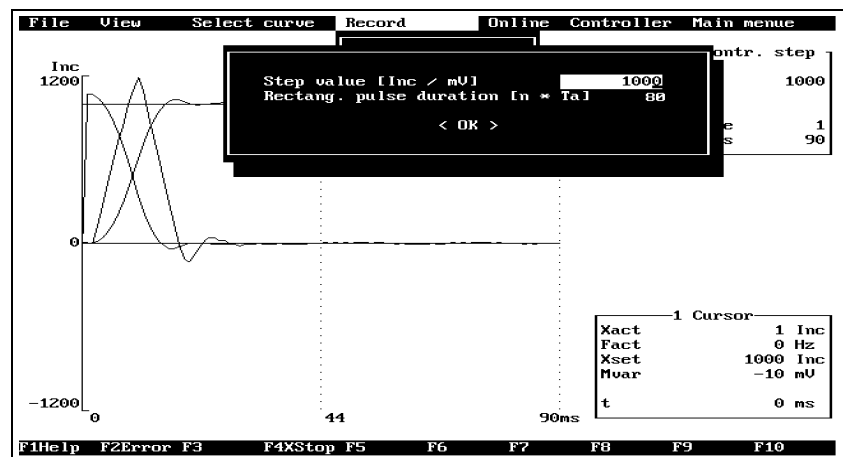


Fig. 3-42 Entering step value and pulse duration

3. Enter the pulse duration and confirm by pressing <↵>.
4. Confirm the <OK> prompt by pressing <↵>.

Trigger threshold for position or frequency trigger

Proceed as follows:

1. Select the menu option "Record/Record mode/Trigger threshold".
2. Select the reference variable using the <SPACE BAR> and confirm by pressing <↓>.

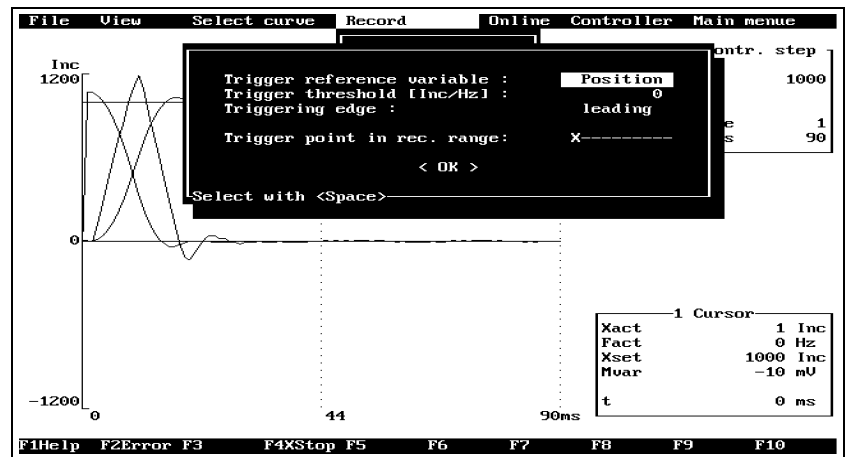


Fig. 3-43 Trigger threshold

3. Enter the trigger threshold and confirm by pressing <↓>.
4. Select the triggering edge using the <SPACE BAR> and confirm by pressing <↓>.
5. Select the trigger point in the range to be recorded using the <←> and <→> keys and confirm by pressing <↓>. This can be used to analyze the time zone before and after the trigger point.
6. Confirm the <OK> prompt by pressing <↓>.

Trigger from application program using the controller function "record"

Proceed as follows:

1. Select the menu option "Record/Record mode/Trigger from app.prg."
2. Select the trigger point in the range to be recorded using the <←> and <→> keys and confirm by pressing <↵>. This can be used to analyze the time zone before and after the trigger point.

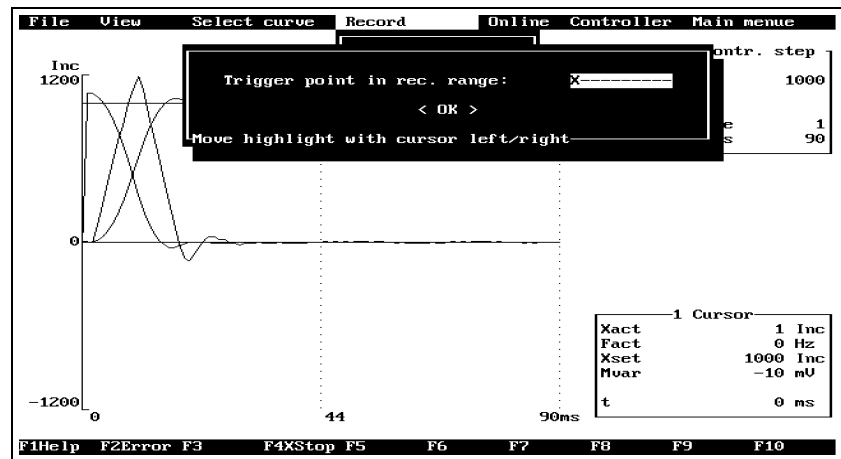


Fig. 3-44 Trigger from application program

3. Confirm the <OK> prompt by pressing <↵>.

Program example with trigger from application program:

```
ld      counter 1
add     counter 2
gt      1000
jmpn   continue
ld      0
record
```

Signal trigger determined by input signal states

Proceed as follows:

1. Select the menu option "Record/Record mode/Signal trigger".

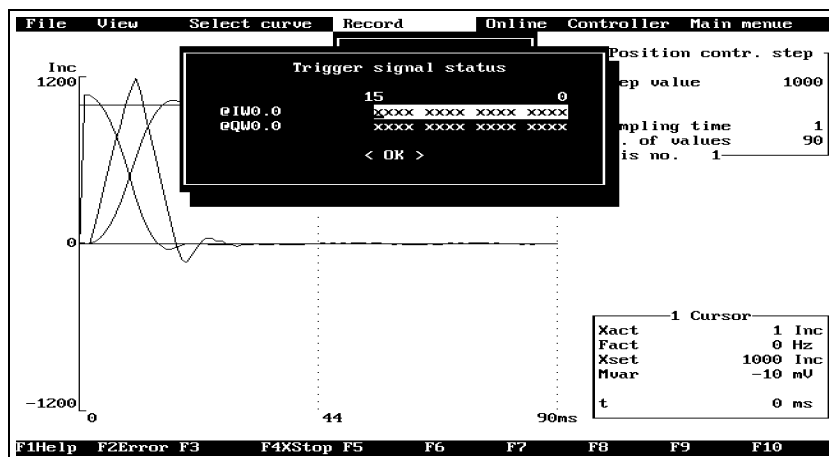


Fig. 3-45 Signal triggering

2. Move the cursor to the signal to be selected by pressing the cursor keys and enter one of the following values:

Value	Description
X	Signal is ignored.
1	Signal must be <i>active</i> .
0	Signal must be <i>inactive</i> .
Ctrl ↑	A positive edge must occur (change from inactive to active).
Ctrl ↓	A negative edge must occur (change from active to inactive).

3. Confirm the selection by pressing <↓>.
4. Confirm the <OK> prompt by pressing <↓>.
5. Select the trigger point in the range to be recorded using the <←> and <→> keys and confirm by pressing <↓>. This can be used to analyze the time zone before and after the trigger point.

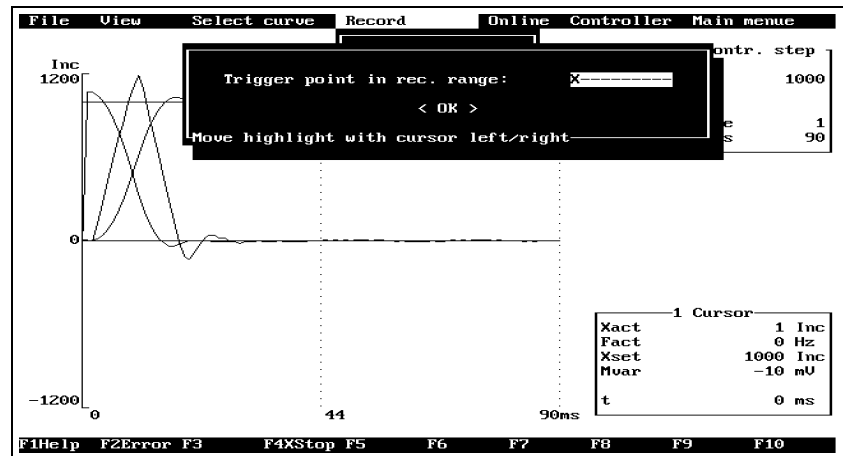


Fig. 3-46 Selecting a trigger point

6. Confirm the <OK> prompt by pressing <↓>.

3.4.6.2 Data buffer

This function enables you to enter an interval between any two measurements and the number of measurement values. The interval between two measurements must be entered in ms (or, more specifically: 1s/1024). If the memory capacity is insufficient for the specified number of measurement values, ONLINE3 adapts the value accordingly.

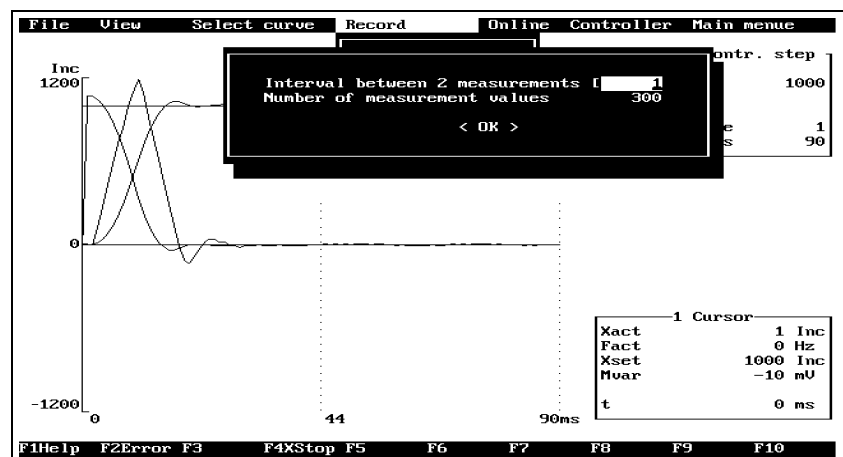


Fig. 3-47 Data buffer

Proceed as follows:

1. Select the menu option "Record/Data buffer".
2. Enter the interval between any two measurements and confirm the input by pressing <↓>.
3. Enter the number of measurements and confirm by pressing <↓>.
4. Confirm the <OK> prompt by pressing <↓>.

3.4.6.3 Select curve

This option can be used to select data to be recorded.

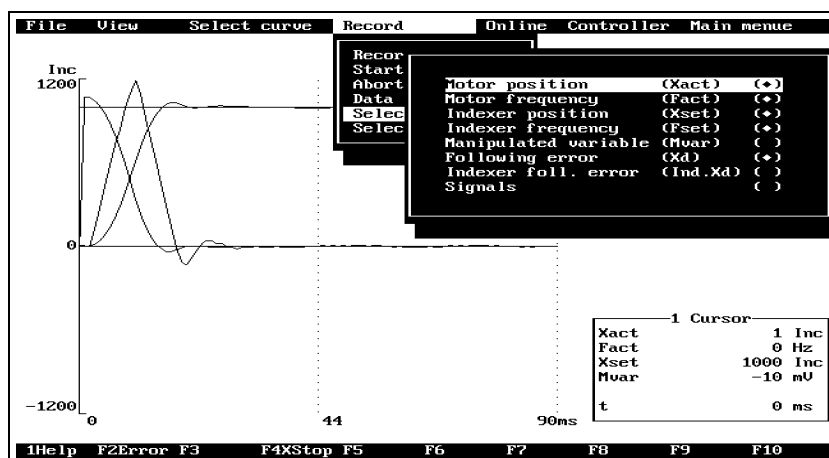


Fig. 3-48 Selecting a curve

Proceed as follows:

1. Select the menu option "Record/Select curve".
2. Move the highlight to the menu option to be selected using the cursor keys.
3. Mark or unmark the option using the <SPACE BAR>. When the option is marked, the curve is selected.
4. Confirm the selection by pressing <↵>.



NOTE

Since the minimum sampling time is 1s/1024 (see chapter 3.4.6.2, Data buffer, on how to set this parameter), the motor frequency determined or displayed is always a multiple of 1024 Hz.

3.4.6.4 Select signal

This option is used for selecting the signal words for signal triggering (see menu option "Recording mode").

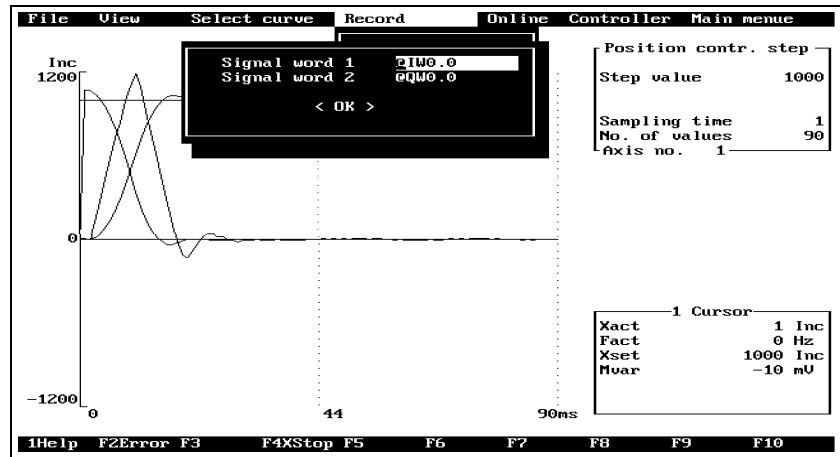


Fig. 3-49 Selecting signals

Proceed as follows:

1. Select the menu option "Record/Select signal".
2. Enter the signal words to be used and confirm the input by pressing <↵> (see BPRO3 Programming Manual, chapter 1.4.2.5).
3. Confirm the <OK> prompt by pressing <↵>.

3.4.7 Pull-down menu "Online"

This pull-down menu is identical to the pull-down menu "Online" in the main menu (see chapter 3.3.4).

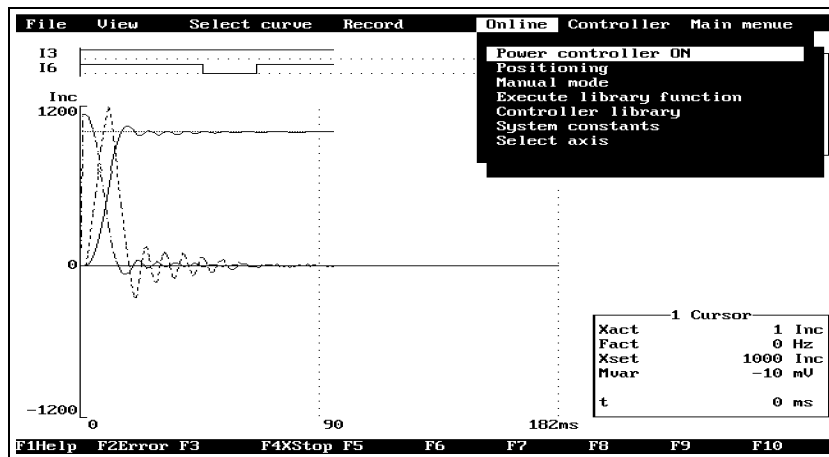


Fig. 3-50 Pull-down menu "Online"

Menu option	Description
Power controller ON	To switch on the power controller for the pre-selected axis. This is required so that a shaft is able to move.
Positioning	To position the preselected axis, where ramp number, set speed and the setpoint must be specified.
Manual mode	To move the shaft manually using the cursor keys. This can be done step by step with <←> or <→>, or continuously with <Shift> and <←> or <Shift> and <→>. Enter the desired speed in the input field "Manual frequency". The additional limit switch is disabled in this case (see chapter 3.3.4.1).
Execute library function	To execute a function from the controller library (see chapter 3.3.4.2).
Controller library	To display a list of functions of the controller library (see chapter 3.3.4.3).
System constants	To display a list of all system constants used (see chapter 3.3.4.4).
Select axis	Enter the number of the axis to be controlled (only for multi-axis controllers, see chapter 3.3.4.5).

3.4.8 Pull-down menu "Controller"

This menu is used for setting position controller parameters and drift compensation.



NOTE

The functions of this pull-down menu are only available if the controller connected has a position controller installed.

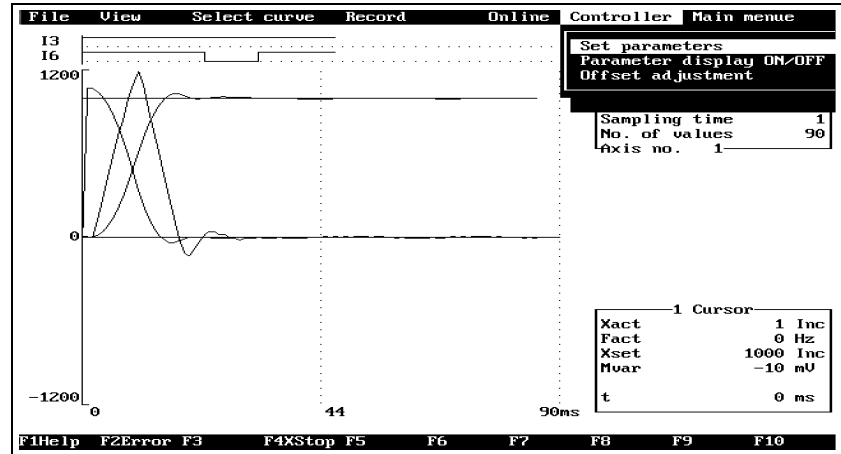


Fig. 3-51 Pull-down menu "Controller"

Menu option	Description
Set parameters	To set the position controller parameters KD, KI, KP, KA and KF.
Parameter display ON/OFF	To enable or disable the window showing the set parameters.
Offset adjustment	To set the drift compensation.



NOTE

For more information on the values to be entered, see controller manual.

3.4.9 Menu option "Main menu"

This menu option returns you to the main menu and terminates recording mode.

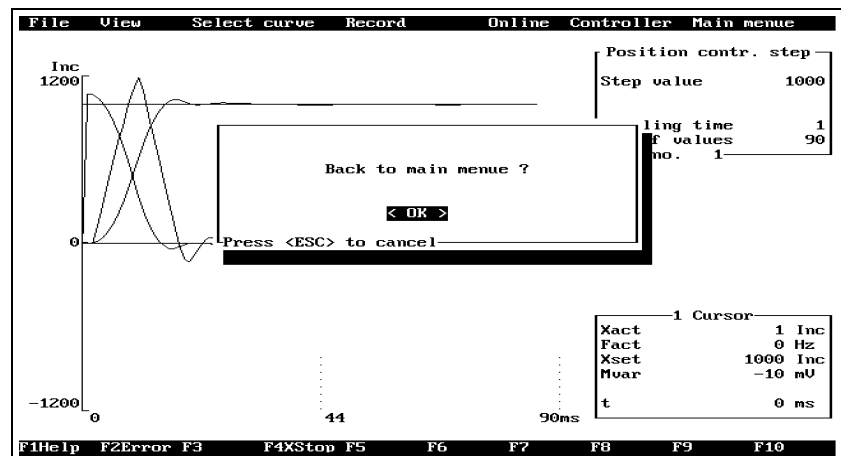


Fig. 3-52 Returning to the main menu

3.5 Exit

This menu option exits ONLINE3 and returns you to the DOS level.

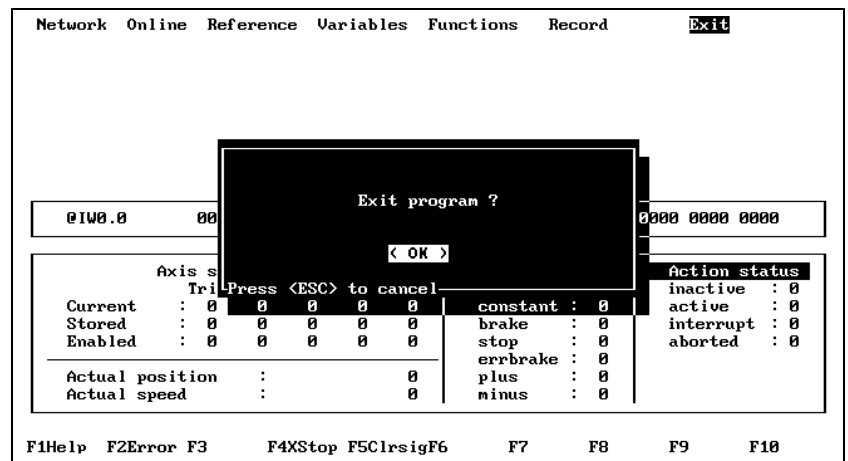


Fig. 3-53 Exiting the program

4 Error messages

4.1 Error messages at program start

Error message	Cause	Rectification
Insufficient memory	Too many TSR programs in memory (Terminate and Stay Resident).	Deinstall TSR programs. Check CONFIG.SYS and AUTOEXEC.BAT files for commands loading programs or drivers not required.
	Inappropriate PC configuration.	Modify CONFIG.SYS and AUTOEXEC.BAT files to achieve optimum configuration.
Error in creating the controller library	HFK_SORT.SYS file is not available or corrupt.	Reinstall ONLINE3.
	HFK_SORT.SYS file is not in ONLINE3 directory.	
Error in creating the system constant list	PLC_SORT.SYS file is not available or corrupt.	Reinstall ONLINE3.
	PLC_SORT.SYS file is not in ONLINE3 directory.	
Network driver not installed	Memory-resident network driver BNET2 not loaded.	Load the network driver using the command BNET2.
		Check that the command BNET2 is included in ONLINE3.BAT.
	ONLINE3 directory is not included in the DOS path statement.	Add ONLINE3 directory to PATH command in AUTOEXEC.BAT file and reboot PC.
Help file ONL3.HLP not available	ONL3.HLP file is not available.	Reinstall ONLINE3.
	ONL3.HLP file is not in ONLINE3 directory.	
Help file corrupt	ONL3.HLP file is corrupt.	Reinstall ONLINE3.
I/O configuration not available	EA_KONF.SYS file is not available or corrupt.	Reinstall ONLINE3.
	EA_KONF.SYS file is not in ONLINE3 directory.	
No logical link, LOGIN not possible	Link between PC and controller is not available or defective.	Check wiring (see chapter 2 and controller manual).

Error messages

4.2 Network errors

4.2.1 Logical link errors

Error message	Cause	Rectification
No logical link!	Link between PC and controller is not available or defective.	Check wiring (see chapter 2 and controller manual) and repeat LOGIN procedure.
Transmit error (layer 2)!		
Receive error (layer 2)!		
Error on starting the network		
Login not confirmed		
Logout not confirmed		
No data received		

4.2.2 Sequence errors

Error message	Cause	Rectification
Invalid response	Unexpected response received.	Terminate link using LOGOUT and reestablish link using LOGIN.
Data received		
Login received		
Logout received		
Positive acknowledge received		
Negative acknowledge received		

4.2.3 Internal network errors

Error message	Rectification
Insufficient communication memory!	Call BERGER LAHR.
Invalid parameters!	
Device not configured!	
Insufficient receive buffer!	

4.3 Error messages during execution of functions

Error message	Cause/Rectification
Manual function cannot be executed	Link error or incorrect device condition.
Manual movement not initialized	Attempt to execute manual function before it has been initialized.
Motor already moving	Attempt to perform manual movement although motor is still moving. Wait until motor is at a standstill.
Incorrect operating mode	Manual movement is only possible in point-to-point operating mode.
Positioning not possible	Link failure.
Unrecognized library function	Function is not available in the controller library or not listed in the HFK_SORT.SYS file.
No master curve found	No files with extension ACC available, or they cannot be found in the subdirectory ACC of the ONLINE3 directory.
Master curve file corrupt or not available	Specified master curve file is not available or corrupt.
Unrecognized signal word	Invalid signal word, or signal word not listed in EA_KONF.SYS file.

4.4 Errors on determining the device status

Error message	Cause/Rectification
Errors on determining device status: <ul style="list-style-type: none">- Invalid axis number- Signal word 1- Signal word 2- Act. position- Act. frequency- Action status- Movemt. status- Enabled signals- Latched signals- Current signals	Check device, reestablish link or, if axis number is incorrect, specify correct axis number.

Error messages

4.5 Error messages in record mode

Error message	Cause/Rectification
Graphics hardware not supported	The PC has no VGA, EGA, or Hercules graphics card installed.
MSHERC not loaded	The PC has a Hercules graphics card installed, however, the MSHERC driver has not been called before program start.
File already exists	When storing a graphic image, a file name has been selected which already exists.
File creation error	File cannot be created. Insufficient storage capacity on the specified drive, or write-protected. Invalid character(s) specified in file name (see DOS manual).
Invalid file format or incorrect version	File to be loaded is not a record file or was created by an older ONLINE3 version.
Application program running	Recording of step functions is inadmissible with an application program running.
Invalid parameter	Specified parameters for a function called are out of range.
Insufficient memory	The available memory capacity is insufficient. Deinstall TSR programs.
Memory management error	An error has occurred in controller memory management. Terminate ONLINE3, reset controller, if applicable, and try again.

4.6 Error messages with device errors

Error message	Cause/Rectification
System error !!! No.:	Fatal internal error. Call BERGER LAHR.
Error in error file, Error No.:	Error file corrupt. Device error number is displayed. Reinstall ONLINE3 if necessary.
Error file not found, Error No.:	Error file not found. Device error number is displayed. Reinstall ONLINE3 if necessary.

4.7 Negative acknowledgement from device

Error message	Cause/Rectification
Negative acknowledgement: <ul style="list-style-type: none">- Network error- Invalid network service- Service too long- Service occupied- PSOS event error- Acknowledging error	Call BERGER LAHR.

5 Appendix

5.1 Glossary

Controller library

The controller library is a collection of controller-specific functions. The functions which can be selected depend on the controller configuration specified with the programming system.

Flag

Flags are storage items which can be accessed from any block. The controller has a dedicated memory area for flags which can be defined with the BPRO3 programming system (in "Controller configuration").

Input/output

The controller has a certain number of inputs/outputs. The inputs/outputs are used for controlling sequential operations.

Limit switch

Switch for limiting the travel and for reference movements.

Network mode

An operating mode available in a network of positioning units. Several units are interconnected with a host via a physical link. The units are selected by device polling.

Offline mode

In this mode, the programming system is operated without being linked to a controller.

Online mode

In this mode, the logical link to a controller is established.

Reference movement

Motor movement towards the r.h. or l.h. limit switch or additional reference switch for setting a reference point for the system of dimensions.

RS 485 interface

A serial interface used for networking a number of units.

System constant

Certain system constants are required for supplying controller functions with parameters (e.g. axis number = "x1", serial interface = "c2", encoder input 1 = "p1"). These names must not be used for other purposes (e.g. variable names). System constant names can be changed by the user, however, not their contents.

Variable

Variables are storage items used in a program for data transfer and for temporarily or permanently storing values.

5.2 Abbreviations

AC	Alternating current
ASCII	American Standard Code for Information Interchange
BNET	BERGER LAHR network
DC	Direct current
Doc. no.	Documentation number
DOS	Disk Operating System
EEPROM	Electrically erasable and programmable read-only memory
EGA	Enhanced Graphics Adapter
FW	Flag word number
I	Input
M	Motor
O	Output
PC	Personal computer
PLC	Programmable logic controller
RAM	Random access memory
VGA	Video Graphics Array

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