MTC200/ISP200
Installation
18VRS

Commissioning Manual

SYSTEM200

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	18VRS
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Purpose of this document? This documentation describes the installation of the control systems MTC200 and ISP200. A new installation as well as an update and a firmware update are described.

Configuration control

Documentation identification of previous releases	Release date	Comment
120-0400-B312-01/EN	02/00	New issue

Note This document has been printed on chlorine-free bleached paper.

Contents

1 General Information About Installation

1.1 Setup Program and Installation Instructions

Who installs the program? The installation of the graphical user interface of the software and firmware version 18VRS requires knowledge of working with PCs and knowledge of operating systems. Especially for the optimization of the system, settings and adjustments are necessary. This requires knowledge of the installing operating system. Furthermore administration rights are necessary for installing under WindowsNT.

Setup Program The installation program decompresses and copies the user interface and the associated files from the CD ROM or the installation diskettes onto your hard disk. You must first execute the installation program before you can use the user interface.

Documentation This chapter tells you how you can install and set up the user interface on your hard disk. There is a difference between an installation under MS-DOS and an installation under WindowsNT. Furthermore you will learn how you can update an existing installation under the respective operating system.

1.2 System Requirements

Hardware Requirements

The user interface of the software and firmware version 18VRS for MTC200-P/ISP200-P can be installed on the Indramat BTV20 and BTV30 operator panels and on most standard IBM compatible PCs.

Depending on the employed operating system, the following hardware prerequisites are expected:

	MS-DOS	**WindowsNT**
Processor type	$\geq$ 5x86 / 133 MHz	$\geq$ Pentium P166
Main memory	$\geq$ 16 MB	$\geq$ 32 MB
Display	VGA Color 640*480, minimum 256 colors	65535 colors
Hard disk	$\geq$ 100 MB free space	$\geq$ 250 MB free space
Floppy disk drive	For installation and data backup	
Serial interface	RS232C or RS485 for MTC200/ISP200 connection	

Figure 1-1: Hardware Requirements

In order to install a MTC200-P/ISP200-P in a PC, at least 2 slots must be available.

Depending on the required option, further hardware components (such as interface modules) will be necessary.

Note: Due to the required computing power and free memory space, the NT version of the 18VRS software can no longer be used in the BTV01. There will only be the DOS version that can be used in the BTV01 under the 18VRS software.

Firmware

The firmware of version 18 can be used on the following hardware platforms:

Hardware type	Firmware type
MTS-P01.1-xx-xxx	FWA-MTSP01-S01-18VRS-NN
	FWA-MTSP01-M01-18VRS-NN
MTS-R0*.1-M1-xxx	FWA-MTSR0*-M01-18VRS-NN
	FWA-MTSR0*-S01-18VRS-NN

Figure 1-2: Supported hardware types

Software requirements

The user interface of the 18VRS software and firmware version for MT-CNC and MTC200 can be used under the operating systems MS-DOS (Version 6.22) and WindowsNT (3.51 or 4.0).

For the operating system version WindowsNT 3.51 service pack 5 is necessary, for WindowsNT 4.0 service pack 5 is necessary.

The installation program checks whether the required service pack has been installed.

Note: The corresponding service pack must again be activated if an additional operating system components (such as a network driver) will subsequently be installed.

Indramat supplies Version 18VRS only in conjunction with MS-DOS 6.22 or Windows-NT 4.0.

While some functions of Version 18 are only available under the WindowsNT operating system, other functions are only available under WindowsNT 4.0.

Software options

Within software version 18, the functions listed in the following table will only be available as an option.

The required functions must be ordered by its type name, and must be installed using the enabling code that is included in the delivery.

Function	Type
Custom Display System - CDS - Configuration and runtime version	SWS-MT*BVS-PRO-18VRS-MS
Custom Display System - CDS - Runtime version only	SWS-MT*BVS-RUN-18VRS-MS
Sequential function chart operating modes and sequential function chart diagnosis	SWS-MTC200-SKT-18VRS-MS

Figure 1-3: Software options

1.3 Before You Start Installing the User Interface

If you have ordered a completely configured **BTV20/BTV30** unit with control modules, the user interface and the related firmware have already been installed when the unit is delivered. The following values are invariably entered during the installation process:

The following values are set for the interface data:

- Channel: On line
- I/O address: $0318
- Memory address: $D000:$0000

The following values are set as user data:

- User name: INDRAMAT
- Password: INDRAMAT

In this case you only need the following chapters for updating the software. The user interface must be installed according to the following description if you use the BTV or a third-party PC with external control hardware or if you want to use the MTC-P and MTS-P control modules in a third-party PC.

Note: In order to be able to function properly, the software version of the user interface and the firmware version of the MT-CNC/MTC200/ISP200 must have the same version name. Prior to installing the user interface or to updating an existing installation you must check whether the firmware version of the MT-CNC you wish to control via the user interface is compatible.

1.4 Call Parameters in the Start File

As an option, parameters can be added to the called programs in the MT-RUN.BAT start file.

TSRPG25I If required the following call parameters can be added to the line **TSRPG25I**. The parameters in parentheses should only be used after INDRAMAT Service or Development have been contacted (distinction is not made between capital/small letters):

/?	: Help display (in English)
(/A)	: Shows the file processing during the GUI startup
/B	: Prevents a warm restart through [Ctrl]+[Alt]+[Delete]
/C1 [/C]	: TSR program for utilization in the DOS box of MS-WindowsNT
/C2	: TSR program for utilization in the DOS box of MS-WindowsNT
	can only be used in conjunction with the INDRAMAT function interface
/D	programmable communication address B. $D000,$0000)
	(MTC200 must be $xxxx, $xxxx)

(/G)	:	Creates the "\GLOBAL.DAT" file
(/I=$xx,$yy)	:	Programmable interrupt selections
		$xx = TSR interrupt
		$yy = DPR address
(/K)	:	TSR program shall work without GUI environment
/L	:	Activating GUI logbook functions
(/O=xxxx)	:	The clock of the serial interface is reprogrammed:

1:55,5ms 2:27,7ms 4:14ms 8:7ms 16:3,5ms 32:1,7ms 64:868 µs 128:434 µs 256:217 µs 512:108 µs, 1024:54 µs 2048:27 µs 4096:13 µs.

The default interrupt time (1.7 ms) is used if the /O parameter has not been specified. Other settings may be selected if there are problems with losing the connection. You must select /O=2 (27.7 ms), for example, if you wish to use the GUI under WindowsNT (3.5).

/P	:	TSR program texts are taken from the hard disk
(/Q)	:	Activation of the IPC1-DPR driver
(/R)	:	IPC-DPR protocol with BYTE swapping
(/R0)	:	IPC-DPR protocol without BYTE swapping
(/T)	:	Switch off time synchronization with hardware clock
(/U)	:	Debug mode for the TSR program
(/U0)	:	Indramat function interface with test output
(/W)	:	Prevents main memory swapping reduces the free memory area below 640 kB
(/X)	:	Changeover of the DTR/RTS control signals for RS-485
(/Y)	:	Activates the TELEBYTE function that displays the communication between GUI and MT-CNC upon the start of the GUI (data in \TELEGRAM.TXT).
(/Z)	:	Changeover of the data protocol (checksum for TRANSMIT counter)

MT-CNC If required the following call parameters can be added to the line **MT-CNC**. The parameters in parentheses should only be used after INDRAMAT Service or Development have been contacted (distinction is not made between capital/small letters):

/?	:	Help display (in English)
/B=xx	:	the GUI starts automatically menu item xx, e.g. /B=09 menu item 9, status display, or /B=10 menu item 10, GUI.
(/E)	:	Shows the names of the developing engineers when the EXE versions are displayed.
(/F)	:	Deactivates the hard disk warning. This warning appears if there is less than 1 MB free space available on the hard disk.
/H	:	Third-party EXE files can be started using one of the available function keys. The \MT_TEXTE\MAIN_EXE.DAT file must be used for defining the function key and the related EXE file.
/I	:	Using the INDRAMAT original diagnosis text; custom-related text is suppressed.
(/M)	:	Deactivates the verification of the free main memory upon the GUI start. Caution: When you use this

		option, unexpected MS-DOS runtime errors may occur during GUI operation that can lead to an uncontrolled abortion of the GUI.
(/N)	:	Complete new initialization of the GUI software (deletes the \MT_TEXTE\MT_START.DAT file).
(/S)	:	Boots the GUI into the setup mode.
(/V)	:	Inserts the version of the MT-v into the EXE headers.
/Z	:	Displays the software license number.

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2 Installation Under MS-DOS

2.1 System Files

Recommendations for the Utilization of Compatible PCs

TSR programs/device drivers   Using special hardware in a computer may require special device drivers and/or TSR programs (memory-resident programs) that must be loaded into the PC's main memory. These programs can disturb the operation of the GUI software or even prevent it. If you have problems with starting or using the GUI software you should first deactivate those programs (e.g. by removing the call in the CONFIG.SYS or AUTOEXEC.BAT files).

Main memory   The GUI software requires at least **665 Kbyte** free main memory to be started. The execution of the command 'MEM' allows to find out if there is enough free memory on your PC. If necessary, remove memory-resident drivers or programs to provide more conventional main memory for the GUI. From MS-DOS version 6.0 onwards you may also try it with running the MEMMAKER MS-DOS program that moves drivers into the upper memory, thus freeing more conventional main memory.

> **Note**: Do not execute the MEMMAKER program if you have already installed the GUI program, and the program is started automatically via AUTOEXEC.BAT when the PC starts up.

Below you can see the CONFIG.SYS and AUTOEXEC.BAT system files as they are installed in the BTV unit upon delivery. In addition examples for system files of compatible PCs are indicated. These examples only include essential information which is necessary for GUI operation.

The CONFIG.SYS File of the BTV01.3

```
REM ***********************************************************************
REM ***** CONFIG.SYS                                                 *****
REM *****-------------------------------------------------------------*****
REM ***** MT-CNC BOF/GBO                              Version 05.18Vxx *****
REM *****-------------------------------------------------------------*****
REM *****                        (c) INDRAMAT GmbH                    *****
REM ***********************************************************************

DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE NoEMS
BUFFERS=10,0
FILES=30
DOS=HIGH,UMB
LASTDRIVE=E
FCBS=4,0
BREAK=OFF

REM DEUTSCH:
COUNTRY=049,850,C:\DOS\COUNTRY.SYS

REM ITALIANO:
REM COUNTRY=039,850,C:\DOS\COUNTRY.SYS

REM ESPANOL:
REM COUNTRY=034,850,C:\DOS\COUNTRY.SYS

REM ENGLISH UK:
REM COUNTRY=044,437,C:\DOS\COUNTRY.SYS

REM ENGLISH US:
REM COUNTRY=001,437,C:\DOS\COUNTRY.SYS
```

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The CONFIG.SYS File of the BTV30

```
REM **********************************************************************
REM ***** CONFIG.SYS                                               *****
REM *****--------------------------------------------------------------*****
REM ***** MT-CNC BOF/GBO                            Version 05.18Vxx *****
REM *****--------------------------------------------------------------*****
REM *****                      (c) INDRAMAT GmbH                     *****
REM **********************************************************************

DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE NoEMS X=D000-D1FF
BUFFERS=10,0
FILES=30
DOS=HIGH,UMB
LASTDRIVE=E
FCBS=4,0
BREAK=OFF

REM DEUTSCH:
REM COUNTRY=049,850,C:\DOS\COUNTRY.SYS

REM ITALIANO:
REM COUNTRY=039,850,C:\DOS\COUNTRY.SYS

REM ESPANOL:
REM COUNTRY=034,850,C:\DOS\COUNTRY.SYS

REM ENGLISH UK:
REM COUNTRY=044,437,C:\DOS\COUNTRY.SYS

REM ENGLISH US:
COUNTRY=001,437,C:\DOS\COUNTRY.SYS
```

Example of a CONFIG.SYS File of a Compatible PC

```
DEVICEHIGH=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\HIMEM.SYS
DEVICEHIGH=C:\DOS\EMM386.EXE NOEMS
DEVICEHIGH=C:\DOS\ANSI.SYS /X
DOS=HIGH,UMB
STACKS=0,0
SHELL=COMMAND.COM /E:512 /P
FILES = 30
BUFFERS = 10,0
BREAK = OFF
```

DOS commands are only described briefly. Please refer to your DOS manual for detailed information.

The CONFIG.SYS file is used in the PC for loading special device drivers and for setting up hardware options. The specifications of FILES and BUFFERS are very important.

FILES should be set to 30 or higher. This command specifies the number of files that can be open at the same time. During operation, the GUI software employs several files simultaneously.

BUFFERS (in conjunction with SMARTDRV) should be set to 10.

Despite the additionally reserved memory space, reserving more than 10 data carrier buffers provides, in conjunction with SMARTDRV, increases the processing sped only conditionally, but uses additional memory space.

Note: Entering too high a value for FILES and/of BUFFERS may lead to assigning an unnecessary high amount of conventional main memory. Reduce these values to the minimum values if the free memory space proves insufficient for starting the GUI.

In PCs with 386 or 486 processors and enhanced memory, the DEVICEHIGH command is usually employed for installing the management of the expanded memory. For example:

```
DEVICEHIGH=C:\DOS\EMM386.EXE NOEMS
```

If you have WINDOWS installed in your PC, you may also use the following commands:

```
DEVICE=C:\WINDOWS\HIMEM.SYS
DEVICEHIGH=C:\WINDOWS\EMM386.EXE NOEMS
```

Note: If a BTV30 or a third-party PC is used together with the MTC-P and/or MTS-P control modules, The parameter 'X' must be used after the EMM386.EXE call to mask out the memory space that is used for the communication with the control modules (usually X=D000-D1FF).

The AUTOEXEC.BAT File of the BTV01.3

```
@ECHO OFF
REM *********************************************************************
REM ***** AUTOEXEC.BAT                                             *****
REM *****----------------------------------------------------------*****
REM ***** MT-CNC BOF/GBO                           Version 05.18Vxx *****
REM *****----------------------------------------------------------*****
REM *****                        (c) INDRAMAT GmbH                 *****
REM *********************************************************************

PROMPT $p$g
PATH C:\DOS
SET TEMP=C:\DOS

REM SYSTEM MEMORY 8 MB / ARBEITSSPEICHER 8 MB
REM LH C:\DOS\SMARTDRV.EXE 2048 C

REM System MEMORY 16 or 32 MB / ARBEITSSPEICHER 16 oder 32 MB
LH C:\DOS\SMARTDRV.EXE 4096 C

C:\HDDSTDBY
C:\SIMUL_HE

REM DEUTSCH:
LH KEYB GR,,C:\DOS\Keyboard.SYS
LH KEYBCODE GR

REM ITALIANO:
REM LH KEYB IT,,C:\DOS\Keyboard.SYS
REM LH KEYBCODE IT

REM ESPANOL:
REM LH KEYB SP,,C:\DOS\Keyboard.SYS
REM LH KEYBCODE SP

REM ENGLISH UK:
REM LH KEYB UK,,C:\DOS\Keyboard.SYS
REM LH KEYBCODE UK

REM ENGLISH USA:
REM LH KEYB US,,C:\DOS\Keyboard.SYS
REM LH KEYBCODE US
```

As an option, an external PC keyboard can be connected to the BTV01 unit. The correct country code of the external keyboard must be selected in the AUTOEXEC.BAT file. The default setting expects a German keyboard. If you wish to connect a different keyboard, you must enter the REM command to blank out the calls of the German driver, and activate the drivers of the required language by deleting the appropriate REM command. Check the settings in the AUTOEXEC.BAT file if your external keyboard produces wrong characters.

Die AUTOEXEC.BAT File of the BTV30

```
@ECHO OFF
REM ************************************************************************
REM ***** AUTOEXEC.BAT                                                *****
REM *****--------------------------------------------------------------*****
REM ***** MT-CNC BOF/GBO                              Version 05.18Vxx *****
REM *****--------------------------------------------------------------*****
REM *****                      (c) INDRAMAT GmbH                       *****
REM ************************************************************************

PROMPT $p$g
PATH C:\DOS
SET TEMP=C:\DOS

REM System MEMORY 16 or 32 MB / ARBEITSSPEICHER 16 oder 32 MB
LH C:\DOS\SMARTDRV.EXE 4096 C

REM DEUTSCH:
LH KEYB GR,,C:\DOS\Keyboard.SYS

REM ITALIANO:
REM LH KEYB IT,,C:\DOS\Keyboard.SYS

REM ESPANOL:
REM LH KEYB SP,,C:\DOS\Keyboard.SYS

REM ENGLISH UK:
REM LH KEYB UK,,C:\DOS\Keyboard.SYS

REM ENGLISH USA:
REM LH KEYB US,,C:\DOS\Keyboard.SYS

CALL MT-RUN.BAT
```

As an option, an external PC keyboard can be connected to the **BTV30** unit. The correct country code of the external keyboard must be selected in the AUTOEXEC.BAT file. The default setting expects a German keyboard. If you wish to connect a different keyboard, you must enter the REM command to blank out the calls of the German driver, and activate the drivers of the required language by deleting the appropriate REM command. Check the settings in the AUTOEXEC.BAT file if your external keyboard produces wrong characters.

Example of an AUTOEXEC.BAT File for a Compatible PC

```
@ECHO OFF
PROMPT $P$G
PATH=C:\DOS;\WINDOWS;C:
SET TEMP=C:\WINDOWS\TEMP
SMARTDRV 2084 1024 C
LH DOSKEY
CALL MT-RUN
```

Calling the MT-RUN batch file at the end of the AUTOEXEC.BAT file ensures that the GUI is always loaded automatically when the PC is started.

⚠ **CAUTION**

Ensure that the "Write-Behind-Caching" mode is switched <u>OFF</u> at switch "C" when you use the SMARTDRV.EXE hard disk cache program.

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GUI Directory Tree

The GUI installation program creates the GUI directory structure on the PC hard disk and transfers the individual files to their correct locations.

Below there is a file directory tree of an installation in which an MT-CNC / MTC200 has been defined with address 0 (ANLAGE00) in the GUI. A second controller with address 1 leads to an additional directory tree that begins with ...\ANLAGE01\.., etc.

```
LW:\
 ├─────MT-CNC              GUI main directory (*.EXE and *.OVR files)
 │      ├─────ANLAGE00     Subdirectory for MT-CNC data with address 00
 │      │      ├─────CYCLE     Files for NC cycles
 │      │      ├─────DIAG      Files for diagnosis texts
 │      │      ├─────D?CORR    Files for D corrections
 │      │      ├─────EVENTS    Files for event stati
 │      │      ├─────GBO       Files for GUI user data
 │      │      ├─────GNE       Files for GNE
 │      │      ├─────MACHDATA  Files for machine data
 │      │      ├─────MT_TEMP   Files for temporary backups
 │      │      ├─────NCPRG     Files for NC program packages
 │      │      ├─────NC_VAR    Files for NC variables
 │      │      ├─────OFFSETS   Files for zero offsets
 │      │      ├─────OSCIL     Files for oscilloscope function
 │      │      ├─────PARAM     Files for parameter sets
 │      │      ├─────PCL       Subdirectory of integrated SPS
 │      │      │      ├─────IB     Files for SPS setup data
 │      │      │      ├─────MC     Files for SPS object data
 │      │      │      └─────SRC    Files for SPS user source data
 │      │      ├─────PRINT     Files for print outputs
 │      │      ├─────PROJECT   Files for project archives
 │      │      └─────TOOL      Files for tool magazine lists
 │      ├─────FWA          Firmware files (MTC200 only)
 │      ├─────CONFIG       Files for global configuration data
 │      ├─────CYCLE        Files for global NC cycles
 │      ├─────GBO          Files for global GUI program data
 │      ├─────IND_DRV      Files for global driver files (MS-WinNT only)
 │      │      └─────PROFI_K   Files for global Profibus configurations (MS-WinNT only)
 │      ├─────MACHDATA     Files for global machine data
 │      ├─────PCL          Subdirectory of integrated SPS
 │      │      ├─────IB     Files for global SPS setup data
 │      │      ├─────MC     Files for global SPS object data
 │      │      └─────SRC    Files for global SPS user source data
 │      └─────SCREEN       Files for global user data of status display
 ├─────MT_TEXTE           Files for global MUI screen texts
 ├─────MTHELP             Files for global help data
 │      ├─────GNE          GNE text files
 │      └─────GBO          Files for global GUI screen texts
 ├─────NC_ARC             Archive files for NC program packages
 ├─────PAR_ARC            Archive files for parameter sets
 ├─────SPS_ARC            Archive files for SPS programs
 └─────TOOL_ARC           Archive files for tool lists
```

The ..._ARC directories contain archived (compressed) data. An archived parameter file can contain several files that are compressed to a single file (in order to save space on the hard disk). These files can be used if the active file is corrupted or has been deleted.

⚠️ **CAUTION**

Using the GUI function for archiving the user data or producing a complete backup of the GUI user data via the 'Backup/Restore' function in menu item 1 is within the user's responsibility.

The MT-RUN.BAT File

The MT-RUN.BAT file is created during the GUI installation. It is located in the DOS main directory of the drive that contains the GUI software installation.

For drive 'C', directory 'MT-CNC' and controller MT-CNC, the MT-RUN.BAT file has the following contents:

```
ECHO OFF
REM INDRAMAT MT-CNC (c) Copyright 1997
REM --------------------------------
SET DPMIMEM=MAXMEM 4096
    C:
    CD C:\MT-CNC
    TSRPG25I
    MT-CNC /H /B=10
    CD\
REM --------------------------------
```

For drive 'C', directory 'MT-CNC' and controller MTC200, the MT-RUN.BAT file has the following contents:

```
ECHO OFF
REM INDRAMAT MT-CNC (c) Copyright 1997
REM --------------------------------
SET DPMIMEM=MAXMEM 4096
    C:
    CD C:\MT-CNC
    TSRPG25I /R0 /D=$XXXX,$XXXX
    MT-CNC /H /B=10
    CD\
REM --------------------------------
```

2.2   First-Time Installation of the GUI

The complete GUI installation without user programs requires at least 40 MB of free space on the hard disk (54 MB if the English text files are installed). There should be approximately 10-20 MB free space on the hard disk for user data.

1. Prior to starting the GUI installation procedure you should execute the 'DIR' command in the main directory of the hard disk and ensure that there is sufficient free space available on the hard disk.

2. You should read the Software License Agreement before you start the GUI installation process.

How to use the setup program

Call menus

The menus of the installation interfaces can be activated with function key **<F10>**. The cursor keys allow to move horizontally or vertically within the menus.

<Alt> and the letter which is displayed in a colour allow to directly call a menu. The menu item can be selected by simply entering the letter which is displayed in a different colour. For example **<Alt>+<E>** allows to open the menu **new installation**, **<S>** starts the installation.

Navigating in the screen masks

<Tab> allows to switch between the buttons and the entry fields in forward direction, **<Shift>+<Tab>** in reverse direction. The cursor keys allow to move within an entry field.

Mark selection fields

Fields for the selection are marked by the **<Space>** key. For example language selection: (_) German becomes (•) German after selecting with the **<Space>** key.

Mouse support

The installation program can also be controlled using a Microsoft mouse (or compatible) if a corresponding driver is installed.

Help

The installation program provides help texts for various screens and errors.

Press **<F1>** to open the help window that is related to the current screen or the current error.

INSTAL03.PCX
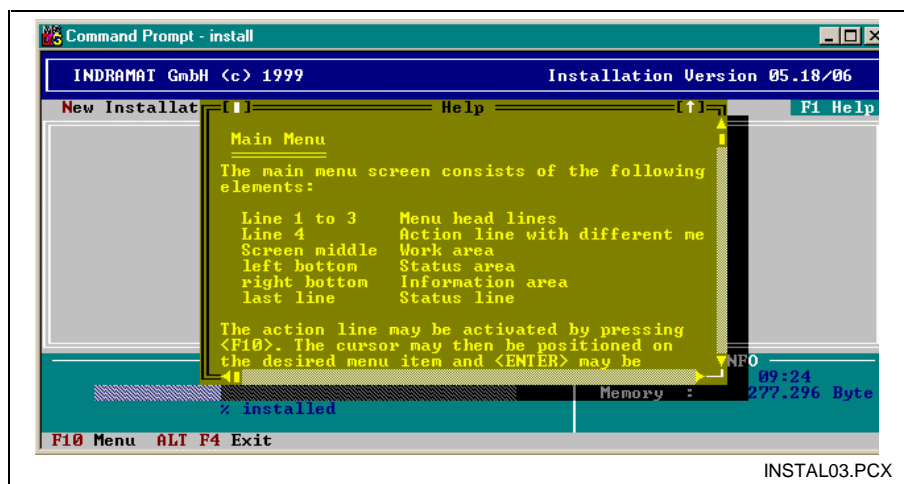
Figure 2-1: Example of a help window

Exit the setup program

<Alt> + <F4> allow to cancel the setup program.

Note:	If the program is exited before the installation has been finished, a new installation is absolutely necessary.

Start setup

To install the GUI, insert diskette no. 1 in drive A or B of your PC (in this description we assume that you use drive A). Return to the main directory of your hard disk (e.g. 'CD\') and change to drive A (e.g. A: **<Enter>**).

Call the setup program

1. Enter 'INSTALL' and press **<Enter>**.

   The installation program starts.

Select installation language

2. Select the language which is to be used for the setup program (German is default).

3. Press **<Enter>** to continue.

Once the language has been selected, the main installation selection screen appears. When the screen is opened for the first time, a window shows the version and a Copyright message regarding the installation program.

4. Press **<Enter>** to confirm this window.

5. Select **Start** in the **New installation** menu.

Select program language

In the following dialogue you are prompted to define the language of the GUI. German and/or English can be selected for:

- the start language: This language will be used when the GUI is started

- further languages: A second language can be selected. This language can be selected in the SETUP menu of the GUI.

- the help files:

6. Select the start language, further languages and the language of the help files

Select control

Use the following screen to select the controller.

7. Select the control which is to be installed and exit the dialog with **<Enter>**.

Set interface parameters

The following interface parameter screen is displayed when you select an MT-CNC:


instal06.pcx
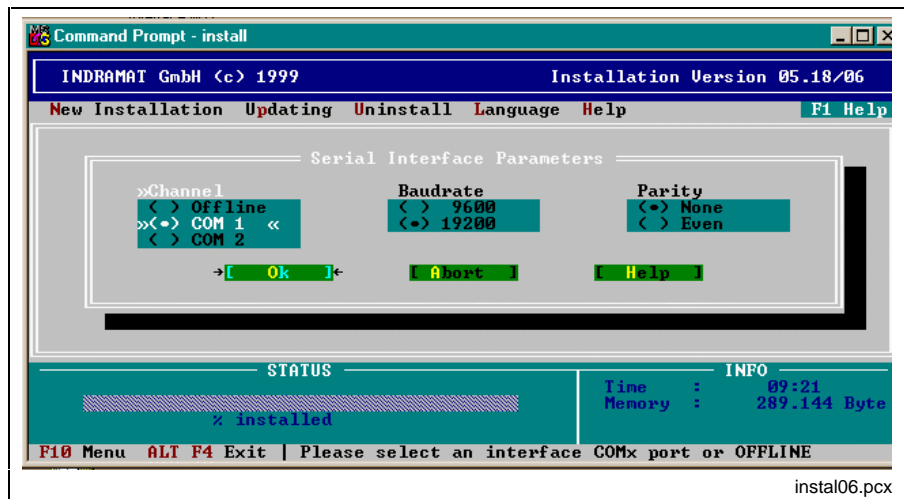
Figure 2-2: Selection of interface parameters for MT-CNC

Use this screen to select the settings of the serial interface that are employed when the GUI starts up.

'Offline' permits the GUI to be used without a connection to the controller.

'Baudrate' and 'Parity' define the transfer parameters of the serial interface.

Note:	The selections made for 'Baudrate' and 'Parity' must match the switch settings on the SIOB and/or CPUB module of the MT-CNC (default: 19200 Bd, no parity).

The following interface parameter screen is displayed when you select an MTC200:
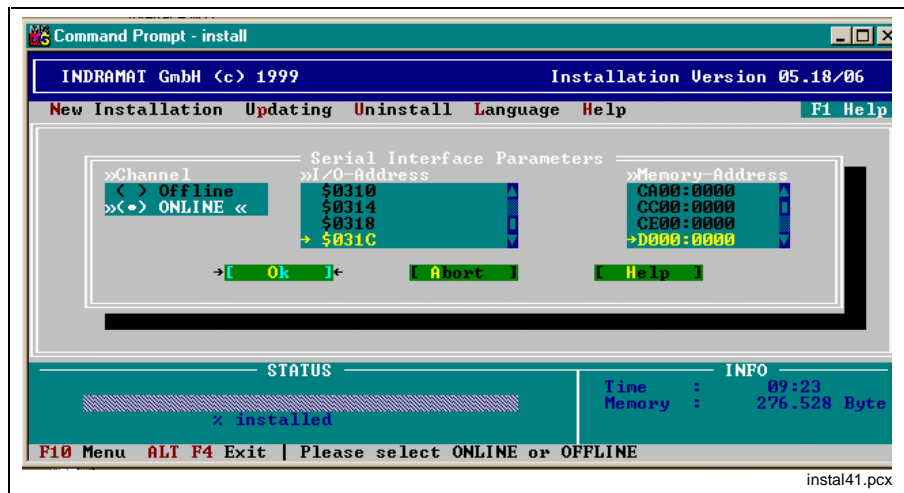
Figure 2-3: Selection of interface parameters for MTC200

In this screen the communication with the control card MTC200-P is set. For I/O address areas are displayed in which the setup program found a MTC200-P. Furthermore it is possible to determine the memory range in which the PC and the MTC200-P communicate. The default selection should be D000:0000.

8. Set the interface parameters in correspondence to your system and exit the dialog with **<Enter>**.

Determine destination drive and directory

The next step determines which drive and which directory will be used for the installation of the program.

9. Confirm the given path with **<Enter>** (recommended)

- or -

⇒ enter another destination directory for the installation.

Note:	Successful installation requires at least 40 MB free capacity on the target drive.

The installation program issues a message that tells you whether or not the specified directory exists.

10. Confirm the creation of the directory.

The installation program checks now whether there is enough free capacity on the selected hard disk.

If there is not enough memory:

11. Exit the setup program
12. free memory on the requested drive or
13. install the program again on another drive

Program personification

The personification (serial number, name, company) of the user interface is performed during the first-time installation. You are prompted to enter

the serial number, the name and the company of the rightful owner of the software. The serial number is printed on your diskette set.

14. You are prompted to enter the serial number, the name and the company of the rightful owner of the software.

This information is displayed every time the user interface is started. It also appears in the footer line of each user data printout (e.g. NC programs).

If you have copy licenses and are allowed to use the set of diskettes more than once, the entered user information is automatically used for every further installation.

The information is displayed again. If the entry contained errors, you can select **<No>** in this screen. The entry dialog screen is displayed again and you can correct your entries.

Once you have confirmed your entries, they will be saved on the diskette.

Enable software options   Select the software options from the following screen.

15. If required enter the option enable codes for the software options and confirm with **<Enter>**.

The installation procedure starts.

During installation, a window displays status information about the decompressing process.

In between, the user is prompted to insert the required diskettes. Software version 18V06 requires 16 diskettes.

Enter user   When installation is completed, the user is prompted to enter the name of the system administrator and the system administrator's password. This user is the only person who is authorized to enter new users and to define their privileges.

⚠ **CAUTION**	⇒ Be sure that you always remember the exact entries you made for user name and password. If you forget the entries, you must clear the interface from the hard disk and install it again. In this process you will lose the user data. **In this case contact INDRAMAT's customer service, they can assist you in finding the password.**

16. Enter name and password of the administrator.

Once installation has successfully been completed, you can enter additional users via the SETUP/Password Management Screen of the GUI.

Update system files   The system asks you whether the CONFIG.SYS and AUTOEXEC.BAT system files shall be modified such that they satisfy the GUI requirements.

The modifications are accepted automatically when you press the **<Enter>** key to confirm the OK button.

17. Press the **<Enter>** key in order to execute modifications automatically.

- or -

⇒ press **<No>** if you would like to execute the modifications later.

The last screen shows the default setting of the GUI:

COM1: The GUI tries to communicate with MT-CNC through the COM1 connection of the PC.

00: Up to 16 MT-CNCs can be managed via the GUI. Upon startup, the GUI selects the MT-CNC with the communication address 00.

DEUTSCH: The GUI starts in this language.

The installation is now completed and the MS-DOS prompt appears.

The main directory of the hard disk drive contains the MT-RUN.BAT batch file with the default settings. The possible parameters are specified in the section 'MT-RUN.BAT File'.

Additional information about the installation

In order to avoid a blocking of the PC when the GUI starts up for the first time, all other units that are connected to the serial COM1 port of the PC must be disconnected. The GUI will try to communicate with the MT-CNC via this serial connection because COM1 is the default selection for ONLINE MODE.

If you have already selected OFFLINE MODE during installation, the GUI will not try to establish a link to the MT-CNC via a serial connection. In this case you may use the serial interfaces for other I/O units, such as mouse or printer.

The MT-RUN.BAT file can be modified such that the MUI setup screen can be started directly so that you can select OFFLINE MODE there.

If you wish to exit the GUI and return to DOS, you must first press **<F10>** to return to the GUI main menu. This is the only point where you can use the **<Ctrl>+<C>** key combination to return to the DOS prompt. This exit is password-protected. If a password is not active, the system will prompt you to enter your name and password. This prevents that unauthorized users can return to the operating system level.

2.3 Updating a GUI Installation

Before you start updating an existing older GUI version to this new version, you should remember the following points:

- An update to the current version is possible from any previous GUI installation.

- Restore all user data items (backups) that shall be converted for this new version in the existing old GUI form. To do this, use the archiving utilities of the old and currently installed GUI version. This is necessary because backups of earlier GUI versions can not be read and/or converted when they are retrieved or restored with the new version.

- When you update the GUI of a machine you must ensure that all components of the MT-CNC system are equipped with the correct firmware. To obtain information about the firmware,

   - press **<Ctrl>+<F1>** in the menu item 7 of the GUI to print the firmware that is installed in the MT-CNC, RECO, BTM;

   - check the version that is displayed in the last screen line of the SOT main menu.

Note: Updating is only possible if there is at least another 25 MB free space on drive that contains the current GUI installation. Prior to starting the update you should therefore use the 'DIR' command in the main directory of the hard disk to check whether there is a sufficient amount of free space on the hard disk available.

Type designation
of the GUI software: GBO-18V00

                                     Release version
                                     Version
                                     Type: GUI

To update the GUI, insert diskette no. 1 in drive A or B of your PC (in this description we assume that you use drive A). Return to the main directory of your hard disk (e.g. 'CD\') and change to drive A (e.g. A: **<Enter>**).

Start the update

Call the setup program
1. Enter 'INSTALL' and press **<Enter>**.
   The installation program starts.

Select installation language
2. Select the language which is to be used for the setup program (German is default).

3. Press **<Enter>** to continue.

Once the language has been selected, the main installation selection screen appears. When the screen is opened for the first time, a window shows the version and a Copyright message regarding the installation program.

4. Press **<Enter>** to confirm this window.

5. Select **Start** in the **Update** menu.

6. Enter the directory where the current GUI version is installed.

The installation program issues a message if the directory in the specified drive cannot be found or is not a GUI main directory.

A safety message is issued as soon as the specified directory has been recognized as the GUI main directory.

7. Press **<No>** to cancel the update.

- or -

⇒   To continue uninstalling, press **<Yes>**. All GUI data items are replaced with the ones of the new version. The user data is retained on the hard disk, and is converted for the new version.

During installation, a window displays status information about the decompressing process.

In between, the user is prompted to insert the required diskettes.

Once the updating process is completed, the system issues a message that says that the last setup settings were not modified during GUI updating.

8. Press **<Enter>** to close the information window.

The setup program is terminated and the command prompt is displayed.

Updating is now terminated and the DOS prompt is displayed. The main directory of the hard disk drive contains a new MT-RUN.BAT batch file. The original file with the previous settings is saved as MT-RUN.OLD. Your modifications must be checked and eventually entered again! Possible settings are described in the section 'MT-RUN.BAT File' (see page 2-1).

Start GUI again   To start the GUI, enter 'MT-RUN' at the DOS prompt, and press the **<Enter>** key.

Exit GUI   If you wish to exit the GUI and return to DOS, you must first press **<F10>** to return to the GUI main menu. This is the only point where you can use the **<Ctrl>+<C>** key combination to return to the DOS prompt. This exit is password-protected. If a password is not active, the system will prompt you to enter your name and password. This prevents that unauthorized users can return to the operating system level.

2.4   Removing the GUI

The installation program helps you to remove all GUI files, MT-CNC user files and their directories from a specific hard disk.

> ⚠ **CAUTION**
>
> **All program files and user data will be deleted!**
> ⇒ Use the backup functions for data which is to be used again after the update.

To uninstall the GUI, insert diskette no. 1 in drive A or B of your PC (in this description we assume that you use drive A). Return to the main directory of your hard disk (e.g. 'CD\') and change to drive A (e.g. A: **<Enter>**).

Call the setup program
1. Enter 'INSTALL' and press **<Enter>**.
    The installation program starts.

Select installation language
2. Select the language which is to be used for the setup program (German is default).
3. Press **<Enter>** to continue.

Once the language has been selected, the main installation selection screen appears. When the screen is opened for the first time, a window shows the version and a Copyright message regarding the installation program.

4. Press **<Enter>** to confirm this window.
5. Select **Start** in the **Uninstall** menu.
6. Enter the directory where the current GUI version is installed.

The installation program issues a message if the directory in the specified drive cannot be found or is not a GUI main directory.

A safety message is issued as soon as the specified directory has been recognized as the GUI main directory.

7. Press **<No>** to cancel un-installation.

- or -

⇒   Press **<Yes>** to continue.

> ⚠ **CAUTION**
>
> **All GUI and user program data items on the specified hard disk will be deleted.**

Once you have completed the installation program, all GUI files including the created user data will be cleared from the hard disk.

Once you have pressed the [Yes] button, the installation program returns to the DOS prompt.

The GUI, all data items you have created, and the related directory structure are now deleted from the hard disk, and the DOS prompt appears. If the invocation of the GUI was entered in the AUTOEXEC.BAT file, you should now remove this entry.

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3 Installation Under MS WindowsNT

3.1 Administrator Rights

For WindowsNT system settings and the installation of the interface, administrator rights are necessary.

⇒ Log on as a user with administrator rights.

Pre-installed BTVs BTVs delivered by Indramat have the following access data:

- User name: INDRAMAT
- Password: INDRAMAT

3.2 Set WindowsNT System Properties

Before you start the installation some system settings are necessary for optimum interface functions.

Performance characteristics

In order to guarantee best possible reaction time and a faultless operation of the function interface, the performance boost must be set for foreground applications.

1. Open **Control panel** in **Start - Settings - Control Panel**
2. Select **System**.
3. Select **None** for **Boost** in the **Performance** tab.


ntinst30.pcx
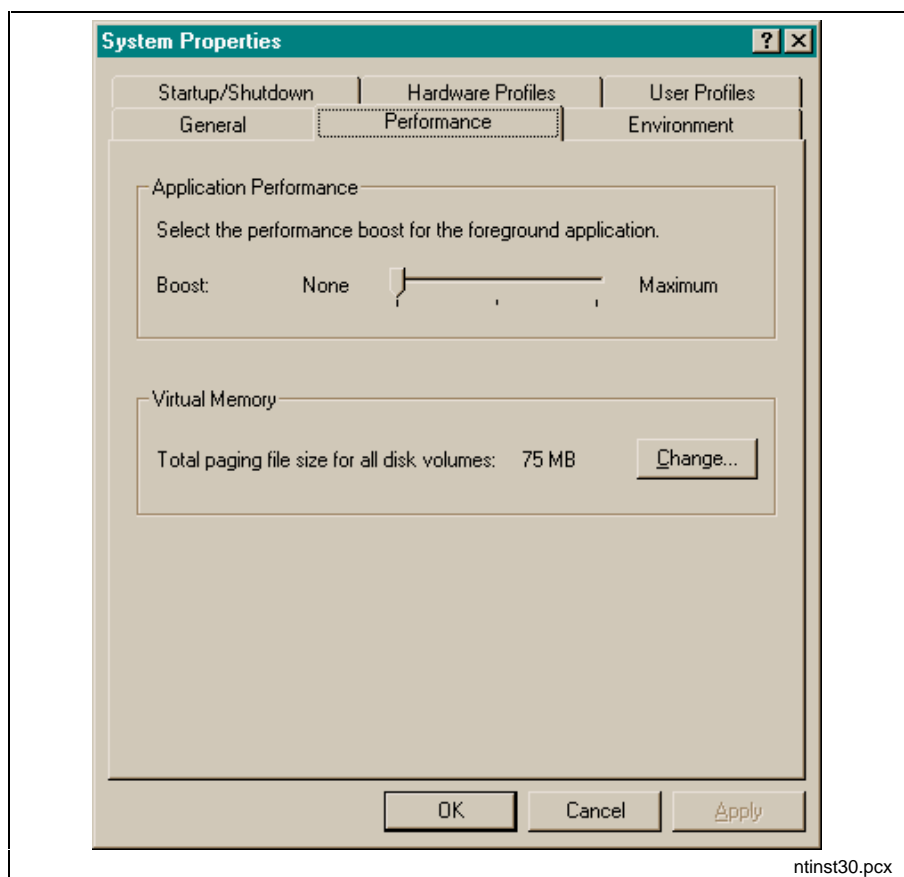
Figure 3-1: Selecting the WindowsNT System Properties "Performance"

Adjust Date/Time

For data exchange between 2 computers, it is necessary that the time zone settings are the same on both computers. Furthermore the function automatically adjust time for daylight savings **must be disabled**.

> ⚠ **If the clock is automatically adjusted for daylight saving changes by the operating system, the user interface cannot be started any longer!**
>
> **CAUTION**

1. Open **Control panel** in **Start - Settings - Control Panel**
2. Select **Date/Time**.
3. Set the **time zone** as shown on the tab and disable automatically adjust time for daylight savings.
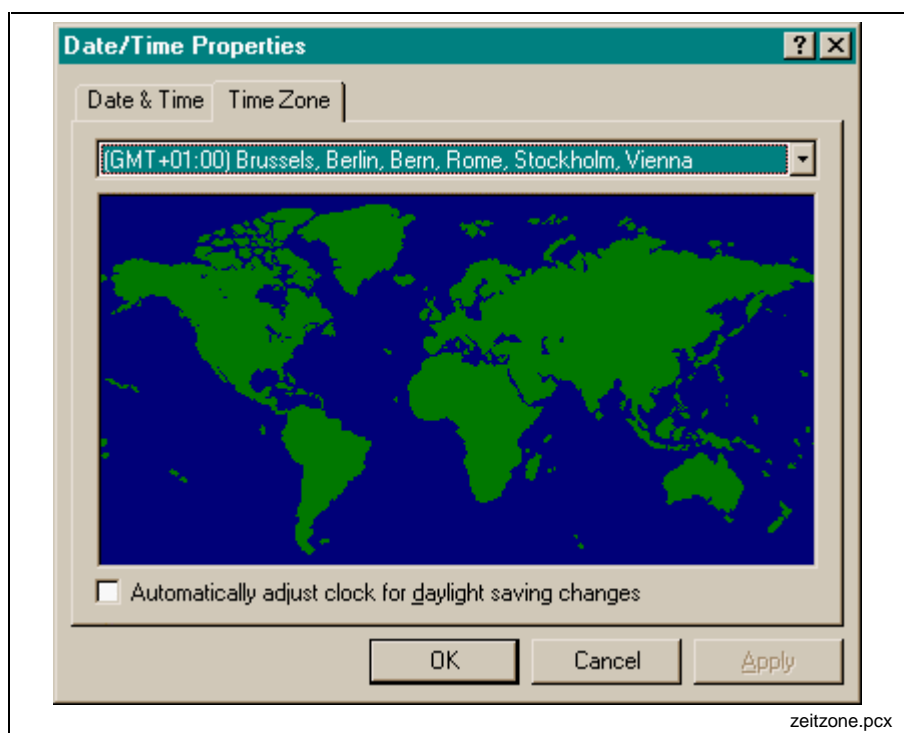
Figure 3-2: Date/time settings

DOS Box Environment

As the GUI software uses more than one file at the same time during operation, the value for files must be set to 30 or more (FILES=30) in the CONFIG.NT file. The CONFIG.NT file can be found in the \\WINNT\SYSTEM32 directory.

1. Open the CONFIG.NT file in the \\WINNT\SYSTEM32 directory with an editor.
2. Change the **FILES=** value to 30 or higher.

Relocating the kernel mode drivers

During intensive memory utilization, the WindowsNT operating system relocates parts of the kernel mode drivers into the page file. This can have an extremely negative effect on the performance of the overall system. WindowsNT provides an option of preventing the relocation of kernel mode driver. Selecting this option requires the registry editor to be

activated. In WindowsNT 4.0, it is located under the name of REGEDT32.EXE in the directory \\WINNT\SYSTEM32.

The setting can be changed with the following key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session-Manager\MemoryManagement. The value of the "DisablePagingExecutive" variable must be changed.

Note: Safe and faultless operation of the function interface is only ensured if the "DisablePagingExecutive" parameter has been set to "1".

⇒ Set the value of the **"DisablePagingExecutive"** variable to **"1"**.
This prevents the relocation of kernel mode driver.
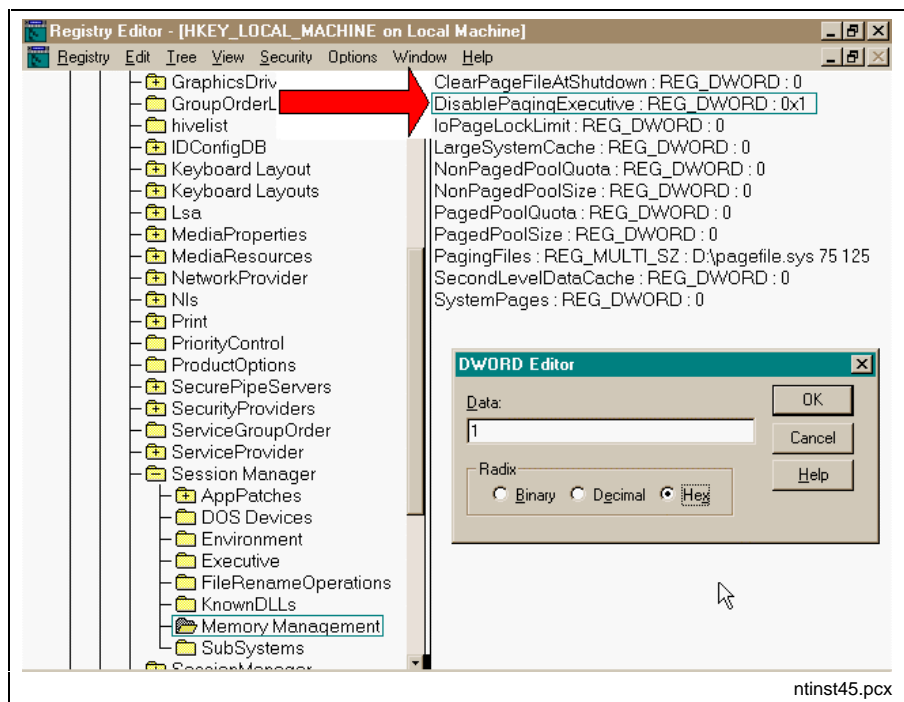
Figure 3-3: REGEDT32.EXE: DisablePagingExecutive

Idle Sensitivity

In order to achieve a more efficient utilization of the CPU resources during the idling phases of a foreground program (DOS box), the idle sensitivity of the "_default" file must be set to **high**. This selection provides less resources for the background programs. This means that as much CPU power as possible will be passed on to other active applications while the DOS box is idling.

1. Mark the "_default" file in the \\WINNT directory in the WindowsNT explorer.
2. Click on the _default file with the right mouse key and select **"Properties"**.
3. Select the **Misc** tab and select "high" idle sensitivity.

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ntinst32.pcx
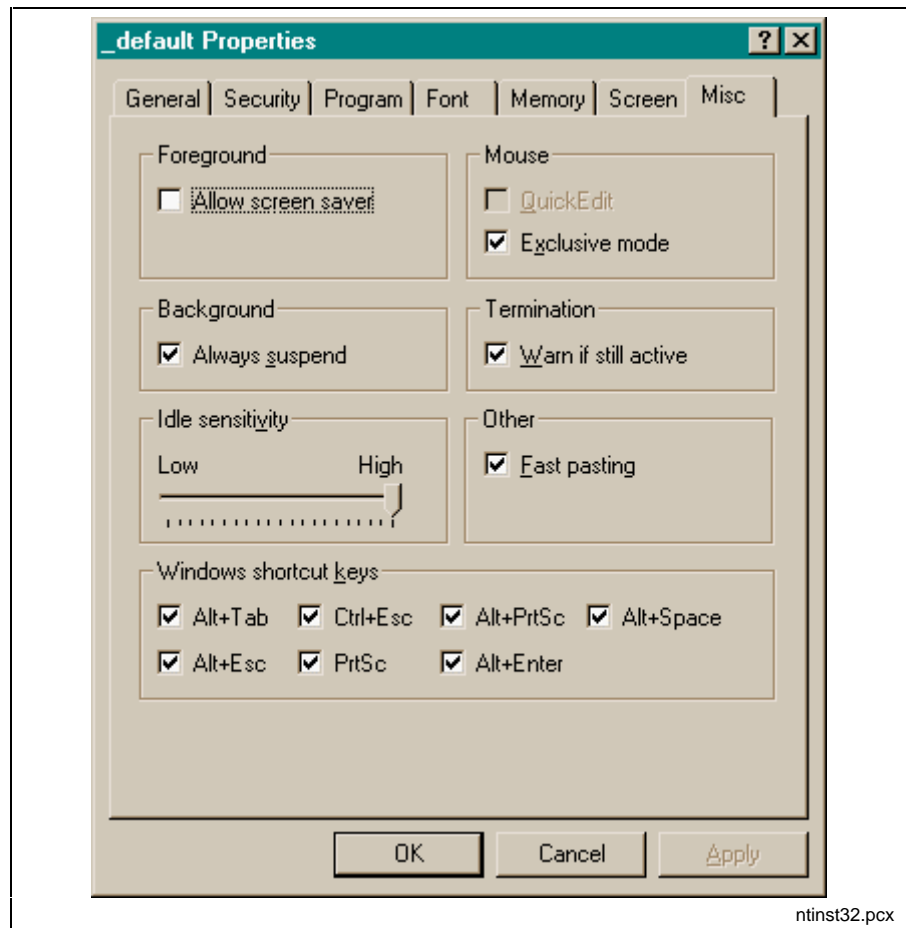
Figure 3-4: Settings in "_default.pif": Idle Sensitivity

Network services

If you have installed the network services that are provided by WindowsNT without actually being connected to a network, there will be a long waiting time (approximately 2-5 seconds) when you change menus. This is caused by system-internal time-outs. There are 2 possibilities to solve this problem:

⇒ Uninstall the network services according to the WindowsNT system description

- or -

⇒ Generate two hardware profiles (with and without network services) according to the WindowsNT system description. This will cause an option menu to be displayed upon the next system start from which you can select a configuration with network services or one without.

3.3   First Installation of MTC200/ISP200

CD/Disk Installation   The installation can be executed with CD or with diskettes. For the following description drive "D" is used as an example for an installation from CD, and/or "A" is used for a floppy drive.

1.   Insert the CD-ROM into the corresponding drive of your PC.

- or -

⇒   Insert the 1st diskette into the corresponding drive of your PC.

2.   Click on **Execute** in the start menu.

3.   Type the letter for the corresponding drive together with ":\SETUP.EXE".

When you install your system from a CD-ROM, type, for example: "D:\SETUP.EXE".

When you install your system from diskettes, type, for example: "A:\SETUP.EXE".

ntinst00.pcx
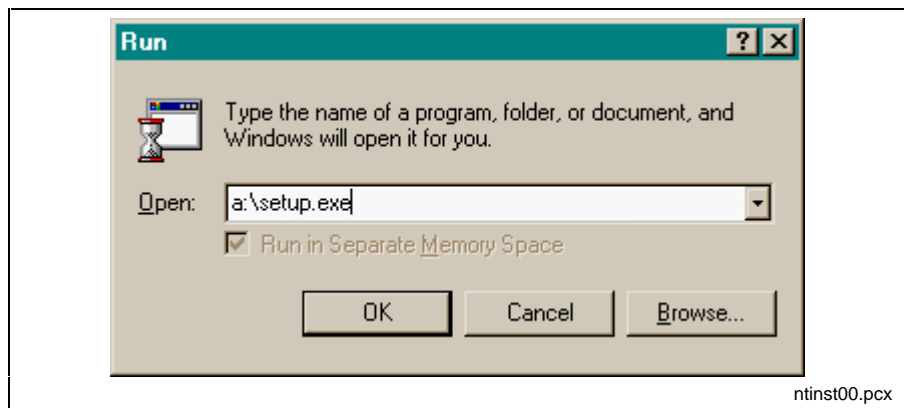
Figure 3-5: WindowsNT dialog box "Execute"

4.   Click **OK** or confirm with **<Enter>**.

5.   Select the installation language.

The installation program is loaded.

02.tif

Figure 3-6: The installation program is loaded.

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Follow the following installation instructions now. Confirm with **Yes** or **Continue** until the selection between "New Installation" and "Update Installation" is displayed.

6.   Select **New Installation** and **Continue**.
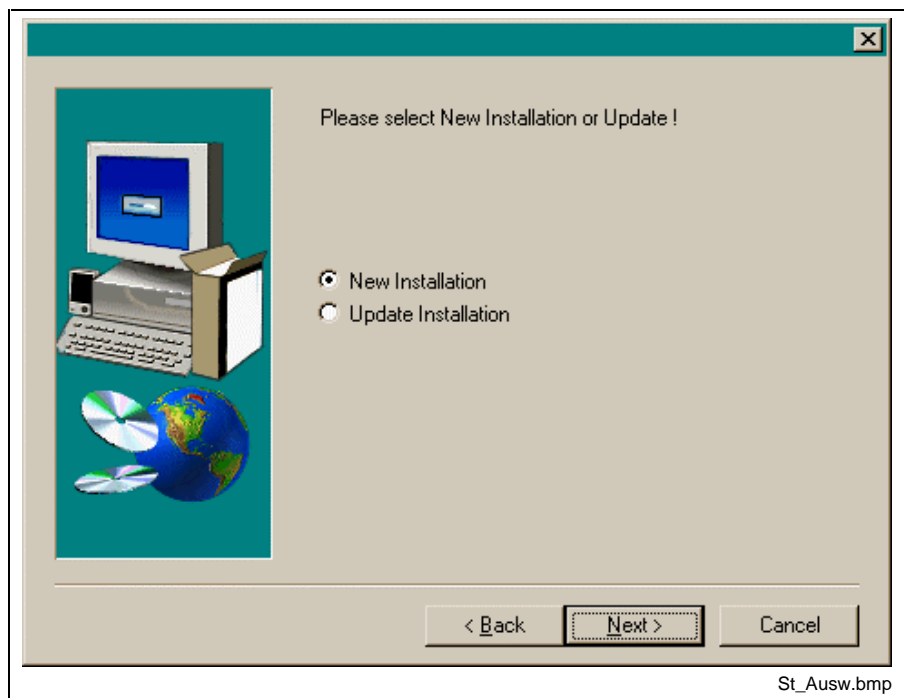
Figure 3-7: Installation selection

7.   Enter name and company of the rightful user.
8.   Enter the serial number of the software. The serial number is printed on the diskette set or on the CD-ROM label.
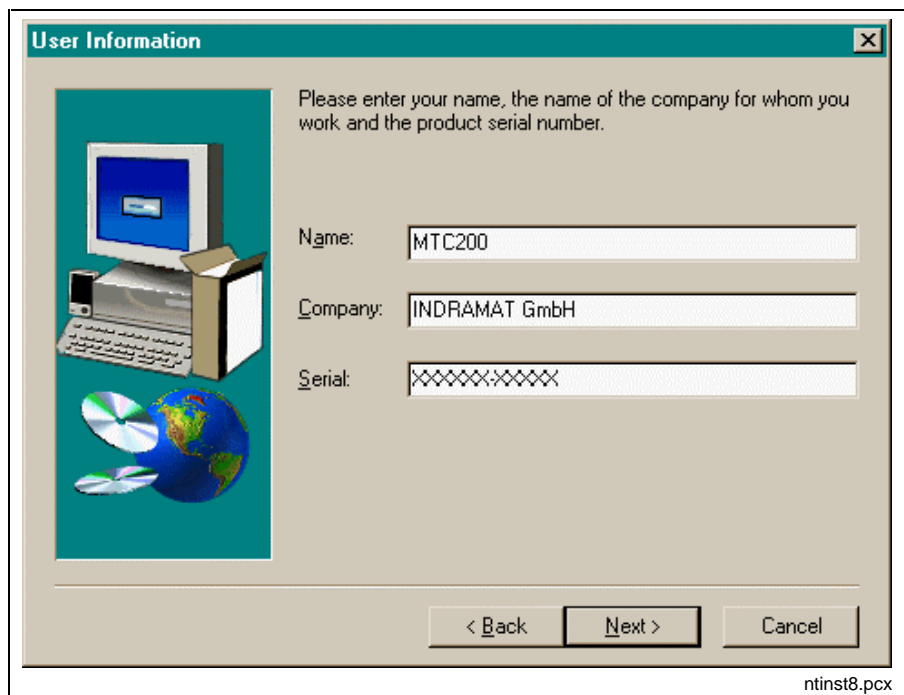
Figure 3-8: Company information and serial number

9.   Select drive D: in the following dialog in order to install the interface.

Note:	With a standard BTV, the hard disk is separated into two partitions (C: FAT file system, D: NTFS file system). The interface must be installed on drive D: for safety reasons.

10. Follow the further instructions of the setup program until you are prompted to enter the folder for the program symbols.

11. Enter a name for a new program folder or select an existing folder.

Note:	Ensure that you do not select the Autostart group. User interface and system configurator cannot be started simultaneously.

12. Enter name and password of the administrator in the following dialog. Only the administrator can create new users.

⚠ **CAUTION**	⇒ Be sure that you always remember the exact entries you made for user name and password. If you forget the entries, you must clear the interface from the hard disk and install it again. In this process you will lose the user data. **In this case contact INDRAMAT's customer service, they can assist you in finding the password.**

ntinst17.pcx
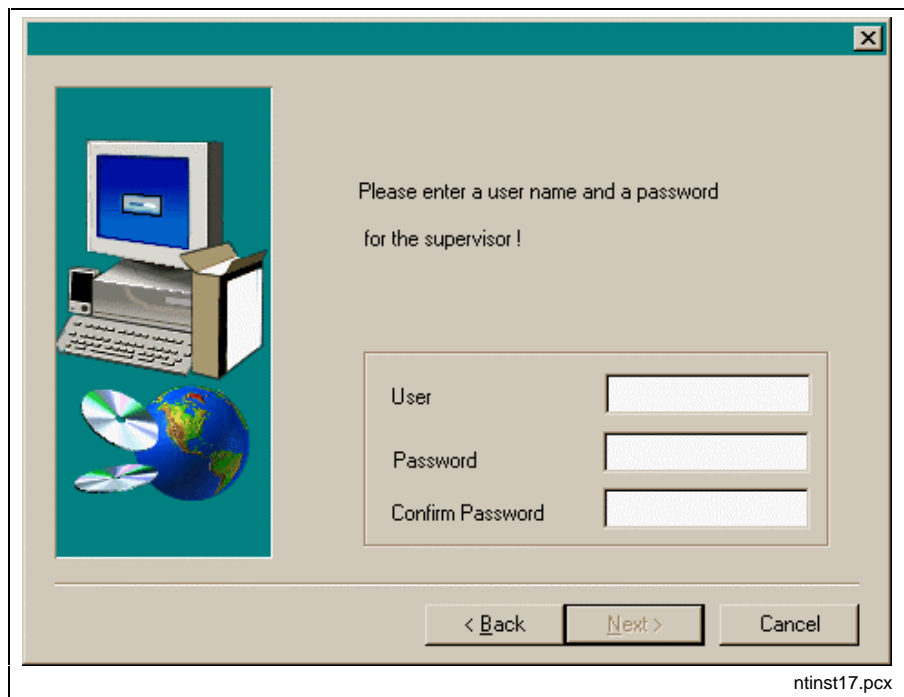
Figure 3-9: Enter user name and password of supervisor

13. Follow the further instructions of the setup program.

If all information has been entered, the copy process is started. With diskette installations you are prompted to change the diskettes.

Message Integrator   During the installation you are prompted if you would like to install the Message Integrator. It is used for multilingual parameterization of

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message texts for general faults and sequential function chart messages. The texts are saved in an Access database.
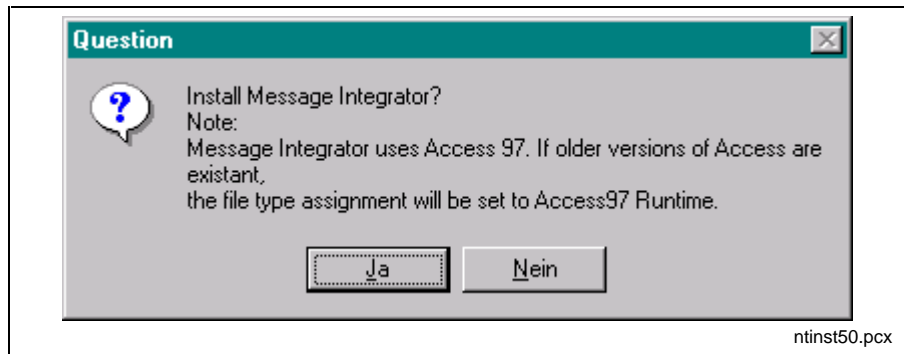
Figure 3-10: Installation of Message Integrator

Once the installation is completed, you will be asked whether the installation program shall install icons on the desktop.

⇒ Select **Yes** if icons are to be created or select **No** if you don't want to display icons on the desktop.

Then the installation is finished.

Hinweis: You must restart Windows and/or your computer before you can use the program.

Load Firmware/SPS Program

After the installation of the interface it is necessary to update the firmware. Proceed as described in chapter 5, 'Install/Update Firmware'.

Also the SPS program must be loaded into the control.

3.4   Update MTC200/ISP200 Installation

Before you start updating an existing older GUI version to this new version, you should remember the following points:

- An update to the current version is possible from any previous GUI installation.

- Restore all user data items (backups) that shall be converted for this new version in the existing old GUI form. To do this, use the archiving utilities of the old and currently installed GUI version. This is necessary because backups of earlier GUI versions can not be read and/or converted when they are retrieved or restored with the new version.

- When you update the GUI of a machine you must ensure that all components of the MT-CNC system are equipped with the correct firmware. To obtain information about the firmware,

  - press **<Ctrl>+<F1>** in the menu item 7 of the GUI to print the firmware that is installed in the MT-CNC, RECO, BTM;

  - check the version that is displayed in the last screen line of the SOT main menu.

Note:	Updating is only possible if there is at least another 25 MB free space on drive that contains the current GUI installation. Prior to starting the update you should therefore use the 'DIR' command in the main directory of the hard disk to check whether there is a sufficient amount of free space on the hard disk available.

Type designation
of the GUI software: GBO-18V00
                                              │ └── Release version
                                              │────── Version
                                              └────── Type: GUI

For updating the MTC200/ISP200 insert the CD-ROM into the CD-ROM drive or disk 1 into the corresponding floppy drive of your PC.

Follow the installation instructions of the setup program and confirm with **YES** or **Continue** until the window for the installation selection is displayed. Click on **Update Installation** and confirm with **Continue**.

Follow the installation instructions.

When you use diskettes for the update installation, you will now be prompted to insert the corresponding diskettes.

⚠ **CAUTION**	⇒ A complete new installation becomes necessary if you abort the update installation during the copy process.

Once the installation has been completed, the system asks you whether the installation program shall update the icons on the desktop or create new once if there aren't any.

⇒   Select **Yes** if icons are to be created or select **No** if you don't want to display icons on the desktop.

The update is finished now.

Note:	You must restart Windows and/or your computer before you can use the program.

3.5   Further Steps Before First Operation

Execute System Configuration

Before the control is used for the first time, the system must be configured. The system configurator determines which devices are connected to the control PC, the status they have and the communication ways that are used by the devices. Please refer to chapter 4 "System Configurator".

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Load Firmware/SPS Program

After the new installation of the interface it is necessary to update the firmware. Proceed as described in chapter 5, 'Install/Update Firmware'.

Also the SPS program must be loaded into the control.

4   System Configurator (WindowsNT)

4.1   Utilization

The system configurator is an editor that is used for defining and listing units that are connected to the controller PC. The device addresses, the device type and the description of the communication path to the unit are employed for this purpose. The goal is to create an image of the unit structure (known as the system configuration) that is connected to the controller PC. The system configuration is stored in the controller PC.

Furthermore, the units can have basic features assigned, such as the allocation of a unit of the MTVNC type (virtual MTC for the "off line simulation function") to a unit of the MTC200-P or MTCNC type for the purpose of generating a simulation pair.

Function interface and user interface employ the system configuration for organizing the communication with the units that are connected to the controller PC.

4.2   Call System Configurator

After a new installation of the interface, the system configurator is called automatically the first time the interface is started.

In order to change an existing configuration call the system configurator in the start menu or with the icon on the desktop.

4.3   Menu Structure and Data Input
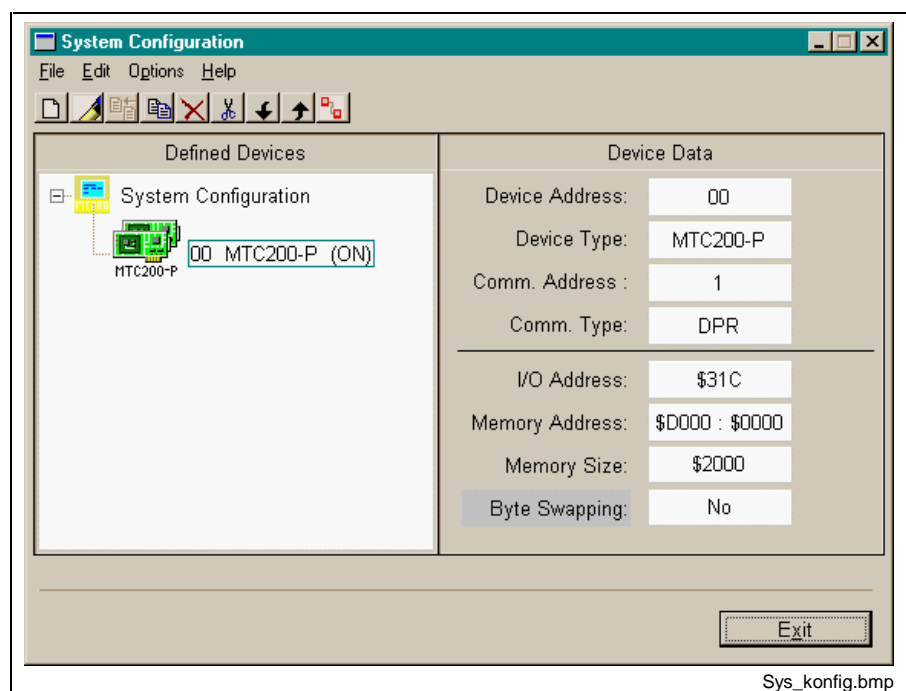
Figure 4-1: Screen System Configurator

Screen Structure   The left-hand half of the screen contains a graphical representation of the configured units in a tree diagram. The data related to the unit that is selected in the tree is displayed in the right-hand half of the screen.

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Data input   An assistant guides the user during the processes of entering data, entering a new unit or editing an existing unit.

Typical scenario   If, for example, an MT-CNC02 (address 0 selected at the address switch) is connected via RS232 to COM2 of the controller PC, this configuration must be entered in the system configurator, i.e. a unit of the MTCNC type with device address 0, etc.

If the physical configuration of a device is changed, the device must be adjusted/edited in the system configurator. If for example for device 0 the connection at the control PC is changed from COM2 to COM1, the device 0 must be edited in the system configurator, i. e. COM1 instead of COM2 must be entered.

A detailed description of the system configurator is available under **DOK-CONTRL-SYS*CON*V17-ANW1-EN-P**.

5 Install/Update Firmware

5.1 General Information

The controller components of the MTC200 product family are equipped with electrically erasable flash memories. Replacing EPROM chips is not necessary for installing or updating the firmware of these components. Instead, the firmware is simply loaded via the PC like any other software.

Note: This functionality only exists for Indramat controller components. Third-party elements, such as fieldbus interfaces or network modules cannot be controlled via this function.

5.2 Before you install/update

Firmware programming is not a part of the installation program. This function can only be reached via the setup screen after the interface has completely been installed.

Backup user data   **Before loading the firmware, a backup of the user data is necessary, otherwise the user data will be overwritten.**

Language selection   You must have selected the language before you reach the setup menu. When the interface is installed, the German as well as the English version are installed. Select one of the versions.

For the installation of optional languages please refer to the delivered documentation.

5.3 FWA Programming

Firmware programming is a menu item of the setup. The setup menu is called with a key combination in the main menu.

Call FWA Programming

1. Confirm the key combination**<Shift>** + **<F1>** in the MUI main menu.
    The language selection screen is displayed.
2. Select the language.
    The setup menu is displayed.
3. Select **FWA programming**.
    The main screen of the FWA programming is called.

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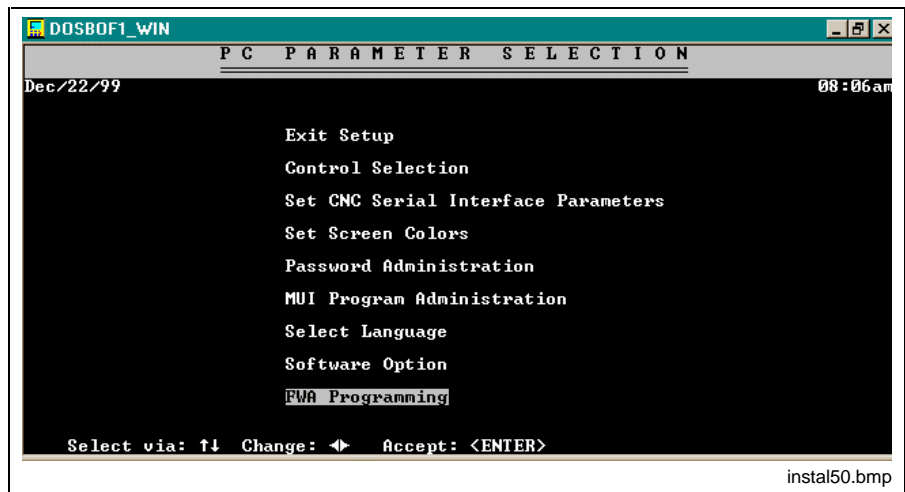
Figure 5-1: Setup menu in the interface

Save Modifications

The menu item **Exit Setup** saves modifications and the MUI main menu is displayed.

Note:	After extensive modifications, the initialization upon the termination may take some time.

5.4   Execute FWA Programming

The following screen is displayed when you select the **FWA programming** menu item:
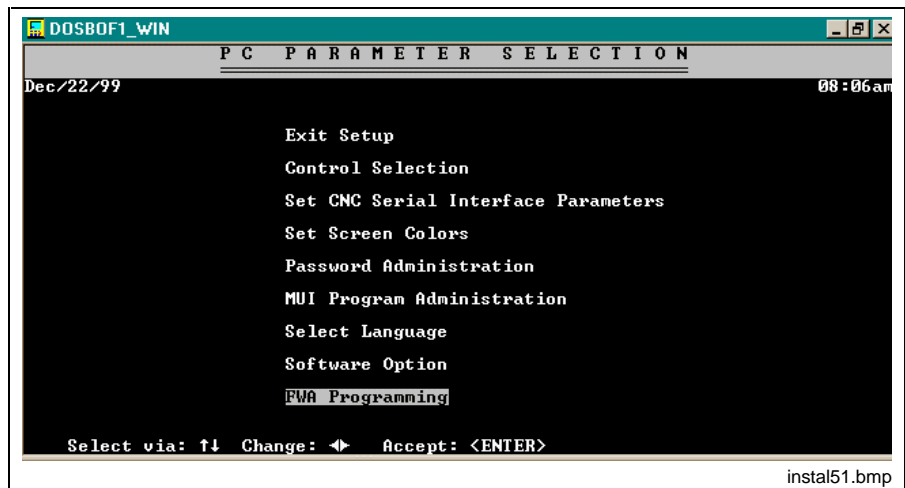
Figure 5-2: Firmware Programming

The softkeys allow to

- **<F2>** delete the user data from the individual modules
- **<F5>** load all cards in the system with the current firmware
- **<F6>** transfer the firmware after the selection of a card for one special card.

Delete Memory

The function key **<F2> Delete Memory** allows to delete user data from the individual modules. The firmware data, however, is not deleted. This can be necessary for example in order to initialize the control.

1. Position the cursor on the module from which the user data is to be deleted.
2. Press **<F2> Delete Memory**.
3. Confirm the safety prompt with **<Y>**.

The control is shut down and the user data is deleted.

Complete Firmware Download

The software is completely transferred to all modules of the control by selecting **<F5> FWA rel. download**.

1. Press **<F5> FWA rel. download**.

   The file selection window is opened.
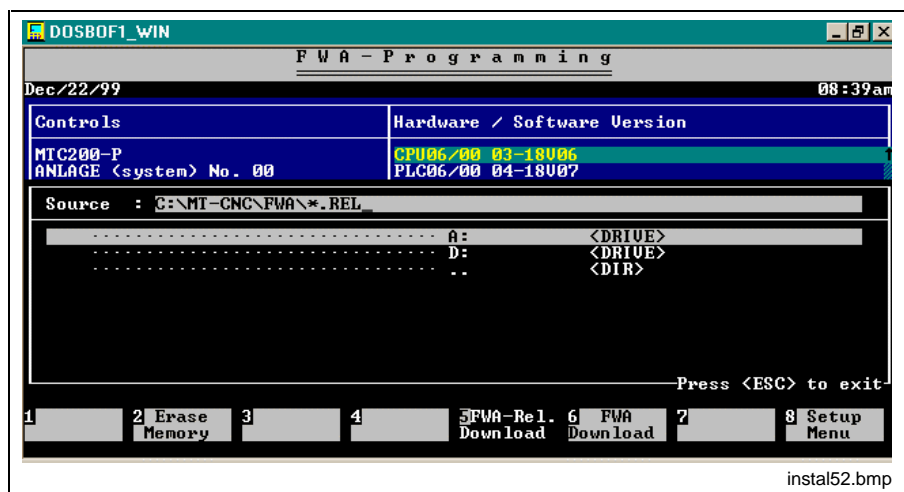
Figure 5-3: Complete firmware programming

As a default the firmware data in the default directory on the hard disk are proposed in the "source" window. <Tab> allows to switch to the drives/directories window.

You need the firmware diskette (SWD-MT*FWA-004-18Vxx-NN-C1,44), that is a part of the SWA-MTC200 scope of delivery, if the data is not on the hard disk. If it is, you only need a firmware diskette if you wish to update the firmware.

2. Select the directory or drive where the firmware data is located and confirm with **<Enter>**.
3. Position the marking on the release and press **<Enter>**.

   The following screen is displayed.

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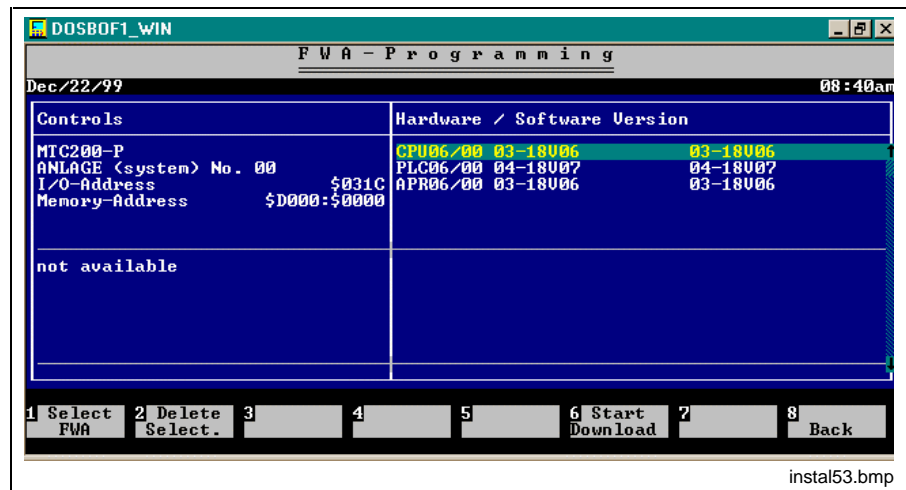
Figure 5-4: Transfer FWA programming data

The right-hand window now contains the following list:

At the left-hand side you can see the firmware that is currently loaded in the firmware. In the right-hand section you see the firmware version that shall be transferred.

Now it is still possible to change the selection. In order to exclude firmware from the selection or in order to add firmware, proceed as follows.

Change selection

Delete selection

1. Position the marking on the module which is to be removed from the selection.

2. Press **<F2> Delete Selection**.

   The firmware list entry on the right is removed for the concerning module.

Add selection

1. Position the marking on the module which is to be added to the selection.

2. Press **<F1> FWA Selection**.

   The firmware version for the concerning module is displayed on the right side of the window.

Start download

Press **<F6> Start download** to start the firmware download.
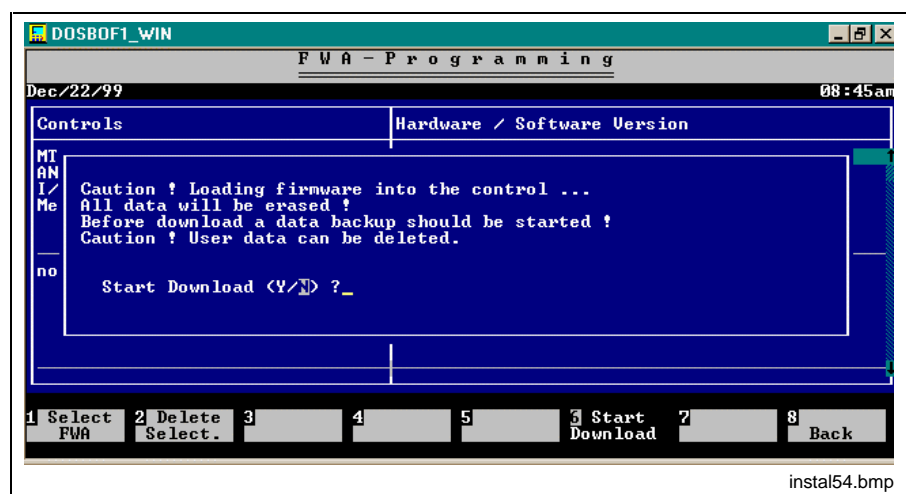
Figure 5-5: Confirmation FWA download

The transfer starts once you have answered the safety prompt with **<Y>**. The control is shut down, the data is transferred and the control is started again.

A progress control bar informs you about the progress of the procedure.

Selective Firmware Download

The execution of a selective firmware download corresponds to the procedure of a complete firmware download that is described above. The difference is that the new firmware, however, is transferred to selected cards exclusively.

1. Press **<F6> FWA rel. download**.

   The file selection window is opened. At the right-hand side you can see the firmware that is currently loaded in the firmware.

2. Position the marking on the module for which the firmware is to be loaded.

3. Press **<F1> FWA Selection**.

   The file selection window is displayed.

4. Select the drive and the file as described under complete download.

   The selected version is transferred to the right side of the window.


```
DOSBOF1_WIN                                                    _ ð ×
                    P C   P A R A M E T E R   S E L E C T I O N
Dec/22/99                                                          08:06am


                        Exit Setup
                        Control Selection
                        Set CNC Serial Interface Parameters
                        Set Screen Colors
                        Password Administration
                        MUI Program Administration
                        Select Language
                        Software Option
                        FWA Programming


        Select via: ↑↓   Change: ◄►   Accept: <ENTER>
```
instal51.bmp
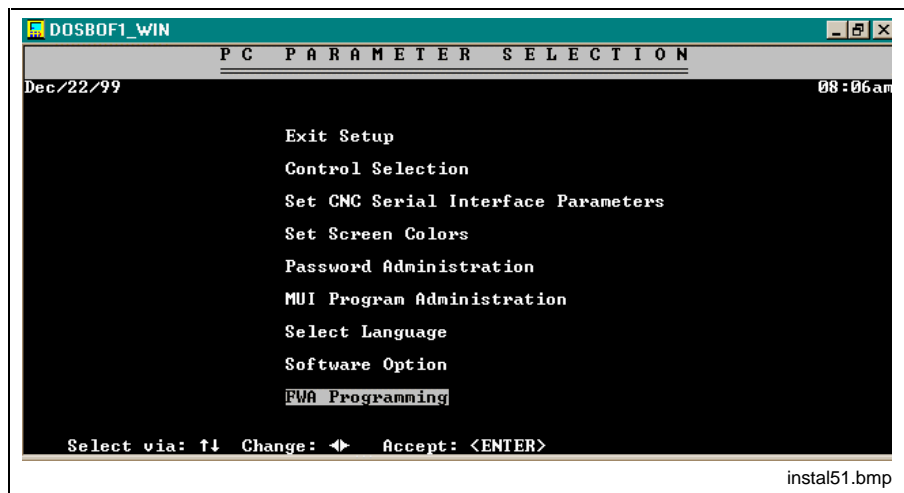
Figure 5-6: Firmware Programming

5. Execute the selection for all required modules.

6. Start the download with **<F6> Start download**.

The transfer starts once you have answered the safety prompt with **<Y>**.

Then the firmware programming is finished.

Note: Transfer the backup user data to the control after the firmware programming is finished.

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8 Kundenbetreuungsstellen - Sales & Service Facilities

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