SIEMENS

SINUMERIK 840C
Software Version 6

Installation Guide **09.2001 Edition**

Start-Up
Difference Description
OEM Version for Windows™

Manufacturer Documentation

SIEMENS

SINUMERIK 840C
Software Version 6

Start-Up Difference Description
OEM Version for Windows™
Installation Guide

Valid for

Control	*Software version*
SINUMERIK 840C/CE (Standard/Export Version)	6

09.01 Edition

SINUMERIK® documentation

Printing history

Brief details of this edition and previous editions are listed below.

The status of each edition is shown by the code in the "Remarks" column.

Status code in the "Remarks" column:

A .... New documentation.

B .... Unrevised reprint with new Order No.

C .... Revised edition with new status.

Edition	Order No.	Remarks
08.94	6FC5197-3AC30-0BP0	**A**
11.94	6FC5197-4AC30-0BP0	**C**
03.95	6FC5197-4AC31-0BP0	**C**
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04.96	6FC5197-5AC30-0BP1	**C**
07.97	6FC5197-6AC30-0BP0	**C**
01.99	6FC5197-6AC30-0BP1	**C**
09.01	6FC5197-6AC30-0BP2	**C**

This manual is included in the documentation available on CD-ROM (**DOCONCD**)

Edition	Order No.	Remarks
10.01	6FC5 198-6CA00-0BG2	**C**

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You will find further information in the Internet under:
http:/www.ad.siemens.de/sinumerik

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Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

We have checked that the contents of this document correspond to the hardware and software described. Nonetheless, differences might exist and therefore we cannot guarantee that they are completely identical. The information contained in this document is, however, reviewed regularly and any necessary changes will be included in the next edition. We welcome suggestions for improvement.

Subject to change without prior notice.

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Preface

Structure of the documentation

The SINUMERIK documentation is organized in 4 parts:

- General documentation
- User documentation
- Manufacturer/Service Documentation
- OEM Documentation

Target group

This documentation is intended for the OEM partner and the machine tool manufacturer who use the SINUMERIK 840C OEM Version for Windows™.

Standard scope

This Installation Guide describes the installation of the software, the startup and the differences and supplements to the SINUMERIK 840C/CE basic version SW6.

The software of the integrated MMC of SINUMERIK 840C OEM Version Windows™ comprises the following operating systems:

- MS-DOS 6.22
- MS-Windows for Workgroups 3.11 (WfW 3.11)
- FlexOS

The control can be booted both under the operating system WfW 3.11 and under FlexOS. If FlexOS is booted, the control has the same functionality as SINUMERIK 840C/CE (basic version).

Complete start-up of the control, especially the machine data dialog, is only possible if the control is booted under FlexOS. Therefore, the manufacturer and service documentation for the SINUMERIK 840C/CE (basic version) control and especially the Installation Guide are also valid in full for the OEM version described here.

Booting under MS-Windows allows the OEM partner or the machine tool manufacturer to integrate his own technological know-how in the control using a widely accepted operating system platform. Furthermore, MS-Windows allows the wide range of low-cost software available for industrial and technical applications to be integrated in the control.

Notes

The SINUMERIK 840C/CE Installation Guide is divided into two parts:

- Installation Instructions 840C
- Installation Lists 840C

The additional edition with the title "SINUMERIK 840C, Installation Guide Lists" gives the commissioning engineer further aids in the form of lists and notes on the NC and PLC machine data and setting data, as well as lists relating to the alarms from the control and the programming device.

The Manufacturer Documentation for the SINUMERIK 840C control is divided into the following parts:

- Interface:
  - Part 1: Signals
  - Part 2: Connection Conditions
- Planning Guide PLC 135WB/WB2/WD
- Function Macros
- Planning Guides
  - Package 0: Basic Functions
  - Package 1: Tool Management
  - Package 4/5: Computer Link
  - Package 7: Code Carrier
  - Package 8: PLC-controlled data input and output

Further SINUMERIK publications apply to all SINUMERIK controls (e.g. Measuring Cycles, CL 800 Cycle Language).

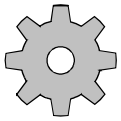
Consult your local Siemens office for more details on further publications.

Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

Important

This Installation Guide is valid for:

Control SINUMERIK 840C OEM Version Windows™, Software Version 4, 5 and 6.



Machine manufacturer

For safety reasons, some functions are locked against unauthorized access. Pay attention to the information provided by the machine manufacturer.

The following notes with particular importance are used in the documentation:

Note

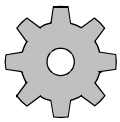
This symbol appears in the documentation whenever mention is made of further important points.

Important/Caution

This symbol appears in the documentation whenever attention must be paid to something of particular importance.

Ordering data options

Occasionally you will encounter in this documentation the symbol shown here with a note referring to an option. The function described is only executable if the option has been ordered with the control.



Machine manufacturer

This symbol appears in the documentation whenever the described function behavior can be influenced or modified by the machine manufacturer. Pay attention to the information provided by the machine manufacturer.

Warnings

The following warnings with graded importance are used in this documentation:

Danger

This symbol appears whenever death, severe bodily injury or substantial material damage **will** occur if the appropriate precautions are not taken.

Caution

This symbol appears whenever minor bodily injury or material damage **can** occur if the appropriate precautions are not taken.

Warning

This symbol appears whenever death, severe bodily injury or substantial material damage **could** occur if the appropriate precautions are not taken.

Caution

This warning (without warning triangle) indicates that material damage **can** result if proper precautions are not taken.

Notice

This warning indicates that an undesirable situation or condition **can** occur if the appropriate instructions/information are not observed.

Contents

1 Start-Up 1

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1.1 Accessing the CD-ROM with the PC-Link software

Installation sequence

1. Install PC-Link on the external PC with "install.bat".
2. Connect the control to the external PC with a parallel cable.

Note

The PC-Link connection required for installation does not fulfill the EMC regulations required for operation and must only be used for servicing (parallel transmission cable, Order No.: 6FX2 002-1AA02-1AD0).

3. The remaining installation sequence is described in the file "readme.txt" in the root directory. The file "readme.txt" is generated with "install.bat".

Note

In order to trigger Backup, Install or Restore on the external PC you must select the relevant menu item on the control (Backup, Install or Restore).

Important

The menu items Backup, Install and Restore in the PC-Link program on the external PC are not enabled until the corresponding menu item (Backup, Install or Restore) is selected on the control..

Expansion options with Backup/Restore User Data

The paths to be saved during backup are stored in the file "back840c". By selecting menu item "Settings/Controlfile" you can select the control file and save it in file "pc-link.ini" with "Settings/Save". In this way, the user can save his own user files.

Note

With PC-Link, the backup menus have partially been changed.

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1.2 Starting up the MMC CPU

The software is supplied ready installed on the MMC CPU. The hard disk of the MMC CPU contains the system software in the five basic languages, the Windows systems for the five languages and the Windows installation directory (English). The Windows systems and Windows installation directory are on the hard disk in the form of self-extracting EXE files. These must be unpacked during start-up. The volume of the software supplied is approx. 150 Mbytes.

For upgrades the software can be ordered on magnetic tape. The entire software upgrade/update set for the SINUMERIK 840C OEM Version for Windows control consists of two tapes. The software is read into the control either with Valitek streamer PST-160 (older model) or with the new PST2-M1200 streamer (see upgrading/updating instructions).

The new PST2-M1200 streamer can also read tapes of the older PST-160 model.

At present, software upgrades are supplied only on CD and are transferred via PC-Link (on the CD) from an external PC to the control.

1.2.1 Start-up procedure

- Mount the MMC CPU supplied in the rack and switch on the control.
- Set correct time and date.
- The control boots MS DOS 6.22 and the following start-up menu is displayed.

```
Copyright (c) Siemens AG 1997. All rights reserved
       Main menu SIN840C-Windows:.......
       ================================
          1. Restore/Backup/Install/Uninstall
          2. Boot MMC-Flexos
          3. Extended functions
          4. Calibrate display
          5. Check and reorganize hard disk (with system restart)
          6. Perform a surface scan of hard disk
          0. End ...reboot MMC-Windows
       ================================
       Enter your Choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-1: Main menu of 840C Windows

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Important
The backed-up files can be read individually into the control again via PC-Link and an external PC using the respective menu items.

To make a complete backup of the software, first select this menu item in the basic menu:

1. Restore/Backup/Install/Uninstall

The following menu appears

```
Copyright (c) Siemens AG 1997. All rights reserved
Restore/Backup/Install/Uninstall - streamer PST-160
================================================

 1. Backup system  (all files on disk to tape)
 2. Restore system (all files on tape to disk)

 3. Backup user data...
 4. Restore user data

 5. Backup INI-files     (all files *.ini on disk to tape)
 6. Restore INI-files... (all files *.ini on tape to disk)

 7. Set I/O device...

 8. Uninstall/Install/Unpack...

 9. Free data transfer via PC-Link...(Attention!!!)

 0. END...
================================================
 Enter your choice...:=[1,2,3,4,5,6,7,8,9,0]?
```

Fig. 1-2: Menu: Restore/Backup/Install/Uninstall

- First check the streamer type and change the type if necessary by selecting this menu item:

  7. Set I/O device

  The streamer set or the PC-Link is displayed in the menu heading.

- After setting the streamer type you can make a complete backup of the hard disk using the menu item

  1. Backup system (all files on disk to tape)

  Using PC-Link 2.1, a packed EXE file is created on your external PC.

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1.2.2 Unpacking the Windows language directories

After successfully making a backup of the hard disk on tape you can now unpack the Windows language versions to be installed.

8. Uninstall/Install/Unpack...

- The following menu is then displayed:

```
Copyright (c) Siemens AG 1997. All rights reserved
  Uninstall/Install/Unpack - Device PST-160
================================
   1. Uninstall windows software...
   2. Install packed windows software...
   3. Unpack packed windows software...
   4. Delete packed windows software...
   5. Set I/O device...
   0. END...
================================
Enter your choice...:=[1,2,3,4,5,0]?
```

Fig. 1-3: Menu: Uninstall/Install/Unpack

3. Unpack packed windows software...

The following menu is then displayed:

```
Copyright (c) Siemens AG 1997. All rights reserved
Unpack windows systemsoftware. Delete packed files after unpack
   ================================

   1. Delete packed file after unpack
   2. Do not delete packed file after unpack

   3. Select language to unpack...
   4. Unpack windows german (windeu.exe)

   5. Unpack windows in all languages (c:\win* except c:\wininst)

   6. Unpack windows installation directory (c:\wininst)

   0. END...
   ================================
   Enter your choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-4: Menu: Unpack windows system software

With the first two menu items you can select whether the packed version is to be deleted automatically after unpacking.

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- To save disk space you can select the following option:

  1. Select **Delete packed file after unpacking**
     and your packed language version is deleted on the hard disk. If this is not desired, select menu item 3.

  3. **Select language to unpack**

     and then unpack them with the following menu item.

  4. **Unpack windows...**

After unpacking the individual language versions the control is fully operational in the required language versions.

For space reasons, you delete all language files that are **not** required from the hard disk.

- To do so, select in the menu *Restore/Backup/Install/Uninstall* the menu item:

  4. **Delete packed windows software...**

The following menu then appears:

```
Copyright (c) Siemens AG 1997. All rights reserved
 Delete packed windows software
================================

 1. Select language to delete...
 2. Delete packed windows german (windeu.exe)
 3. Delete packed windows in all languages (win*.except
                                              wininst.exe)
 4. Delete packed windows installation directory (wininst.exe)
 0. END...

================================

   Enter your Choice...:=[1,2,3,4,0]?
```

Fig. 1-5: Menu: Delete packed windows software

- With menu item 1, you can select a language version not required, which can then be deleted in menu item 2. In this way, the disk space occupied by these files is made available again.
- In the basic menu, the control can be started via menu item

  0. **End ...reboot MMC-Windows**

The first time the control is booted, the system branches automatically into the menu for changing the language. Having selected the required language and rebooted the system, the control is ready for start-up.

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1.2.3 Installation of Windows resources

The actual installation of Windows resources, such as network cards, printers etc. is performed using the control panel of Windows (menu: **Services/Control panel).**

This menu item is described in Section 1.4.2. The required drivers must be located in the directory:

C:\WININST

This directory can be created using this menu item:

6. Unpack windows installation directory (c:\wininst)

To install Windows resources, the following method is recommended:

- Unpack the WININST directory using the menu item:

  6. Unpack windows installation directory (c:\wininst)

- Install the required components via the Windows control panel.

  During actual installation via the control panel, make sure that the path name A: is replaced by C:\WININST when installation disks are requested.

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Important

The installed resource (printer, network card, etc.) is only available in the Windows language version that was active when the resource was installed.

If the resource is required in several language versions, it must be installed separately in each Windows language setting.

Alternatively, you can make the changes directly in the Windows system files *SYSTEM.INI* or. *WIN.INI* in each of the Windows language directories.

After successful installation, directory C:\WININST and the packed file WININST.EXE can be deleted for storage capacity reasons.

Directory C:\WININST is deleted by the following operating sequence (starting in the main menu):

1. **Restore/Backup/Install/Uninstall**
1. **Uninstall windows software...**
5. **Uninstall windows installation directory (c:\wininst)**

Mouse connection

The OEM user can connect a mouse to the MMC CPU. We recommend connecting to the interface COM2. Interfaces COM3 and COM4 on the MMC interface cannot be used since Microsoft does **not** support them for a mouse connection. As standard, the control panel is connected to the interface COM1.

The standard Siemens software is designed for operation without a mouse. If the OEM user wishes to connect a mouse, it cannot be assumed that all Siemens applications can be mouse-operated.

We recommend connecting a Microsoft-compatible mouse with standard cable length.

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1.3 Powering up the control under MS Windows

Control power-up and the transfer of data from the hard disk of the MMC to the memory of the NCK and PLC CPUs is divided into several phases.

1.3.1 Self-test and system power-up

Every time the control is switched on an automatic Power On self-test of the system (POST) is performed before the actual power-up. This test checks the memory, hard disk, system components and other functions of the system.

- If any configuration errors are detected, a message appears on the screen specifying them in more detail.
- If the POST was successful, MS DOS 6.22 is booted and the extended memory is tested.
- After booting MS DOS, the DOS program checks the integrity of the file system on the hard disk. During the test an appropriate message appears on the screen.

  If SCANDISK.EXE signals an error, this error can be corrected automatically with the command SCANDISK /F:
- In the next power-up step, WfW 3.11 is started and the link with the NCK and the PLC is established.

  After this the individual system components are booted.

1.3.2 Virus checker Syslock version 2.01 (SW 6.3 and higher)

General information on Syslock V2.01

The program Syslock V2.01 offers elementary recognition of viruses in the boot sector and in partition tables under DOS/WfW and Windows 95. It makes use of the fact that all viruses of this kind must install themselves in the memory area just below the 640 KB limit for technical reasons. The BIOS is, manipulated to reduce the available memory and to specify 639 KB, for example.

The Syslock driver makes use of this characteristic to detect a virus infection. In this a way, known viruses as well as viruses not identified by conventional virus scanners can be detected. To achieve this, one has to ensure that the relevant target system is free from viruses at the time of installation!

Syslock.exe has - on the basis of its program concept compared to conventional virus protection products – the advantage that regular updating of its program components can be done without.

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On the other hand, the driver is therefore, not able to identify individual viruses or to clear viruses from an infected system. For this, a full virus scanning product such as F-Prot, McAffee or Dr. Solomon is needed.

The virus alarm and how to react to it

When the program recognizes that the size of the main memory has changed since first initializing, the virus alarm 105057 CAUTION: Virus Alarm!!! is triggered. On the one hand, further program execution is halted for 30 seconds and a message is displayed on the screen. On the other hand, a message is logged in file C:\SYSLOCK.LOG. This file exists only when a virus alarm has been registered when Syslock was last started.

If such a virus message is reported, the system must be checked and put in order by a full virus scanner. However, the system must be started with a virus-free boot diskette to enable the virus scanner to function properly.

After cleaning up, the program Syslock.exe can be initialized again by deleting file C:\SYSLOCK.DAT. As this file is not only write-protected but also hidden, it must be accessed first with the command ATTRIB –R –H –S C:\SYSLOCK.DAT prior to deleting.

Compatibility problems

Apart from boot sector viruses, there are still some older HDD controllers which also reserve for themselves a certain area of the BIOS memory. Since Syslock does not check that 640 KB are indeed available, but instead registers any changes in the main memory size, this also enables Syslock to operate together with such programs.

If a virus message has been reported and the virus scanner does **not** detect an infection, please contact the manufacturer of Syslock.exe.

1.3.3 File manager 2000

The file manager (Winfile.exe) from Windows for Workgroups 3.11 shows a wrong file generation date if the date is equal to or greater than 1.1.2000. To rectify the problem, the old Winfile.exe is exchanged for a new year 2000 compatible version.

In the case of 840C OEM version Windows MMC CPUs, WfW 3.11 is already supplied with a year 2000 compatible file manager. To ensure that the file manager in WfW 3.11 is also year 2000 compatible with 840C OEM version Windows MMC CPUs already supplied and updated to SIN840C-Win SW 6.3, the relevant file manager is exchanged during system booting if necessary.

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Note

This update must be used only on Windows for work groups 3.11. Do not install this update on other Windows versions!

Automatic update procedure:

1. A check is made in all installed (unpacked) Windows directories (window, windeu, winfra, etc.) to establish whether the file winfile.old exists. If the fie does exist, an update has already taken place and a new update is unnecessary..
2. If the file winfile.old does not exist, an update must take place. The file WINFILE.EXE in the Windows directory is renamed to WINFILE.OLD.
3. The new file WINFILE.EXE is copied from the directory C:.namewin\win<xxx> to the Windows directory.
4. The new file WINFILE.EXE is copied additionally as file WINFILE.NEW.
5. The file c:\mmcwin\win<xxx>\readme.txt is copied as file WINFILE.TXT to the Windows directory.

1.3.4 Booting the system data

After start-up of WfW 3.11, the individual system programs are loaded. The system program of the NCK CPU is booted if one of the following conditions is fulfilled:

- The software (Boot-EPROM) of the CPU detects loss of the system program in the DRAM (the system program memory of the NCK is not battery-backed). The NCK operating system is thus booted after every Power on.
- A previous boot process was aborted by Power on or Power off.
- The NCK or PLC operating system detected a system error before Power off (or Power on reset) and can therefore not ensure data consistency (Alarm: Start-up by system error).

The boot process displays a Windows message box showing the type and volume of data transmitted.

Unlike the NCK system program that is booted after every Power off during start-up, the PLC system program is normally not loaded.

It is only loaded if one of the following conditions has been fulfilled.

- The software (Boot EPROM) of the CPU detects loss of the system program in the static RAM (system program memory of the PLC is battery-backed).

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- Forced booting is initiated in the start-up menu (replacement of the operating system).

The two 611-D system files for feed and main spindle drives are also booted during this phase, if they are used at all.

Important

As of SW 5, the corresponding entries for booting the FDD/MSD (VSA / HSA) systems are available in the BOOT840C.INI file in directory C:\MMCWIN\PC. They no longer need to be added by the start-up engineer.

As of SW 5, the configuration data for the DACs in the SIMODRIVE 611D drive modules can be saved in a boot file on the operator interface of FlexOS. These configuration data are automatically transferred to the SERVO during the booting procedure which reactivates the original DAC configurations.

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1.3.5 Loading the user data

In the next phase of the loading procedure, user data can be loaded. After booting the system programs, the NCK CPU branches to the booted system program and requests further data from the MMC:

- The UMS (if no customer UMS is installed and has been activated, the SIEMENS standard UMS is loaded at this point). The position of both the SIEMENS standard UMSs and the customer UMSs must be specified in the *BOOT840C.INI* file.

  This ensures that if the size of the customer UMS is incorrect, the standard UMS is loaded to the NCK by "flexible memory management". The following entries are required in the *BOOT840C.INI* file:

  [ASM]
  ASMDEF=<*path*><*name*> (entry for standard UMS)
  ASM=<*path*><*name*> (entry for customer UMS)

- User data

The user defines which data are to be loaded into the NCK memory during this phase of start-up in the file:

C:\MMCWIN\PC\LOAD840C.INI

The structure and syntax of the entries in this file are as follows:

[Files]
File1=<*path1*><*name1*>
File2=<*path2*><*name2*> etc.

In the [files] section, the complete path and the name of the file to be loaded must be specified.

Using the file manager of MS Windows, an ASCII editor (e.g. C:\DOS\EDITOR.EXE or C:\WINDOWS\NOTEPAD.EXE) can be started and the *LOAD840C.INI* initialization file can be modified accordingly.

Note

It is advisable to put the IKA2 and IKA3 records in the *LOAD840C.INI* file as well if IKA is used.

The IKA data are active immediately after the control has been started up without the user having to initiate a warm restart.

The IKA data can be copied using the menu item:

Diagnosis/Data transfer FlexOS

into the Windows name area under the following names:

C:\MD\USER\IKA1
C:\MD\USER\IKA2
C:\MD\USER\IKA3

With SW 6 and higher you can also copy NC-MDs, PLC-MDs and cycle MDs.

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The IKA files can be edited in the SINUMERIK file manager. The entry **MD User** must be selected in the combo box.

The combo box entry **MD User** in the SINUMERIK data manager is equivalent to the hard disk directory:

C:\MD\USER\

The menu-guided input of IKA data is only possible under MMC-FlexOS.

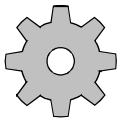
After the user data records have been loaded, the NC initiates a communication bus reset and runs its initialization programs (e.g. by preparing and calculating IKA records).

Note

The machine data TEA1, TEA2 and TEA4 are normally not loaded during start-up. They are located in battery-backed memory areas.

The drive machine data TEA3 are not located in battery-backed areas. They are automatically loaded from the hard disk to the drive when requested by the 611-D drive.

After this, all data are loaded that are stored in the STANDARD workpiece.



Machine manufacturer

The user can also define in NC MD 5025, bit 7, whether the workpieces last selected are to be transferred from the hard disk into the part program memory during this phase.

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1.4 General reset and standard start-up

During start-up of the control, NCK and PLC data are preset with standard or user values and memory areas are formatted. After this the control is restarted.

After replacing a module, the control must be started up again in the start-up menu in order to ensure correct functioning of the control and therefore also of the machine.

1.4.1 Selecting the start-up menu

There are two ways of selecting the start-up menu.

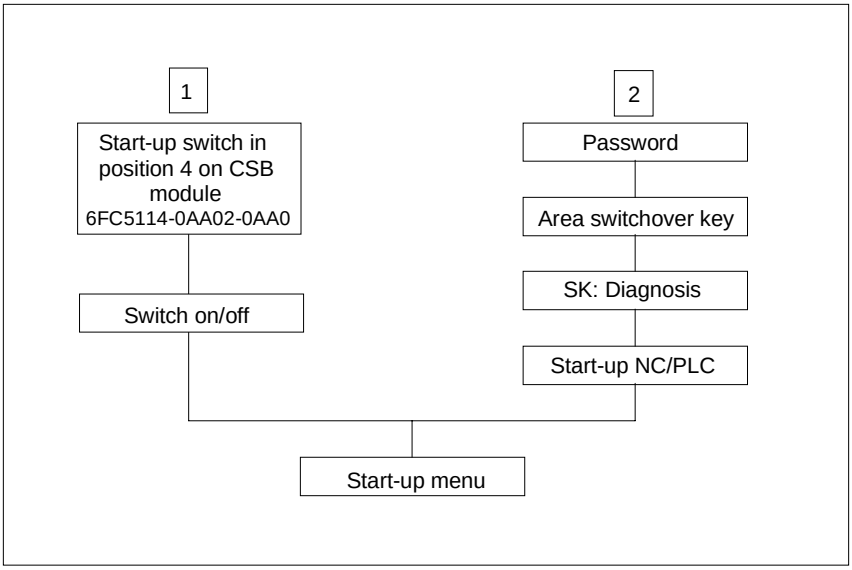

Fig. 1-6: Selecting the start-up menu

Option 1: The NCK is automatically in the general reset mode following mains off/on.

Option 2: The NCK is still in cyclic mode.

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1.4.2 General reset

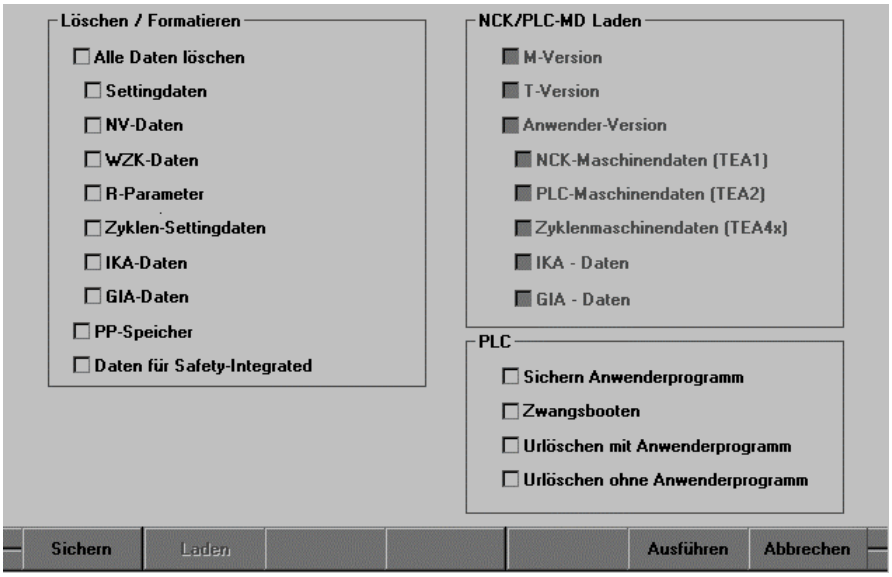

Fig. 1-7: Start-up menu

Start-up menu

The functions that are to be performed during start-up can be marked in the check boxes (space bar) in the start-up menu. Within each group, mutual exclusion of incompatible options has been taken into account.

Group Delete / Format

The functions within the "Delete / Format" group cause deletion and subsequent formatting of the marked memory areas. The original content of the memory is lost.

Delete all data

If the check box "Delete all data" is marked (marking with blank key), all the check boxes under it are automatically also marked. After the EXECUTE softkey has been pressed, the memory areas of the "Setting data", "Zero offsets", "Tool offsets", "R parameters", "Cycle setting data", "IKA data" and "GIA data" are deleted and reformatted.

Softkey SAVE

From 840C, OEM version Windows SW 6.4, this softkey allows all NCK and PLC system data to be saved on the hard disk. This allows them, for example, to be downloaded back into the control system after being uninstalled.

This function can only be executed after start-up was successfully completed. This softkey is the color gray if the system was not started-up (commissioned).

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The following system data are saved:

System data (/NC/SYS)	File	Comment
NCK machine data	TEA1	
PLC machine data	TEA2	
Cycles machine data	TEA4n	0:Central, 1..KANMAX:Channel No.
Stetting data	SEA	
Cycles setting data	SEA4n	1..KANMAX:Channel No.
Zero offset	ZOA0	
Rotary angle	ZOAn	1..KANMAX:Channel No.
Tool offsets	TOAn	1..KANMAX:Channel No.
R parameters	RPAn	0:Central, 1..KANMAX:Channel No.
Int. compensation data	IKAn	1..3
Gearbox internal data	GIA	
PLC user program	ANW_PROG	

Note

After start-up, drive machine data should be saved under FlexOS!

Softkey LOAD

From 840C, OEM version Windows SW 6.4, this softkey allows all NCK and PLC system data, which were previously saved with the save softkey, to be downloaded from the hard disk in the control.

This function can only be executed after the save function was executed. This softkey is gray if save was not executed.

If this function is not successful, the SAVE softkey goes gray, i.e. the SAVE function can only be executed after downloading or after start-up.

Softkey EXECUTE

The softkey EXECUTE initiates the start-up functions. After start-up, the NCK initial clear mode is selected (only necessary with option 2) and the individual functions are performed in an internally defined sequence. After this, the NCK is restarted in cyclic operation.

If general reset mode has been selected using option 1, the switch on the CSB must first be returned to position 0.

All operations required for execution (communication bus reset etc.) are performed automatically.

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If an error is signaled by the NCK or PLC during this automatic procedure, this message is displayed to the user in a message box. Functions that have not been executed completely are not cleared from the check boxes and can be continued (after remedying the cause of error) if you press the EXECUTE softkey again.

Note

If none of the check boxes are marked and the EXECUTE function is selected, only selection and deselection of the NCK initial clear mode is performed, i.e. a **PLC restart**.

Softkey CANCEL

With the CANCEL softkey, only the start-up menu is deselected. The system is not restarted. Deselection is only possible if the NCK is not in the general restart mode (option 2). With option 1 (start-up via CSB position 4), the CANCEL softkey is switched gray, i.e. the function cannot be performed.

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1.5 Services

This area contains both functions for global file manipulations and system settings and extended options for data transfer and backup by the service personnel.

1.5.1 Data import FlexOS

IKA

Using the "Data import FlexOS" menu, the IKA data (IKA1, IKA2 and IKA3) and with SW 6 and higher, the NC-MDs, PLC-MDs and cycle MDs, generated in the machine data dialog in FlexOS are copied to the MS Windows directory.

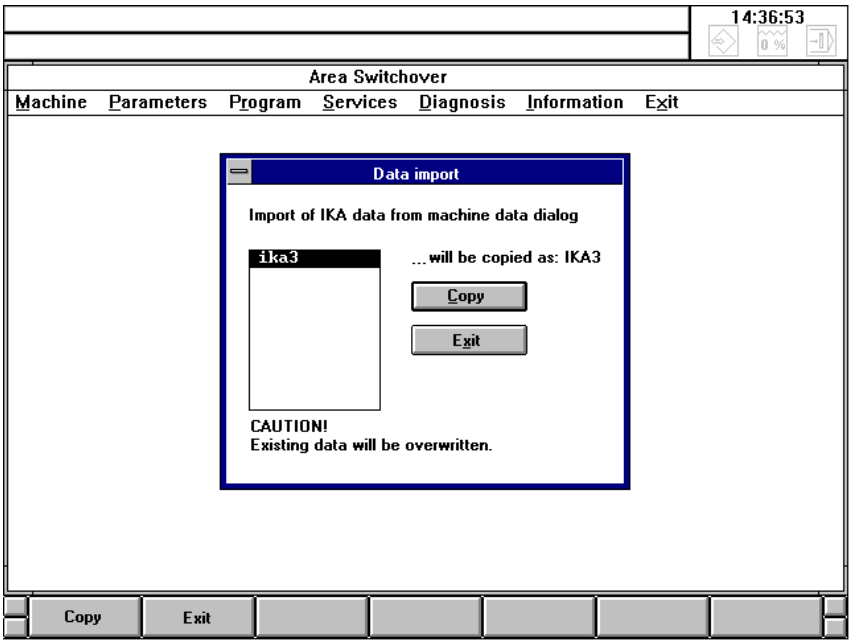

Fig. 1-8: "Data import" dialog box

The IKA data, NC-MDs, PLC-MDs and cycle MDs are stored in the directory:

C:\MD\USER

and can be edited using the WEdit editor with the appropriate access authorization.

IKA1 data	IKA1
IKA2 data	IKA2
IKA3 data	IKA3
NC-MD	TEA1
PLC-MD	TEA2
Cycles MD	TEA4

The data imported can be transferred to the NC using "Diagnosis/Start-up NC/PLC" and activated. To do this in reversed order – i.e. storing online NC data on the MMC disk – use the file manager

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Furthermore, to import data from FlexOS to MS Windows, the following options exist

TEA1, TEA2, TEA4, GIA

NC, PLC and cycle machine data, as well as gearbox interpolation data can be copied into the above directory via the NCK memory. To do this, the entry "NC system data" must be selected in the right-hand combo box and the entry "MD user" in the left-hand combo box.

As an alternative, the above files can be read out onto an external device in paper tape format under FlexOS and read back in under MS Windows.

It is also possible to copy the files directly with the MS Windows file manager. For this, the name conventions for each file **must** be observed. A description of the directory structure is to be found in the OEM documentation.

TEA3

Drive machine data only exist in binary form on the MMC side. For this reason they can only be manipulated under FlexOS. Transfer to MS Windows followed by transfer using the MMC data manager is not possible.

PLC user program

The name and path of the PLC user program that is loaded on initial clear is listed in the file BOOT840C.INI. In this way both the FlexOS and the MS Windows version can access the same PLC program.

Workpiece data

Workpiece data such as part programs, tool offsets, zero offsets can either only be copied from the FlexOS to the MS Windows directory tree indirectly via an external data backup device or using the file manager, or processed after an entry in the SIN840C.ini in the data management.

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1.5.2 Control panel

Global system settings and installations can be performed using the control panel.

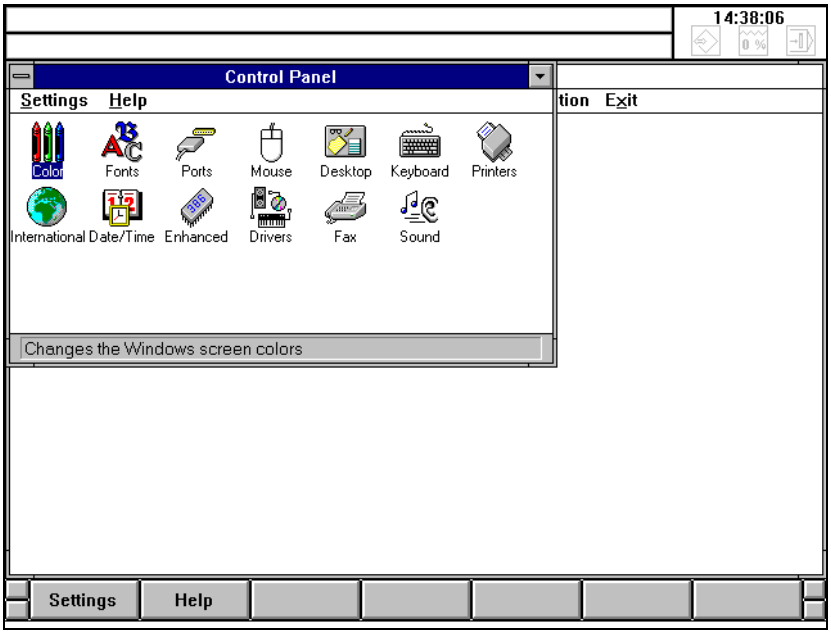

Fig. 1-9: MS WINDOWS control panel

In the following sections, the setting or set-up of the following components is described briefly.

- Screen colors
- Time
- Installation and configuration of printers and networks
- Setting a screensaver

See the Microsoft Windows for Workgroups 3.11/MS DOS 6.2 user manual for more detailed information.

As the default, access to the control panel is protected by a password.

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Setting the colors

After you have selected the **Colors** icon a dialog box is displayed in which you can set the colors.

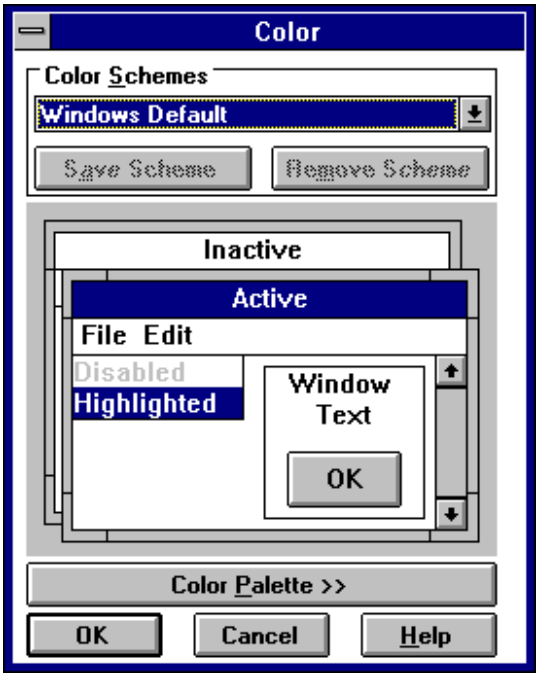

Fig. 1-10: "Color setting" dialog box

The colors of MMC applications are set using this default option from MS Windows. The choice between color and monochrome can be made here.

Select from "Siemens Monochrome 1" and "Siemens Monochrome 2" for monochrome displays.

Note

The colors of the NCK areas (machine, parameter, NC editor, etc) cannot be altered using the MS Windows Control Panel. The corresponding color setting files need to be edited.

A description of the color setting files and settings options can be found in

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Software Version 6
OEM Version for Windows
User's Guide 09.01 Edition

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Setting the time

By selecting the **Date/Time** icon you obtain a dialog box in which you can set the date and the time.

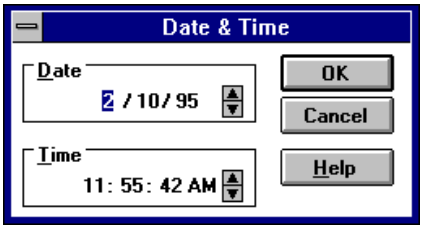

Fig. 1-11: "Date/Time" dialog box

With the EDIT key (<TAB>) it is possible to select the hour, minute or second block of the time or the day and year of the date and to set them using the numeric keypad.

Installation of printers

In order to be able to execute the print function in the "WEdit" editor a printer must be installed. By selecting the printer icon you obtain the dialog field for setting up a printer.

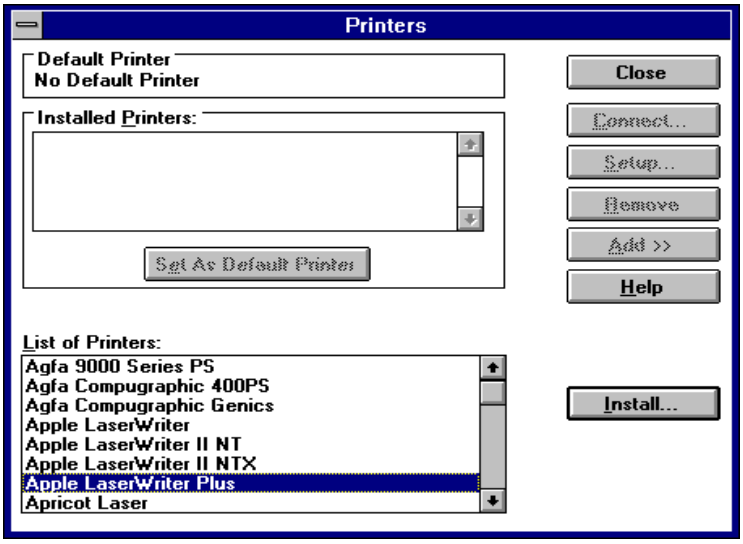

Fig. 1-12: "Printers" dialog box

If the system prompts for the installation diskette containing the printer drivers, instead of drive letter A: you must enter the directory path.

C:\WININST

During installation of Windows resources, the texts are displayed in the language set for the "Windows system". The only exception to this are displays that come directly from the drivers being installed (e.g. printer setup: button "Setup"). These displays are generally in English.

Note

If a printer is connected to the parallel interface of the MMC, it can occur that the part program execution is sporadically interrupted during printing. The MMC alarm "ADS coupling failed" is output!
We therefore recommend that a Xircom network adapter is used to print-out 840C Editor files. Using the network adapter, a network connection is established between the control system and a second PC (via the parallel interface). This serves as spool computer for a printer. The file to be printed is immediately sent to the spool computer via the network after the print task has been sent. The activities then no longer affect the control system.

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Screensaver

Via the **Desktop** icon you can install a screensaver for the screen.

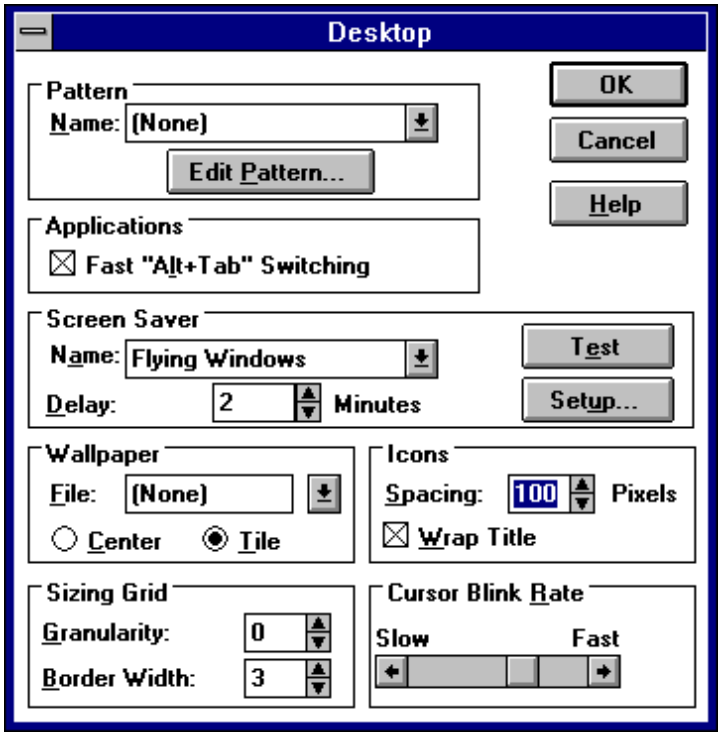

Fig. 1-13: "Desktop" dialog box

Note

The installation of a Windows screensaver is only useful if the 19" operator panel with the CRT monitor is used to prevent the screen from burning in.

If a 14" operator panel with a TFT flat display is used, it is not necessary to install a Windows screensaver as the backlight of the TFT display does not switch off automatically.

In this case, the Siemens screensaver (see 1.5.6) should be used.

Important

If a Windows screensaver is installed, the Siemens screensaver (see 1.5.6) must **not** be configured.

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1.5.3 File manager

Other file operations, such as starting and copying programs, can be performed using the MS Windows file manager.

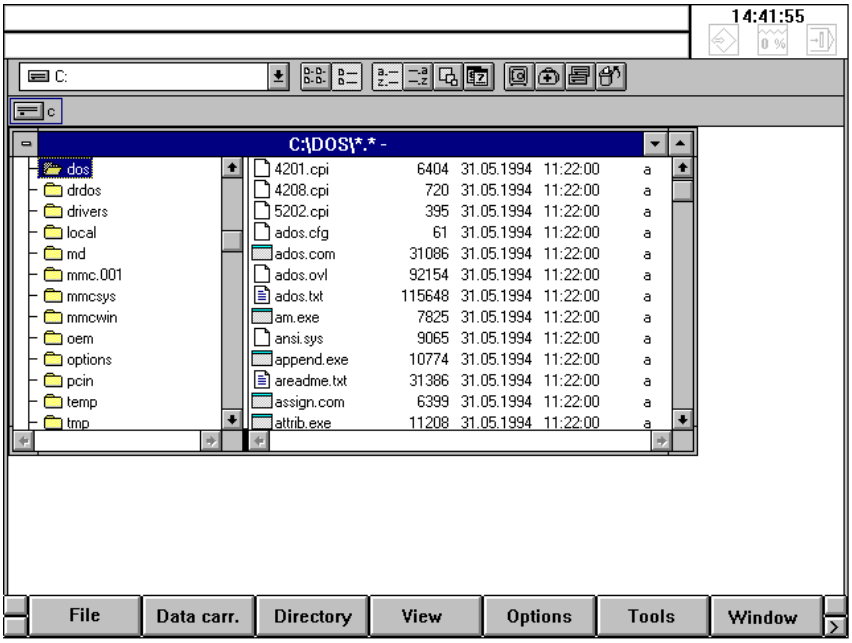

Fig. 1-14: MS Windows file manager

The use of the file manager is recommended for the following purposes:

- Starting an editor: NOTEPAD.EXE or. EDITOR.EXE for editing initialization files such as *LOAD840C.INI*.
- Copying files such as part programs, cycles etc. from the FlexOS to the Windows directory tree.

Note

See the OEM documentation for a precise description of the directory structure.

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1.5.4 Archiving/PCIN

With the menu item archiving, the PCIN data transmission program is called. PCIN version 4.3 is a general purpose program under MS DOS for data transfer between SINUMERIK controls and external data media, e.g. industrial standard PCs, via the serial interfaces COM1 or COM2.

With the OEM Version for Windows for SINUMERIK 840C, PCIN can be used to transfer all files, be they ASCII or binary, to and from a peripheral data backup device. In this way, files that cannot be selected with the data manager (PLC user program, INI files, etc.) can be read in and out via the serial interface.

The following section describes the functions of PCIN that can be used with SINUMERIK 840C (OEM Version for Windows). A detailed description of PCIN is to be found in the Manufacturer Documentation:

SINUMERIK 800
PCIN
Software Version 4
NC-PC Data Transfer
User's Guide 07.94 Edition

In addition to the standard transmission and parameterizing functions, PCIN version 4.3 also provides an integrated text editor.

The interface parameterization can be set for transmission. The settings for the interfaces (baud rate, number of data bits, etc.) can be stored in the file PCIN.SYS.

The program can be switched between the languages German, English and French even during operation.

The user interface has been kept simple to understand. All functions can be selected via the menu bar with pull-down menus and the cursor keys.

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1.5.4.1 Configuration of PCIN

Certain parameters are preset for the PCIN program before they are supplied:

Serial interface

COM2, 9600 baud, 8 data bits, 1 stop bit, even parity.

Screen display

Background color dark blue, foreground color yellow, highlight color red.

The specified colors refer to the display on the color monitor. With monochrome monitors, the colors are shown as the corresponding gray scales. In this case the screen display is specially adapted to monochrome monitors.

Language

English is the default language. In the menu SPECIAL under the entry LANGUAGE it is possible to switch to another language setting.

In the menu V24INI it is possible to parameterize the serial interface and under the menu item SPECIAL it is possible to make other settings such as the screen displays

The chosen settings can be stored in a configuration file PCIN.SYS. This is automatically created on exiting the program PCIN.

Functions of PCIN

The individual PCIN functions are subdivided into 8 function groups in accordance with the type of data transmission. The following commands can be called via pull-down menus:

- Initialization of the serial interface
- Data transfer from the SINUMERIK 840C to the PC
- Data transfer from the PC to the SINUMERIK 840C
- Processing and the management of files (similar to the MS Windows file manager)
- Special functions
- Transfer and processing of files in the PC format
  (Has no meaning for the SINUMERIK 840C OEM Version for Windows)
- Transfer and processing of archives
- End of program.

The menus are selected using the input key; individual menu items are selected using the cursor keys ↑ and ↓ (UP and DOWN). Parameters can be modified using the cursor keys RIGHT and LEFT. If several parameters can be selected, a submenu is displayed. Menu selection can be aborted using the CANCEL key. With the INPUT key, the selected parameters are confirmed.

1.5.4.2 Initialization of the serial interfaces

The parameters for the serial interface can be set via the V24INI menu.

COM NUMBER

1 - 4. Here it is possible to select the number of the serial interface for data transmission. With the OEM Version for Windows of SINUMERIK 840C, the second serial interface is usually used. The first is intended for connection of the operator panel.

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BAUD RATE	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200. The limitations of the remote computer must be taken into account when selecting the baud rate.
PARITY	SPACE (0), ODD (odd parity), MARK (1), EVEN (even parity) or NONE (no parity)
STOP BITS	1 or 2 stop bits
DATA BITS	5, 6, 7 or 8 data bits. For the transmission of binary files, 8 data bits must be set, for ASCII files at least 7 data bits must be set.
XON/XOFF SETUP	Here, 5 parameters must be set which are shown in a submenu.
XON/XOFF	ON (XON/XOFF mode activated) OFF (no XON/XOFF mode)
XON character	Numerical value entered using the numerical keys. The default is 13 (Hex).
XOFF character	Numerical value that is entered using the numerical keys. The default is 93 (Hex).
Wait for XON	ON or OFF. With the ON parameter, the program waits for an XON from the remote computer when reading in.
Send XON	ON or OFF With the ON parameter, XON is sent during data output until the remote partner responds with XON.
END_M30	ON: When M02 or M30 is encountered in the incoming data, data transmission is terminated. This only applies to the setting BINFILE OFF. OFF: M02 and M30 do not have any effect on the end of transmission.
ETX	ON: At the end of data transmission DATA_OUT, an additional ETX character is transferred to the NC. On data transmission DATA_IN from the NC, transmission is stopped when this character is detected. OFF: No ETX character for end of text is appended or evaluated. In this field it is possible to enter an ETX character as a HEX number within the range 00 to FF by pressing the CURSOR key right/left twice.

Note

With binary files this option is not recommended, because the defined ETX character can occur in the data stream which can lead to premature interruption of transmission.

TIME-OUT	Value 0: Time-out monitoring is deactivated. Value 1-99: Here it is possible to set a time-out between 1 and 99 seconds. This is the maximum time that can occur between characters during transmission of data into the PC. If this time is exceeded, data transmission is aborted.
BINFILE	ON: All characters received are stored, i.e. without waiting for a % character marking the beginning of valid data. Reading in can only be terminated by pressing the ESCAPE key or with an ETX character, if activated. The same method is used for sending data to the NC. OFF: ASCII files are accepted.

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If the parameter for DISPLAY in the menu SPECIAL is ON (screen display activated), the internal loudspeaker sounds during transmission of binary files depending on the data transmitted even if the parameter for SOUND in the menu SPECIAL is OFF. If this is not required, set display to OFF. The progress of transmission can be observed by the figures displayed at the top edge of the (empty) transmission window.

TURBOMODE

ON: Acceleration of the data transfer rate by the following measures:

- Block transfer
- Reduced monitor output
- Less frequent keyboard scan

OFF: Standard functionality

DSR SIGNAL

Evaluation: DSR signal is evaluated. If the DSR signal is missing, transmission is aborted.

Do not evaluate: The DSR signal is not evaluated.

NC SEA 850/880

This help display shows the setting data (V.24 interfaces) of SINUMERIK 850/880. With SINUMERIK 840C (OEM Version for Windows) they have no meaning.

CABLE DIAGRAMS

This help display shows the cable diagrams of the possible transmission cables.

The cable diagrams label cables with the 25-way subminiature-D connector on the control side.

The cables shown on the left-hand side of the diagram are of types

6FC9 344 - 4R
6FC9 344 - 4R

whose connectors are equipped with pins on the PC side. They are therefore suitable for the COM1 connection with PG 730 and PG 750 programmers.

The cables shown on the right-hand side of the diagram are of types

6FC9 344 - 4T
6FC9 344 - 4T

whose connectors are equipped with sockets on the PC side. They are suitable for standard PCs with a 9-way COM interface.

Help Text

Brief information about the program.

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1.5.4.3 Data transfer from the PC to the SINUMERIK

After selecting the menu item DATA_IN you must first enter the name of the file in which the data read in are to be stored and confirm that the file name is correct.

After this, transmission is started automatically. The abort criteria for data transmission are:

- Receipt of forty 00H characters
- Receipt of the ETX character or M02/M30 string
- Time-out
- Operator abort with the CANCEL key

In the last case, it is not ensured that data transmission has been properly terminated. For this reason there is a prompt for confirmation before the data are finally stored.

If a binary file is read in, transmission can only be terminated by time-out or pressing the CANCEL key. In the menu SPECIAL, transmission of binary files must be enabled.

If several part programs are transmitted, PCIN also creates a directory with the name <file name>.DIR. This directory is displayed when the integrated text editor is called. For this reason part programs must not be read in with PCIN but using the data manager.

The received data can be viewed on the monitor in a transmission window. For this, the parameter for DISPLAY must be set to ON in the SPECIAL menu.

1.5.4.4 Data transfer from the SINUMERIK 840C to the PC

After selecting the menu item DATA_OUT, you must first enter the name of the file that is to be transmitted to the PC and then confirm that the name is correct.

If no file name is entered or only a partial name with the joker character * and/or ? and the file name is confirmed, an overview of the current directory is displayed. The files can be selected with the key combination <ALT> + <T> (only with MF2 keyboard). The selected files are indicated by a * to the left of them. The selected files are transmitted all together.
Transmission of one or several files is concluded with an ETX character if

- ETX ON has been activated via the SPECIAL menu.

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1.5.4.5 File functions

The FILE menu contains the following functions:

EDIT
Editing a file with the integrated text editor or another text editor, whose path and full name can be set in the SPECIAL menu.

CHANGE DIR
Change directory. When you select CHANGE DIR with the INPUT key an overview of the directories and drives that can be accessed from the current directory is displayed. You change to another directory by marking the required directory with the cursor keys and pressing the INPUT key.

MAKE DIR
Create a directory. When you select MAKE DIR with the INPUT key an input field is displayed in which the current directory is shown. Here the user can create a new subdirectory.

PRINT
Print a selected file via the parallel interface. In this case the printer set up in the control panel of MS Windows is not used but the ASCII text is simply output at the printer interface.

DELETE
Delete one or more files in the selected directory. When you have selected DELETE and pressed the INPUT key, an input field appears showing the name of the file last edited. This name can be replaced by another file name. The file is deleted when you press the INPUT key.

COPY
With this menu item it is possible to copy files without leaving the PCIN program. The name of the source file is first requested, then that of the target file. Copying is started with INPUT.

INSERT CR
If programs and cycles are stored without CR (CR = carriage return) only limited editing with the integrated editor is possible. With this command a CR character is assigned to every LF character (LF = line feed).If the DOS editor EDIT.COM is used, this option is not required.

DELETE CR
This function complements INSERT CR: The CR character is removed from CR LF combinations contained in programs.

Integrated Text Editor
The integrated text editor is selected with EDIT and operates with a command repertoire which is largely the same as that used by the well-known text processing system WordStar. The editor can only be fully operated using the MF2 keyboard (for start-up and service only).

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1.5.4.6 Special functions

In this menu, special configurations of the PCIN transmission program can be set which can then be stored in the file PCIN.SYS on exiting the program and which are reactivated when the program is called again. During selection a short explanatory text is displayed at the bottom edge of the menu for each menu item.

DISPLAY

ON: The data coming from the NC and sent to the NC can be observed in a transmission window on the screen.

OFF: Data are not displayed during transmission. This setting can be useful for binary files.

Regardless of the setting of this parameter, the file name appears on the left and the current display on the right of the top edge of the transmission window during transmission.

X bytes sent out of Y bytes.

The current value X indicates the number of characters already sent and Y the total length of the file to be transmitted.

NC DIR

ON/OFF: Only useful for SINUMERIK 805, 810, 820, 850 and 880. With SINUMERIK 840C (OEM Version for Windows) this parameter must always be OFF.

CANCEL

ON/OFF: Only useful for SINUMERIK 805, 810, 820, 850 and 880. With SINUMERIK 840C (OEM Version for Windows) this parameter must always be OFF.

FILEOPT

ON/OFF: Only useful for SINUMERIK 805, 810, 820, 850 and 880. With SINUMERIK 840C (OEM Version for Windows) this parameter must always be OFF.

SOUND

ON/OFF: Without meaning. SINUMERIK 840C (OEM Version for Windows) does not have an integrated loudspeaker.

COLORS

Here a submenu is displayed in which the colors for the background, foreground and the highlight bar can be set using the CURSOR keys LEFT/RIGHT. In addition to static colors for the highlight bar, blinking and underlined display is also possible. This display is especially suitable for monochrome monitors.

EDITOR PATH

If a text editor other than the integrated text editor is to be used, the complete path and name with the extension (.COM or .EXE for executable programs) of the other text editor must be entered in the input field.

START DIRECTORY

Here it is possible to select a directory that is selected after the program has started. After selection with the INPUT key, an overview of the directories that can be accessed from the current directory is displayed. The required directory or drive is selected with the cursor keys and confirmed with the function key F2.

LANGUAGE

In a subdirectory it is possible to select between English, German and French user interfaces.

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STATUS

ON: At the lower edge of the screen the status of the CTS/RTS and DTR/DSR control lines of the active V.24 interface is displayed.
OFF: No status display on the screen.

VERSION

Display of the version number of the PCIN program.

1.5.4.7 Special functions for files in PC-FORMAT

The PC-FORMAT menu offers functions intended for handling the archive files in the PC format of the SINUMERIK 840C.

To support data backup, the special functions of the SINUMERIK 840C provide the option of storing directories and files in archive lists, i.e. a list of all important files and directories can be stored under a name defined by the user and these can be output together onto an external device.

Data in PC format contain additional information about the path or directory where the data come from. If read in again they are then stored at exactly the same location.

If you select the PC-FORMAT menu, a selection box appears on the screen with the following special functions:

- PC-FORMAT DATA_IN
- PC-FORMAT DATA_OUT
- PC-FORMAT DIRECTORY
- PC-FORMAT UNPACK WITHOUT DIR
- PC-FORMAT UNPACK WITH DIR
- PC-FORMAT GENERATE

PC FORMAT DATA_IN

This function is used for archive transfer from the NC to the PC. After selecting the menu item PC-FORMAT DATA_IN you must first enter the name of the target file. If no file name is entered or if only a partial file name is entered with a joker character (* and/or ?), an overview of the current directory is displayed and a file name can be picked with the cursor. After this, PCIN waits for the file to be transmitted in PC format.

PC-FORMAT DATA_OUT

This function is used for archive transfer from the PC to the NC. After you have selected the menu item PC-FORMAT DATA_OUT, the default file name TRANSFER.MMC appears and can be replaced by another file name. If no file name is entered or if only a partial file name is entered with a joker character (* and/or ?), an overview of the current directory is displayed and another directory or a file name can be selected with the cursor and ENTER. After selection of a transmittable file, data transmission begins.

PC-FORMAT DIRECTORY

After selection of the function PC-FORMAT DIRECTORY and input or selection of a file name of an archive file, a list of all files in this archive is displayed on the screen.

At the same time the file DIR.COL is created in the current directory and contains this list. The user has the option of renaming this file.

If the file selected is not a SINUMERIK archive file, the following error message appears:

This file is not in SINUMERIK PC-format!

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UNPACKING ARCHIVES

In order to access the individual files of an archive, the files must first be taken out of the archive (unpacked).

There are two ways of unpacking:

- Placing all files in one directory
- Placing them in the same directory structure on the PC as on the NC.

PC-FORMAT UNPACK WITHOUT DIR

With this function an archive is unpacked into a single directory. After you have selected the PC-FORMAT UNPACK WITHOUT DIR menu item all files are stored in the current directory regardless of their position in the directory structure of the NC. The current directory can be defined in the menu FILE/CHANGE DIR.

PC-FORMAT UNPACK WITH DIR

The files from the archive are stored in the same directory structure as on the NC when the function NC FORMAT UNPACK WITH DIR is selected. It is important to ensure that the directory structure in the NC only has a certain depth: In Fig. 6 the part programs are stored up to a directory depth of 4, for example. In order to avoid exceeding the maximum DOS path length of 64 characters, this archive must not be unpacked in a directory in the 6th level.

Before actually unpacking a main directory must be specified. The data are first stored in this directory. In this way, individual files can be kept in PC format, e.g. separated from different controls on the hard disk.

PC-FORMAT GENERATE

By selecting the menu item PC-FORMAT GENERATE it is possible to group together several files to a single file in PC format.

There are two ways of doing this:

- Generate PC-format from file list
- Generate PC-format from directory.

For this, a file with the extension .COL is first required. This file contains an assignment list with the elements

File name in PC > path/file name in the MMC area of the NC;

with the aid of which a file that can be transmitted into the NC in PC format is generated with the name TRANSFER.MMC. In this way, single files no longer have to be copied into the clipboard but can be transferred directly to the appropriate subdirectory of the NC.

Example of an assignment line

```
MPF123 > /MMC.001/USER.005/
                LOCAL.063/PART1.064/MPF123.013;
```

for a part program MPF123 that is to be transferred to the NC directory \USER\LOCAL\PART1 under the name MPF123. The redirection sign > performs the renaming. The directories of the NC are indicated here with the normal slash (/) and not with the backslash (\); every line must end in a semicolon.

As an aid, the file DIR.COL last created under the menu item PC-FORMAT DIRECTORY can be selected. When it is called it is modified so that the line begins with the redirection sign and is correctly terminated with a semicolon.

Transfer

After the assignment lines have been entered a prompt asks whether they are to be stored and a file in PC format linked. This file with the name TRANSFER.MMC can then be transmitted to the control with the function PC-FORMAT DATA_OUT in the PC-FORMAT menu.

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PC-FORMAT GENERATE FROM FILE LIST

This function is used to pack files that were generated with PC-FORMAT UNPACK WITHOUT DIR. As an aid, a *.COL file already generated can be selected. This is modified so that every line begins with the redirection sign followed by the file name and ending with the obligatory semicolon. All "list" files that are created are given the extension .COL.

Example: Direct storage of the UMS of the SINUMERIK 840C in German: The content of the list UMS.COL is as follows:

ASM.AIH > /MMC.001/USER.005/NCK.008
/DEUTSCH.008/ASM.018

PC-FORMAT GENERATE FROM CATALOG

This function is used to pack files that were generated with PC-FORMAT UNPACK WITH DIR. Only the main directory need be entered. After this a file called TRANSFER.MMC is created in it with all the files, even those in subdirectories.

The information about which files are to be linked is contained in the file \MMC.001\TEMP.003\@@DTSINF.001.
In this file only the names of the files are required that are to be linked into a file in PC-format.

1.5.4.8 Special functions for archive files

Like SINUMERIK 840C, PCIN 4 also has the option of creating a file with the names of the files to be transmitted. This file has the extension .ARV.

NEW ARCHIVE

Here it is possible to set up a new archive. After entering the name of the archive a data selection list is displayed. With the key combination <ALT> + <T> (MF2 keyboard only) the names of the files that are to be put in the archive are marked. Confirm with ENTER.
If you press ENTER with the cursor on a directory, this directory is opened to provide a further selection.

ADD TO ARCHIVE

Here, files can be added to an existing archive file. First select the archive file name, then pick the files to be archived with ALT-T and press ENTER.

EDIT ARCHIVE

Edit an archive file with the integrated editor or another preset external editor (under EDITOR PATH).

TRANSFER ARCHIVE

An archive can be selected and then transferred. All the current settings of the serial interface apply.

TRANSFER DIRECTORY

Here you must first select a directory from a list of directories. After selection it is possible to set a filter, e.g. *.MPF. This means that all files with the extension .MPF from the selected directory are transmitted. The current settings of the serial interface apply here too.

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1.5.4.9 Exit program

You can exit the PCIN 4 program in two ways:
- Abort with <Alt> + <X> (MF2 keyboard only)
- Abort with menu EXIT.

"Immediate exit" with ALT-X is possible from the main menu at any time without a prompt for confirmation.

The normal way of exiting is via the EXIT menu with two prompts:
- Are you sure? and
- Save configuration?

If you confirm saving of the configuration, PCIN creates a file with the name PCIN.SYS or changes an existing file with this name: This contains the parameters that are active on leaving the program (e.g. language). These are reactivated when PCIN is called again.

1.5.5 Change language (flag symbols)

The Windows application Change language is used to change the control language. Select Change language via the flag symbols in the Services menu. It is important to note that, at least as far as the language setting is concerned, the software of the SINUMERIK 840C OEM Version for Windows is subdivided into three components, each with its own language setting.

- NC kernel + MMC basic system
- Windows for Workgroups 3.11 operating system
- OEM applications

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The Change language function is structured as follows.

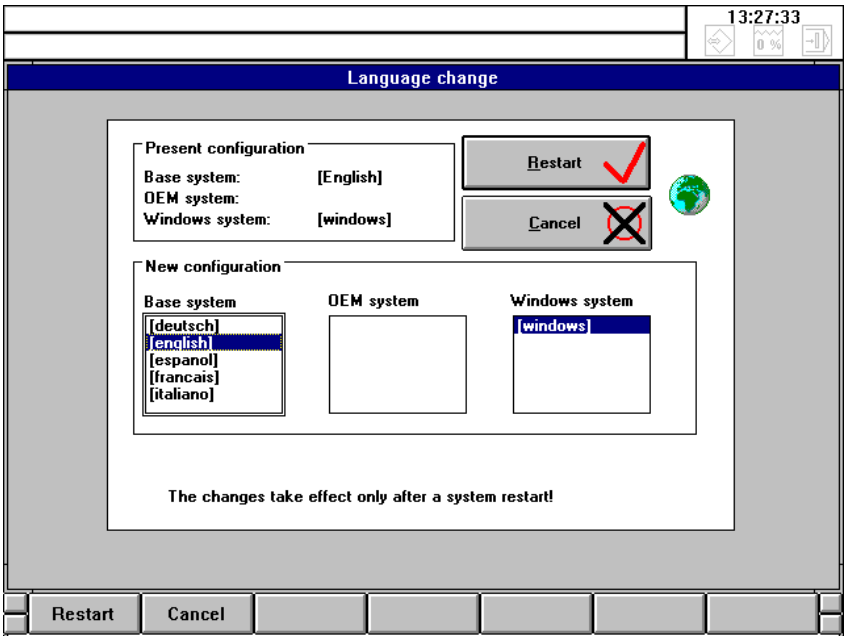

Fig. 1-15: Change language

Present configuration

In this field, the languages of the active installed

- Base applications (NCK components + MMC basic system)
- OEM applications
- WfW 3.11 operating system

are displayed.

New configuration

In these list boxes the user can pick the required language for each component.

For a consistent appearance of the control it is advisable to pick the same language for all components.

Restart

If you select the softkey Restart the application is ended and the control is restarted. This activates the new language setting.

Cancel

The "Change language" application is terminated.

The methods by which the language change ascertains the language of each component and the aspects that must be considered when integrating new languages or customer language-dependent OEM applications are to be found in the OEM description:

SINUMERIK 840C
Software Version 6
OEM Version for Windows
User's Guide 09.01 Edition

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1.5.6 Screensaver

In order to keep the screen in good condition, a Siemens screensaver can be used instead of the standard MS Windows screensaver.

If this screensaver is activated when a flat operator panel with TFT display is used, the backlighting is also switched off, which is not the case with the MS Windows type of screensaver. When used with the CRT version, a black screen is output. The screen can be reactivated by pressing a key.

It is also possible to activate the control via the PLC (same as basic version) with acknowledgment message to the PLC.

A separate password can also be used to lock reactivation of the screen.

The screensaver only functions within the MMC environment of the SINUMERIK 840C OEM Version for Windows.

The screensaver is configured in the Services area under the menu item "Screensaver".

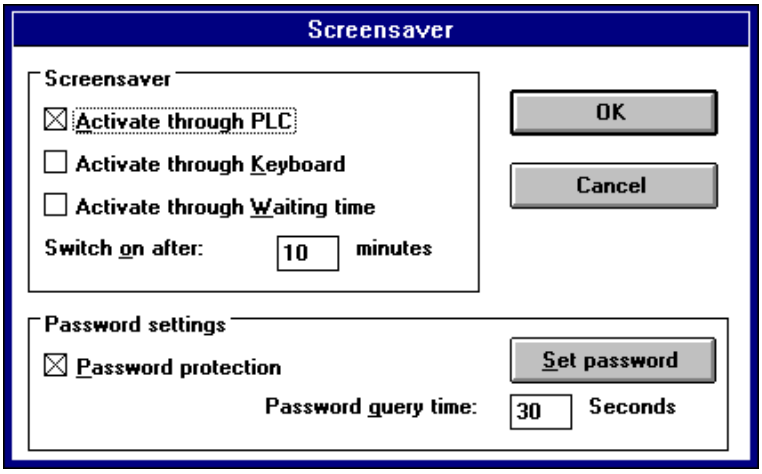

Fig. 1-16: Screensaver

The following possibilities are provided for activating the screensaver.

Activate through PLC

By marking the control box entitled "Activate through PLC", screensaver control can be activated from the PLC. (DB48, DW0, Bit 13=1: "Screen dark").

If the control box is not marked, the signal "Screen dark" from the PLC has no effect. Equally, no acknowledgment message is sent to the PLC.

Otherwise, the PLC receives an acknowledgment message once the screensaver is active or the backlighting has been switched off by a flat operator panel (DB48, DW1, Bit 13=1: "Screen is dark").

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If the operator panel is connected to the MMC anew, any running screensaver is automatically switched off and the PLC informed accordingly.

It is also informed if the screensaver is switched on or off by the keyboard or upon expiry of a delay time. With a flat operator panel, the signal is only sent to the PLC once it is absolutely sure that the backlighting is really switched off.

Activate through keyboard

Activation of the screensaver using the key combination SHIFT+Maximize display on the operator panel keyboard for 840C Windows.

Activate through waiting time

Activation after a specified delay. The screensaver is automatically activated if no key is pressed within a specified period of time. This time can also be set in this configuration menu. It has a minimum value of 1 minute and maximum value of 9.1 hours. The default value is 10 minutes.

Password protection

A password lock can be activated. This password is independent of the various password levels which are available for the other assorted lock or release functions. The screensaver password can be set or altered by means of *Set password*. Incorrect input leads to the output of a message box with an appropriate error message.

The password is set by means of the dialog box activated by the *Set password* button:

Fig. 1-17: Password interrogation

The Help button activates the Windows help function which can also be activated from the Control Panel. This provides an explanation of entering and modifying the screensaver password in whichever Windows system language has been set.

Password interrogation time

If the password lock is activated with a flat operator panel, the backlighting is switched on when the dialog box for the password interrogation appears.

If the wrong password is entered, the backlighting of the flat operator panel is automatically switched off again upon expiry of the password interrogation time.

The default time period is set to 30 seconds.

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All settings for the screensaver are automatically stored from the display application in the file C:\MMCWIN\PC\BACKLIGH.INI in the [ScreenSaver] section.

Important

If the Siemens screensaver is configured for the application, the MS Windows screensaver must be deactivated in the Control Panel (icon: **Desktop**).

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1.6 Diagnosis area

This area contains both functions for global file manipulation and system settings and diagnostics tools for start-up engineers and service personnel. Operation and selection of each menu item is described in:

SINUMERIK 840C OEM Version for Windows
User's Guide 09.01 Edition

1.6.1 PLC status/NC service/NC information/machine data

The menu trees for the above menu items are provided by the NCK and are operated using softkeys. The operation and function of the areas is compatible with those of the SINUMERIK 840C standard product. For more information please consult the Service Documentation:

SINUMERIK 840C
SIMODRIVE 611-D
Installation Instructions
Installation Guide 09.01 Edition

1.6.2 NC memory configuration

With the aid of the application "Flexible memory configuration" the user can allocate the user memory (DRAM and SRAM) in accordance with the NCK CPU and drive used (digital or analog).

The application for memory configuration can be selected via menu item **NC memory configuration** in the **Diagnosis** menu.

With this application it is possible to display the active memory configuration in the NCK, the user configuration on the hard disk and the Siemens standard configuration on the hard disk.

Both the Siemens standard and the active memory configuration (on-line) cannot be changed directly. The user configuration can be modified and, if it is consistent with the data of the NCK, saved.

1.6.3 Alarms

Possible subdivision into all types of alarms, NCK, PLC, 611D, MMC alarms as well as messages (see 2.7.2.1).

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General data

After you have selected the entry **NC memory configuration** in the **Diagnosis** menu, the area for configuration of the DRAM and the SRAM of the general data is displayed.

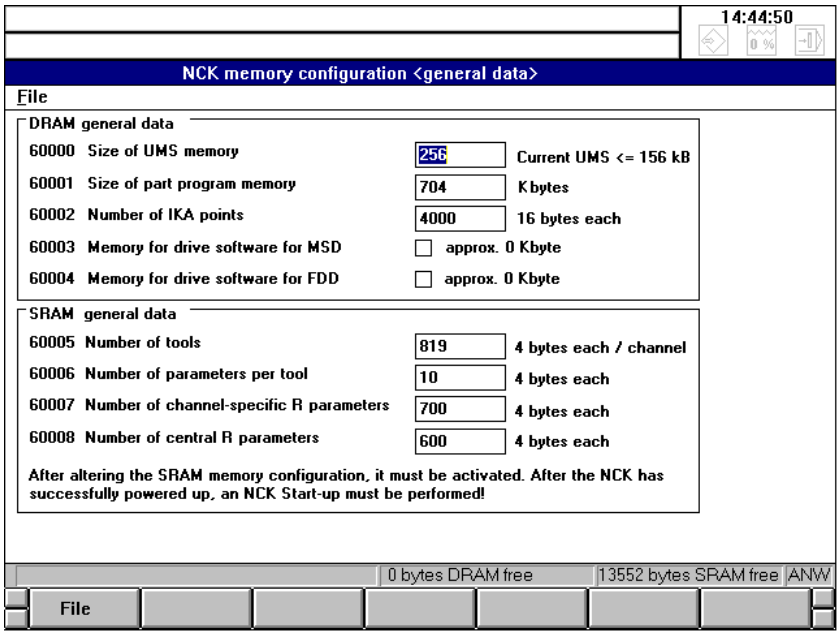

Fig. 1-18: Memory management - general data

In the upper part of the menu it is possible to define the size of each DRAM area, such as:

- Size of the UMS memory
- Size of the part program memory
- Number of IKA points
- Number of real axes

Please refer to Section 2.5 of:

SINUMERIK 840C
SIMODRIVE 611-D
Installation Instructions
Installation Guide 09.01 Edition

for a detailed description of this function.

The function "Number of real axes" improves the memory management of 4 MB NC modules. The standard value is 15 axes. Each additional axis defined requires a memory space of approx. 16 KB.

The memory required by the first 15 axes is not included in the area of the "Flexible memory configuration", i.e. if a value smaller than 15 is specified, additional memory is not made available. In this case, the size of the free residual memory remains unchanged.

Note

If more real axes than specified in the "Flexible memory configuration" in MD 60013 are defined during start-up, alarm 50 "Flex. memory configured incorrectly" is displayed.

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In the lower part of the display it is possible to set the size of each SRAM area for user data, such as:

- Number of tools
- Number of parameters per tool
- Number of channel-specific R parameters
- Number of central R parameters

In total, 64 Kbytes of SRAM are available for the user.

1.6.4 Loading the drive software with SW 6 and higher

General notes

Up to SW 5 all the drive software (MSD and FDD) is loaded from the MMC hard disk to the NCK user memory when the control is powered up and is then transferred to the drive when the latter powers up. The user must make 192 Kbytes NCK user memory available for each package.

As from SW 6, this memory size is no longer sufficient. Two methods can be used for loading the drive software:

1. Increase the size of the NCK user memory for FDD/MDD

   Advantage: Drive software loaded quickly

   Disadvantage: High user memory requirement

2. Load the drive software from the hard disk in packages

   Advantage:: No additional user memory requirement

   Disadvantage: Power up time takes longer

The available memory is set in NC-MD 60014. If less memory is made available than is required by the drive software, the missing software is retroloaded from the hard disk, thus increasing the time that the control takes to power up.

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The following menu has been added to the OEM Version for Windows.

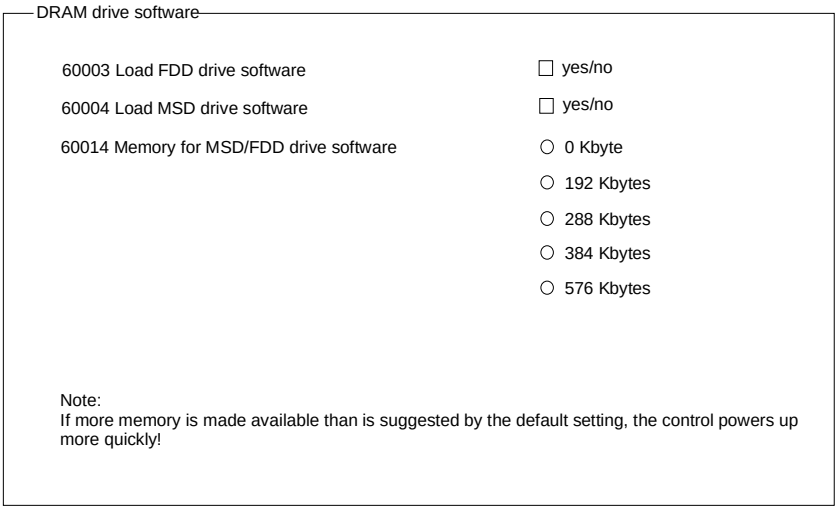

Fig. 1-19: Configuring the drive software

Sensible combinations are automatically suggested:

- If no drive SW is selected (MD 60003 =MD 60004 =0), radio button "0 Kbytes" for MD 60014 is marked and the other choices are disabled, i.e. the remaining radio buttons are grayed out.
- If MD 60003 or MD60004 is selected, standard configuration "192 Kbytes" is marked and the radio buttons for "0 Kbytes", "384 Kbytes" and "576 Kbytes" are grayed out. The user can still select "288 Kbytes" as an alternative.
- If both MD 60003 and MD 60004 are selected, standard configuration "384 Kbytes" is marked and the radio buttons for "0 Kbytes" and "288 kbytes" are grayed out. The user than still select "576 Kbytes" or "192 Kbytes" as an alternative.

Block memory management

The other input windows for memory allocation (channel-specific block data management, measured value memory) are accessed by the page up/down keys.

It is possible to switch between the displayed memory configurations (standard, user or on-line) in the File menu where the user configuration can also be selected and the application terminated.

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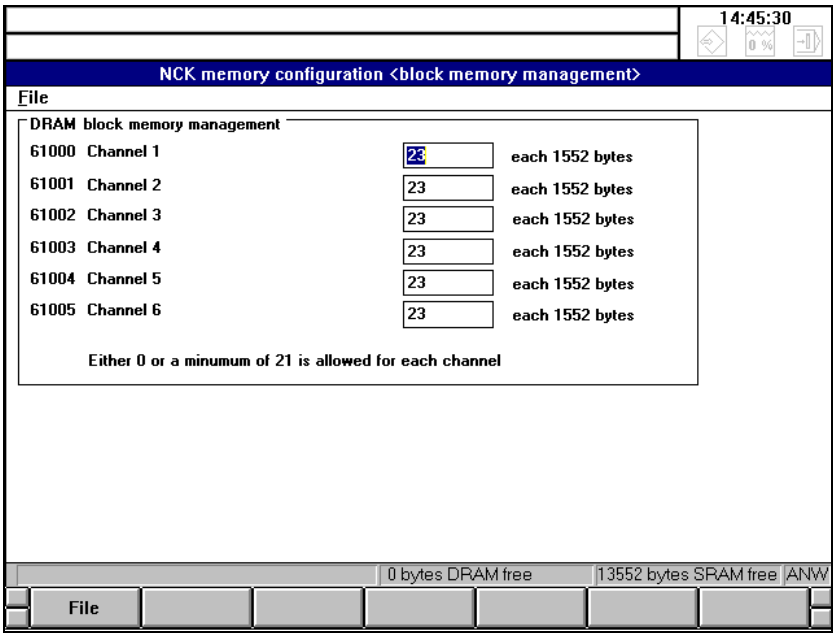

Fig. 1-20: Memory management - block memory management

In the block memory management it is possible to define the number of block buffers in the block memory. Depending on the utilization of each channel it is possible to define channel-specifically up to how many part program blocks can be predecoded during execution.

In NC-controlled machine tools, one or two channels are often used as processing channels, whereas the others are "only" for auxiliary functions. By increasing the number of block buffers in the block memory the processing channels can be made "faster", i.e. more blocks can be predecoded and loaded at the IPO cycle frequency, if necessary.

Extended overstore

The input screen for the function "Extended overstore" can be selected using the page up/down keys.

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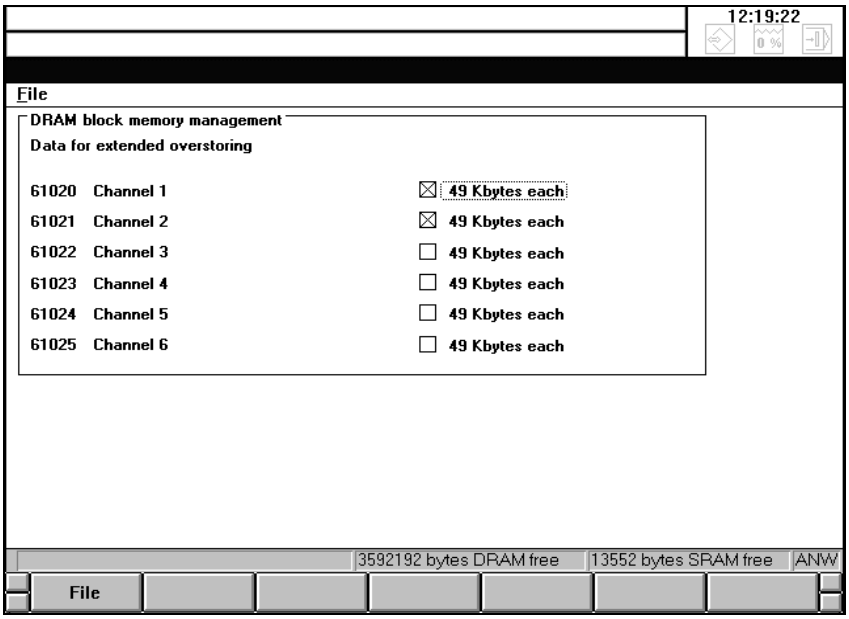

Fig. 1-21: Extended overstore

In this screen, the memory required for the function "Extended overstore" can be switched on or off for each channel individually, however, with the following restriction.

If block buffers have not been defined for a channel, i.e. this channel does not exist from the NCK's point of view, switching on/off of the memory for the "Extended overstore" function does not influence the free residual memory.

If the required memory in a channel is reserved, the "Extended overstore" function remains available without any changes. In channels, where the memory is switched off, the selection of the "Extended overstore" function is rejected with the message "No memory available for the function" or, if selected from PLC, with the error code 145.

As a standard, the memory for "Extended overstore" is reserved in the first two channels. The information concerning the channels in which memory space for "Extended overstore" is to be reserved is stored in the file NCMEMCFG.020. This information is transferred automatically into the channel-specific machine data 6102* on booting.

Through switching off/on the memory for "Extended overstore" in a channel, you gain/lose approx. 48 KB of memory space.

Extended measurement

The following window is used to input the number of axis-specific measured values for the "Extended measurement" function.

With the "Extended measurement" function, a programmed number of single actual position measurements of axes can be recorded sequentially. Because measured values can be recorded faster than the measured values can be transmitted in R parameters, the measured values are stored in the measured value buffer.

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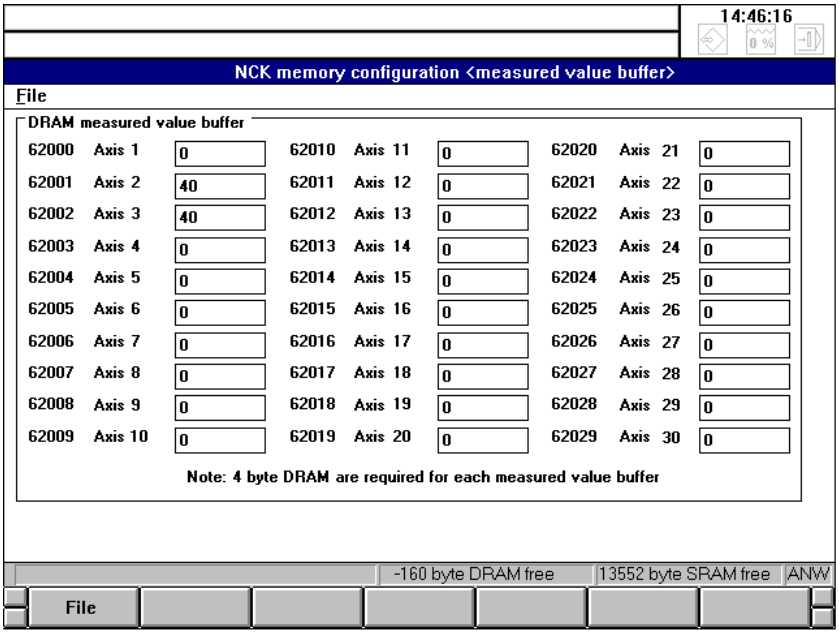

Fig. 1-22: Memory management - measured value buffer

In this input window, the size of the measured value buffer, i.e. the maximum number of buffered measured values is defined for each axis.

Notes

Generally, all entered values are checked as you exit each field and a message displayed if necessary. The currently available free memory space in the SRAM and DRAM is calculated immediately and displayed in the status line.

If the application is terminated a message box gives the user the opportunity to save the configuration.

It is only possible to save the configuration if the settings of the configuration are compatible with the physical memory capacity of the NCKs. Otherwise the error is indicated to the user in a message box.

For a detailed description of this function see Section 12 of:

SINUMERIK 840C
SIMODRIVE 611-D
Installation Instructions
Installation Guide 09.01 Edition

Procedure

A user wishing to change the current memory configuration must proceed as follows:

- Select the **NC memory configuration** entry in the Diagnosis menu.
- Enter the required user memory configuration.
- Activate the modified user memory configuration using the **Activate** entry in the **File** menu.

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1.6.5 Service data digital drive

1.6.5.1 MSD

This example program reads the most important service data of a connected digital feed drive (SIMODRIVE 611-D) and displays it in the following window.

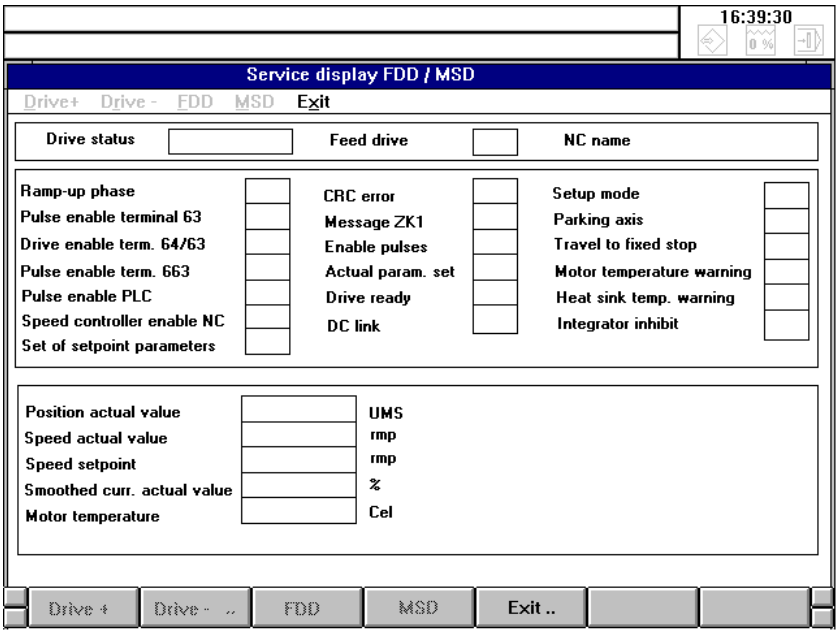

Fig. 1-23: Service display MSD

The FDD/MSD drive service display gives an overview of signals and states of the FDD/MSD drives and is purely for information. The content of the display fields is derived from the specific drive data (NC, PLC, drives).

Drive status

This display describes the ramp-up and operating states of the digital drives. The state is generated in the SERVO during start-up and updated accordingly in the display (drive MD 11008).

Possible statuses are:
0 = Off
1 = On (after feedback from the drive to the SERVO)
2 = On-line (communication is possible)
3 = Boot (drive must be booted)
4 = Connected (drive is completely started up)
5 = Ready (drive under control, power connected)

Feed/main spindle drive

This display field contains the drive number of the feed or main spindle drive.

Ramp-up phase

This display field contains the control word for the ramp-up control of the 611-D components of which there is one for each logical digital drive number (drive MD 11000). The high byte contains the ramp-up status from the SERVO, the low byte shows the status acknowledged by the drive.

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Pulse enable (terminal 63/48)

This display field contains the image of terminal 63/48 of the infeed/regenerative feedback unit (drive MD 1700.2 - reset centrally for all drives).

Possible display value: off or on

Drive enable (terminal 64/63)

This display field contains the image terminal 64 of the infeed/regenerative feedback unit (drive MD 1700.6 - central drive enable).

Possible display value: off or on

Pulse enable (terminal 663)

This display field contains the image of terminal 663 (drive MD 1700.1 - module-specific reset).

Possible display value: off or on

Pulse enable PLC set

This display field contains the status of the pulse enable PLC of cyclic control word 2 (drive MD 11005.7).

Possible display value: off or on

Speed controller enable set

This display field contains the status of the speed controller enable NC of cyclic control word 2 (drive MD 11005.9)

Possible display value: off or on

Set of setpoint parameters

This display field contains the current set parameter set of cyclic control word 2 (drive MD 11005.0-2).

Possible display value: 0-7

CRC error

This display field contains the number of bus transmission errors between the NC and the drive detected by the hardware (drive MD 11001).

Possible display value: 0000-FFFF

Signal status class 1

This display field contains the status of the signal status class 1 of cyclic status word 1 (drive MD 11002.0).

Possible display value: off or on

Enable pulses

This display field contains the status of "Enable pulses" of cyclic status word 2 (drive MD 11003.7).

Possible display value: off or on

Actual parameter set

This display field contains the current actual parameter set of cyclic status word 2 (drive MD 11003.0-2).

Possible display value: 0-7

Drive ready

This display field indicates the status of the drive (drive MD 11003.5).

Possible display value: off or on

DC link

This display field contains the status of the DC link (drive MD 11006.0)

Possible display value: off or on

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Set-up mode	This display field contains the status of the set-up mode of cyclic status word 1 (drive MD 11002.8). Possible display value: off or on
Parking axis	This display field contains the status parking axis of cyclic control word 1 (drive MD 11004.1). Possible display value: off or on
Travel to fixed stop	This display field contains the status travel to fixed stop of cyclic status word 2 (drive MD 11003.13). Possible display value: off or on
Motor temperature warning	This display field contains the status motor temperature warning (drive MD 11006.14). Possible display value: off or on
Heat sink temperature warning	This display field contains the status heat sink temperature warning (drive MD 11006.15). Possible display range: off or on
Integrator inhibit	This display field contains the status integrator inhibit of the cyclic status word 1 (drive MD 11003.6). Possible display value: off or on
Position actual value	This display field contains the position actual value (drive MD 12000). It is dependent on the position control for rotary axis (NC MD 5640.5) and the position control resolution (NC MD 18000.0-3).
Speed actual value	This display field contains the speed actual value of the motor (drive MD 1707).
Speed setpoint	This display field contains the speed setpoint of the motor (drive MD 1706).
Smoothed curr. act. value	This display field contains the smoothed actual current as an absolute percentage value (drive MD 1708).
Motor temperature	This display field contains the current motor temperature (drive MD 1702).

Safety Integrated service data

After the selection of the "SI Service" softkey in the "Service display" screen, the following display appears.

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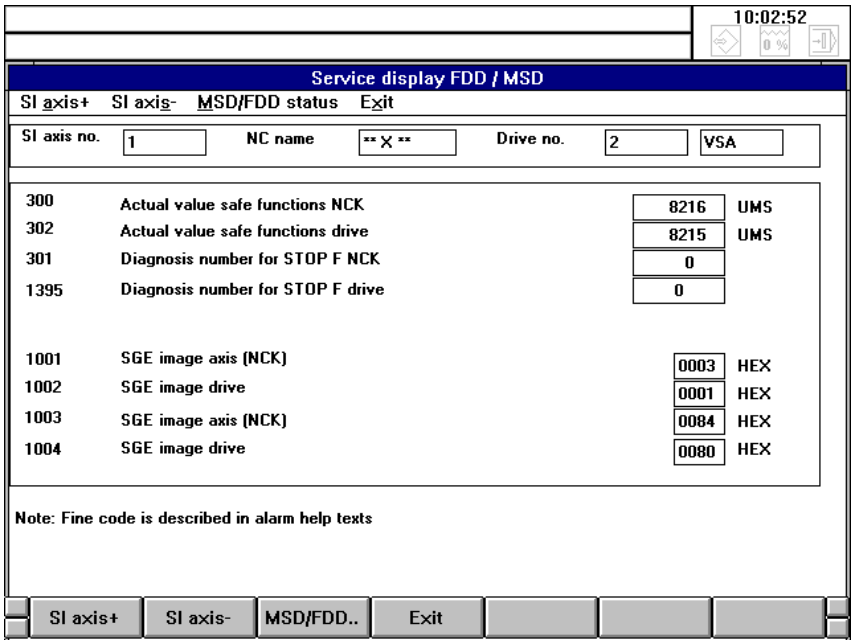

Fig. 1-24: Safety-Integrated service data

SI axis+/SI axis- With these softkeys, you can page from one SI axis to the next/previous SI axis. The defined NC axes, which are not defined as SI axes, are omitted.

SI axis No. In this field, the number of the SI axis (1 to 30) is displayed.

NC name In this field, the axis name (X, Y, Z, etc.) is displayed. In the case of a C axis, the spindle assigned to the C axis is also displayed (e.g. C30/S6).

Drive No. In this field, the number of the drive and the information "MSD"/"FDD" are displayed.

MD300 ... MD 1004 The servo MD 300 to MD 302 and the drive MD 1395 are 32-bit values that are displayed in decimal form. The servo MD 1001 to MD 1004 are 16-bit values represented in hexadecimal form.

If the axis/spindle-specific NC alarms 1336*/2097* "Failure in a monitoring channel" or the drive alarm 300911 "STOP F triggered" are set, detailed codes relating to the cause of the failure are displayed in the service data 301 and 1395.

For explanation of the identifiers for the detailed codes, please refer to the online help texts for the above mentioned alarms.

MSD/FDD status With these softkeys, you can return to the previous screen "Service display".

Exit With this softkey, you exit the application.

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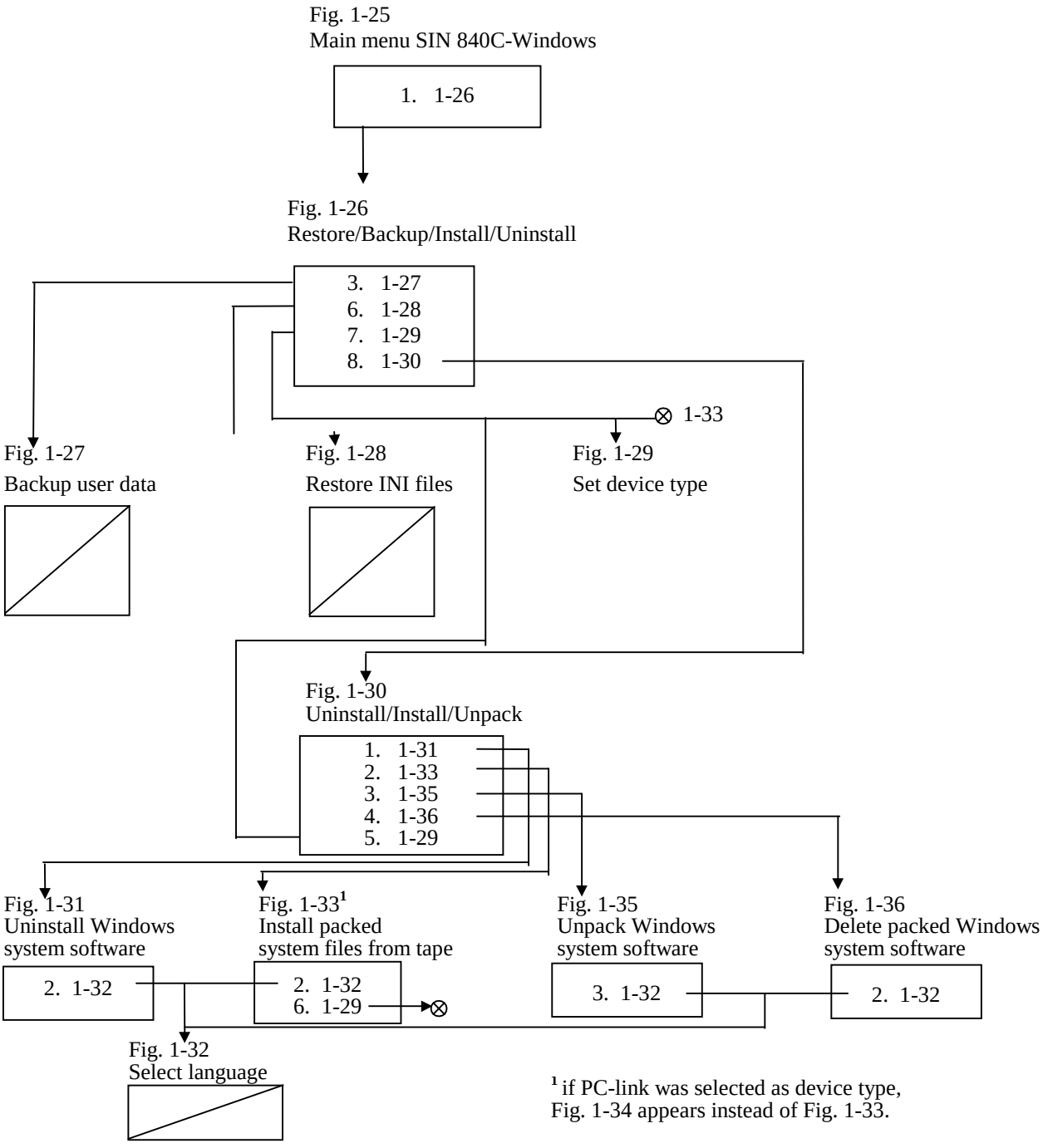
1.6.5.2 Service display extensions with new diagnosis data of safety technology (SW 6.3 and higher)

The service display has been extended by four new drive machine data (1391 to 1394). These are diagnosis data containing bit-encoded information in the case of errors. Please look at Safety Integrated Documentation for further information.

1.6.6 Backup/FlexOS

This menu item causes the control to end MS Windows and go to the MS DOS level. The following menu (Fig. 1-25) is displayed:

Schematic Backup/FlexOS



[1] if PC-link was selected as device type, Fig. 1-34 appears instead of Fig. 1-33.

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Main menu
SIN840C-Windows

```
Copyright (c) Siemens AG 1997. All rights reserved
Main menu SIN840C-Windows:.......
================================
   1. Restore/Backup/Install/Uninstall
   2. Boot MMC-Flexos
   3. Extended functions
   4. Calibrate display
   5. Check and reorganize hard disk (with system restart)
   6. Perform a surface scan of hard disk
   0. End ...reboot MMC-Windows
================================
Enter your Choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-25: Main menu of 840C Windows (Software Version 6.3)

1. Restore/Backup/Install/Uninstall

If you select 1, you enter menu "Restore/Backup/Install/Uninstall" (Fig. 1-26).

2. Boot MMC-FlexOS

With this selection, booting of the control under the operating system FlexOS can be started. The actual start-up of the control and the drive 611-D is possible only under FlexOS using the machine data dialog.

When leaving the FlexOS interface, the control boots automatically under the MS Windows interface.

Note

Booting of the control under FlexOS is possible only via this menu item.

3. Extended functions

At the present time, no other entries are stored under this menu item.

This menu item is used for the extension of menus, e.g. for post-installation of further languages not implemented at the present time.

4. Calibrate display

This menu item is used for adjusting colors on the flat control panel by means of potentiometers at the back of the panel. The BIOS version must be 17 or higher for this menu item.

The version is displayed in the first line of the screen during booting:

```
Award Software ..... _17
```


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5. Check and reorganize harddisk

Using menu item "Check and reorganize harddisk", a defragmentation program is started. This program allows the files on the hard disk to be reorganized. This has a positive effect on the access speed. On exiting the defragmentation program, the system reboots.

6. Perform a surface scan of harddisk

The menu item "Perform a surface scan of the hard disk" initiates a surface test of the hard disk.

The menu item "Free data transfer via PC-Link... (Attention!!!)" is provided for experienced PC-Link users and is password-protected. When selecting this menu item all other menu items of the PC-Link are activated.

0. End reboot MMC-Windows

This menu item causes the control to boot under the operating system MS Windows.

Restore/Backup/ Inst./Uninst.

By selecting menu item 1 "Restore/Backup/Install/Uninstall" in the menu "Main menu SIN 840C Windows" (Fig. 1-25) you enter the menu for data backup.

```
Copyright (c) Siemens AG 1997. All rights reserved
Restore/Backup/Inst./Uninst. - Device Valitek
PST2-M1200
================================================
 1. Backup system  (all files on disk to tape)
 2. Restore system (all files on tape to disk)
 3. Backup user data...
 4. Restore user data
 5. Backup INI-files     (all files *.ini on disk to tape)
 6. Restore INI-files... (all files *.ini on tape to disk)
 7. Set I/O device...
 8. Uninstall/Install/Unpack...
 9. Free data transfer via PC-Link...(Attention!!!)
 0. END...
================================================
 Enter your choice...:=[1,2,3,4,5,6,7,8,9,0]?
```

Fig. 1-26: Menu: Restore/Backup/Install/Uninstall

1. Backup system

With the backup system all the data on the hard disk are backed up using a VALITEK streamer or PC-Link (SW 6 and higher). The entire system software, all user data are stored on magnetic tape.

The VALITEK streamer is connected to the parallel interface of the MMC module. Connection of another data backup device is not possible because the software is adapted to the VALITEK streamer.

The VALITEK streamers PST-160 (older model) and PST2-1200 (newer model) can be connected. The currently active streamer setting is displayed in the above menu. If necessary, set the streamer type in menu item 7 (Set streamer type) before starting the actual backup.

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Caution

If the serial interfaces SERIAL 1 (connector: X141) and SERIAL 2 (connector X151 with ± 12 V) are confused with the parallel interface (connector: X122 with TTL level), this can destroy the devices connected.

2. Restore system

A magnetic tape containing a backup written with the backup system can be read back onto the hard disk of the controller with this menu item. When the control is started up afterwards, MS DOS 6.22 is automatically read into the boot sector of the hard disk if another DOS version was originally installed on the hard disk.

Caution

When reading back, files on the hard disk are overwritten without confirmation if backed up files have the same name.

3. Backup user data (only with VALITEK streamer)

By selecting 3 you enter the menu "Backup user data" (Fig. 1-27).

4. Restore user data

This function allows you to restore a backup of the user data from the magnetic tape to the hard disk of the MMC module.

Important

When restoring, files with the same name on the hard disk are overwritten without request for confirmation.

5. Backup INI files

With this function, all initialization files (*.INI) on the hard disk C:\ are backed up on magnetic tape.

6. Restore INI-files

By selecting 6 you enter the menu "Restore INI files" (Fig. 1-28).

7. Set I/O device

By selecting 7 you enter the menu "Set device type" (Fig. 1-29).

8. Uninstall/Install/Unpack

By selecting 8 you enter the menu "Uninstall/Install/Unpack" (Fig. 1-30).

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9. Free data transfer via PC-Link

Menu item "Free data transfer via PC-Link ... (Attention!!!)" is available for experienced PC-Link users and is password-protected.

0. End

Back to previous menu.

Backup user data

Depending on the I/O device selected, the following menu is displayed after selecting menu item 3 "Backup user data" under menu "Restore/Backup/Install/Uninstall" (Fig. 1-26) has been selected. With this function all user data is saved on magnetic tape.

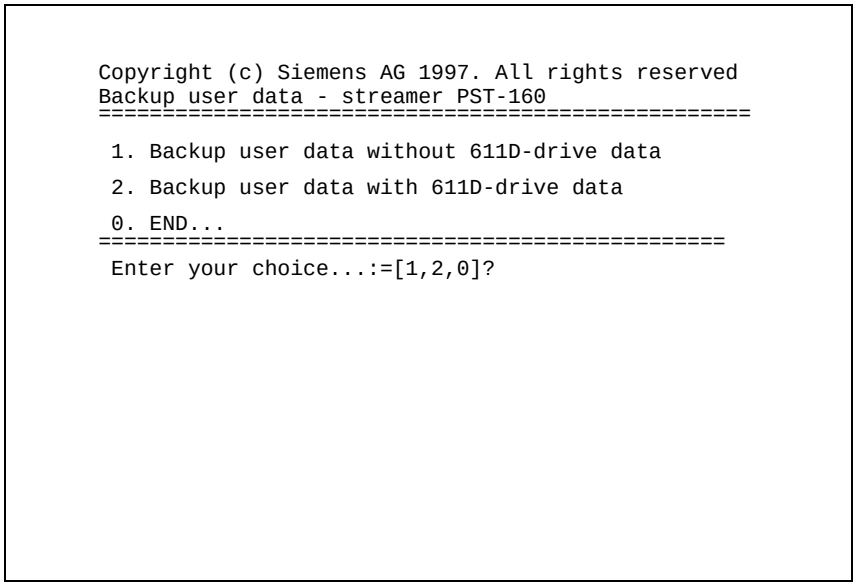

Fig. 1-27: Menu: Backup user data (not available with PC-Link)

1. Backup user data without 611D-drive data (only with Valitek Streamer)

With this option, the entire user branch is backed up under the FlexOS directory structure and the data listed below in the MS Windows directory:

- User machine data
- User cycles
- Workpieces
- OEM directory

2. Backup user data with 611D-drive data (only with Valitek-Streamer)

With this option, the 611D-drive boot files c:\mmc.001\siem.069\servo.111*.113 are backed up on tape in addition to the above named data.

0. END

Back to the previous menu.

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Restore INI files

After selecting menu item 6 "Restore INI files" in the menu "Restore/Backup/Install/Uninstall" (Fig. 1-26) the following menu is displayed. This function permits restoration of Windows initialization files from magnetic tape to hard disk. Restoring is possible with overwrite prompt (Restore with prompt) or without (Restore without prompt).

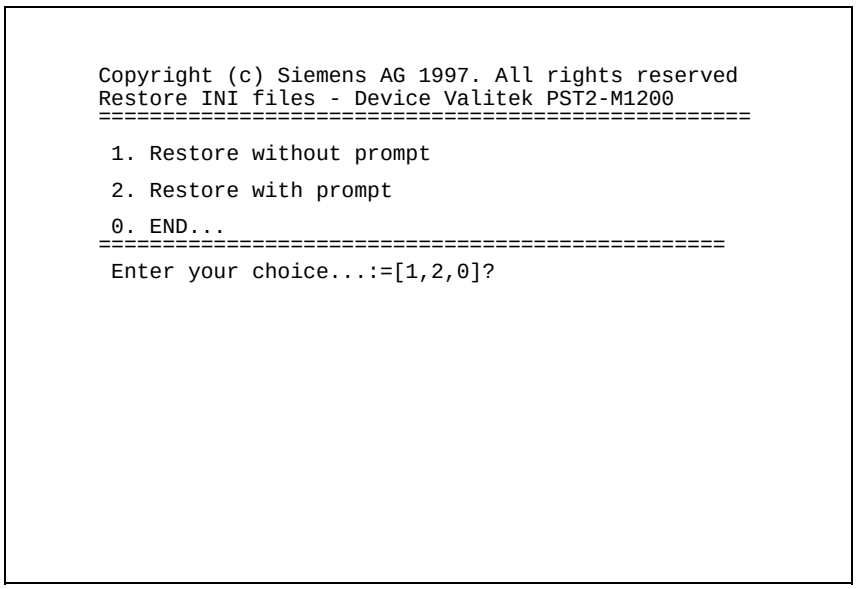

Fig. 1-28: Menu: Restore INI files

1. Restore without prompt

Restoring is takes place without an overwrite prompt.

Note

This function should be used for a series start-up.

2. Restore with prompt

Restoring takes place with an overwrite prompt.

0. END

Back to the previous menu.

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Set device type

With menu item 7 "Set I/O device" in the menu "Restore/Backup/Install/Uninstall" (Fig. 1-26) you can enter the selection menu for the setting of the input/output medium.

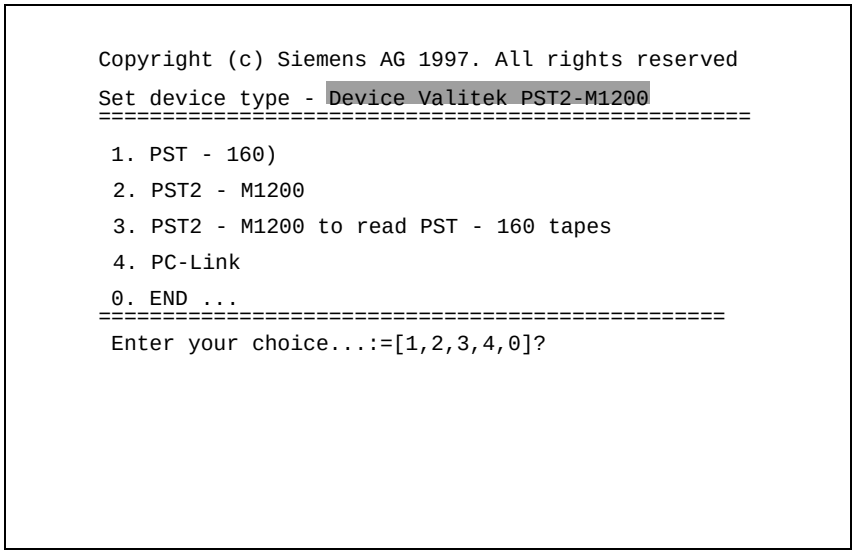

Fig. 1-29: Menu: Set I/O Device

1. PST - 160

By selecting menu item 1 you choose the "older" PST-160 streamer. The type set in this menu is retained via RESET/POWER ON. The I/O medium set is displayed in the second line of the menu (highlightes here with grey background).

2. PST2 - M1200

By selecting menu item 2 you choose the "newer" PST2-M1200 streamer. The type set in the menu is retained via RESET/POWER ON. The I/O medium set is displayed in the second line of the menu (highlighted here with grey background).

3. PST2 - M1200 to read PST - 160 tapes

By selecting menu item 3 you choose the "newer" PST2-M1200 streamer to read in tapes created by the "newer" PST2-160 streamer. The type set in this menu is retained via RESET/POWER ON. The I/O medium set is displayed in the second line of the menu (highlighted here with grey background).

4. PC-Link

By selecting menu item 4 you choose PC-Link. The type set in this menu is retained via RESET/POWER ON. The I/O medium set is displayed in the second line of the menu (highlighted with with grey background).

0. END

Back to the previous menu.

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Uninstall/Install/ Unpack menu

When selecting menu item 8 "Uninstall/Install/Unpack", in the menu "Restore/Back-up/Install" (Fig. 1-26), the following menu is displayed:

```
   Copyright (c) Siemens AG 1994. All rights reserved
     Uninstall/Install/Unpack - Device Valitek PST2-M1200
   ================================
      1. Uninstall windows software...
      2. Install packed windows software...
      3. Unpack packed windows software...
      4. Delete packed windows software...
      5. Set I/O device...
      0. END...
================================
Enter your choice...:=[1,2,3,4,5,0]?
```

Fig. 1-30: Menu: Uninstall/Install/Unpack

1. Uninstall Windows Software...

By selecting menu item 1 you get into the menu "Uninstall windows system/software" (Fig. 1-31).

2. Install packed windows software

By selecting menu item 2 you get into the menu "Install packed system files" (Fig. 1-33).

3. Unpack packed windows software

By selecting menu item 3 you get into the menu "Unpack windows system software" (Fig. 1-35).

4. Delete packed windows software

By selecting menu item 4 you get into the menu "Delete packed windows system software" (Fig. 1-36).

5. Set I/O device

By selecting menu item 5 you get into the menu "Set device type" (Fig. 1-29).

0. END

Back to the previous menu.

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Uninstall windows system software

When selecting menu item 1 "Uninstall windows software" under menu "Uninstall/Install/Unpack" (Fig. 1-30), the following menu is displayed to show uninstalling of windows software. When uninstalling, complete (unpacked) directories are deleted.

```
Copyright (c) Siemens AG 1997. All rights reserved
Uninstall windows systemsoftware from harddisk, active IS
c:\windows
  ========================================
   1. Uninstall MMC-System
   2. Select language  to uninstall...
   3. Uninstall windows c:\
   4. Uninstall windows in all languages (c:\win* except
      c:\windows)
   5. Uninstall windows installation directory (c:\wininst)
   0. END...
  ========================================
  Enter your choice...:=[1,2,3,4,5,0]?
```

Fig. 1-31: Menu: Uninstall windows software

1. Uninstall MMC-System

Deletes the entire MMC system (FlexOS and Windows). The operating system Windows is not deleted.

2. Select language to uninstall

By selecting menu item 2 you get into the menu "Select language" (Fig. 1-32).

3. Uninstall windows

Deletes the language directory of the language selected previously by means of menu item 2. The language directory to be deleted is displayed under c:\win....

The active language directory cannot be deleted as the user interface could otherwise no longer be loaded in the active language. To delete this directory, you must first change to another language.

4. Uninstall windows in all languages

Deletes all Windows language directories with the exception of WININST and the active language directory.

5. Uninstall windows installation directory

Deletes the Windows installation directory if, after subsequent installation of a printer etc., the space required for this directory must be made available again.

0. End

Back to the previous menu.

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Select language

After selecting menu item 2 "Select language to uninstall" in the menu "Uninstall windows system software" (Fig. 1-31), the following language selection menu is displayed.

```
Copyright (c) Siemens AG 1997. All rights reserved
Select language to work with - actually selected
  ========================================
     1. german
     2. english
     3. french
     4. italian
     5. portuguese
     6. spanish
     7. swedish
     8. czech
     0. END...
  ========================================
  Enter your choice...:=[1,2,3,4,5,6,7,8,0]?
```

Fig. 1-32: Menu: Select language

Install packed system files (with Valitek streamer

After selecting menu item 2 "Install packed windows software" in the menu "Uninstall/Install/Unpack" (Fig. 1-30), the following menu is displayed for the upgrading version. Depending on the type of device selected, various menus are displayed. The following menu is displayed when the device selected is a VALITEK streamer.

```
Copyright (c) Siemens AG 1997. All rights reserved
Install packed system files from tape -
Device Valitek PST2-M1200
    ========================================
     1. Install system
     2. Select language to install...
     3. Install packed Windows (.exe)
     4. Install packed Windows in all languages
        (win*.exe except wininst.exe
     5. Install packed windows installation files
        (wininst.exe)
     6. Set I/O device
     0. End...
    ========================================
    Enter your Choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-33: Menu: Install packed system files (with Valitek streamer)

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1. Install System

Reads in a system tape completely.

2. Select language to install

By selecting menu item 2 you get into the menu "Select language" (Fig. 1-32).

3. Install packed windows (.exe)

Reads in the self-extracting language file. The language, i.e. self-extracting language file to be read in, selected in the second menu item is displayed (in the example: german and windeu.exe).

4. Install windows in all languages ...

Reads in all files from the tape with the name win*. In particular, any new language versions not listed individually. The file WININST.EXE is not read in.

5. Install packed windows installation files

The WININST.EXE with the installation files for the English Windows version is read in.

Important

If an attempt is made to execute items 2 to 8 with the wrong tape, the following VALITEK error message can be displayed:

"There are no files tagged to restore. Press a key"

If you then press any key you return to the menu of the VALITEK streamer. The menu can be exited if you first press the "ESC" key (alarm acknowledgment key) and then answer the prompt that appears with "Y" for "YES".

6. Set I/O device

By selecting menu item 4 you get into the menu "Set device type" (Fig. 1-29).

0. End

Back to the previous menu

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Install packed system files (with PC-Link)

After selecting menu item 2 "Install packed windows software" in the menu "Uninstall/Install/Unpack" (Fig. 1-30), the following menu is displayed for the upgrading version. Depending on the type of device selected, various menus are displayed. The following menu is displayed when the device selected is a PC-Link.

```
Copyright (c) Siemens AG 1997. All rights reserved

Install packed system files from tape - Device PC-Link
    ========================================
     1. Install system
     2. Install packed Windows

     3. Install packed windows installation files
        (wininst.exe)

     4. Set I/O device

     0. End
    ========================================

    Enter your Choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-34: Menu: Install packed system files (with PC-Link)

1. Install System

Reads in from the CD a selected self-extracting system file.

2. Install packed windows

Reads in from the CD a selected self-extracting Windows system file.

3. Install packed windows installation files

Reads in from the CD the file WININST:EXE.

4. Set I/O device

By selecting menu item 4 you get into the menu "Set device type" (Fig. 1-29).

0. End

Back to the previous menu.

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Unpack windows system software

After selecting menu item 3 "Unpack packed windows software" in the menu "Uninstall/Install/Unpack" (Fig. 1-30), the following menu is displayed. This menu is used to extract preinstalled or previously read-in packed language versions. After unpacking, the option is available to automatically delete the packed version.

```
Copyright (c) Siemens AG 1997. All rights reserved
Unpack windows systemsoftware. Delete packed files after unpack
   ================================

   1. Delete packed file after unpack
   2. Do not delete packed file after unpack

   3. Select language to unpack...
   4. Unpack windows german (windeu.exe)

   5. Unpack windows in all languages (c:\win* except c:\wininst)

   6. Unpack windows installation directory (c:\wininst)

   0. END...
   ================================
   Enter your choice...:=[1,2,3,4,5,6,0]?
```

Fig. 1-35: Menu: Unpack windows system software

1. Delete packed file after unpack

The packed version is automatically deleted after unpacking.

If a packed version is not completely unpacked, because of lack of space on the hard disk, for example, the packed files are not deleted even if "Automatic deletion" is selected.

2. Do not delete packed file after unpack

Item 1 is undone.

The setting "Automatic deletion" is retained even when the control is switched off. When the control is started up for the first time deletion is **not** set.

3. Selected language to unpack

This entry leads to another menu where the language to be unpacked can be selected (see Fig. 1-32).

4. Unpack windows <language>

Unpacks the self-extracting language file. The language file selected in the third menu item is displayed (in the example: german and windows.exe).

5. Unpack Windows in all languages

All existing packed language directories are unpacked and the packed files are deleted or not depending on the setting.

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6. Unpack Windows installation directory

Unpack the Windows installation directory WININST with subsequent deletion, depending on the settings.

0. End

Back to the previous menu.

Delete packed Windows software menu

After selecting menu item 4 "Delete packed windows software" in the menu "Uninstall/Install/Unpack" (Fig. 1-30), the following menu is displayed. This menu permits manual deletion of packed language versions. In this way assigned memory space can be made available again.
The following menu is displayed:

```
Copyright (c) Siemens AG 1997. All rights reserved

 Delete packed windows systemsoftware
================================

 1. Select language to delete...
 2. Delete windows german (windows.exe)
 3. Delete packed windows in all languages (win*.except
                                              wininst.exe)
 4. Delete packed windows installation directory (wininst.exe)
 0. END...

================================

   Enter your Choice...:=[1,2,3,4,5,6,7,0]?
```

Fig. 1-36: Menu: Delete packed Windows software

1. Selected language to delete

This entry leads to another menu where the language to be deleted can be selected (see Fig. 1-32).

2. Delete packed windows <language>

Deletes the self-extracting language file. The language file selected in the first menu item is displayed (in the example: german and windows.exe).

3. Delete packed Windows in all languages

Delete all packed language versions with the exception of WININST, the installation directory for the English version.

4. Delete packed windows installation directory

Delete packed version of WININST.

0. End
Return to previous menu

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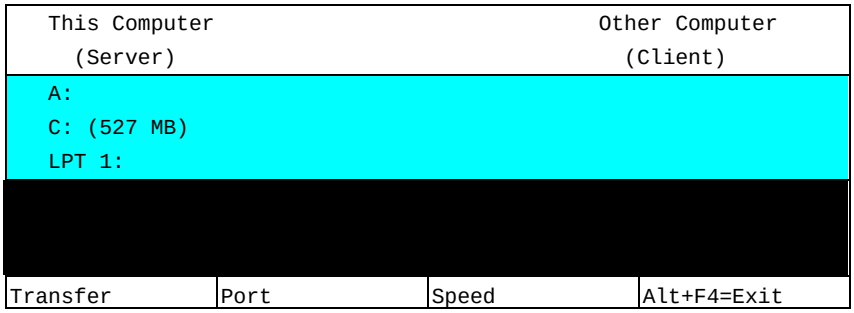
1.6.7 Backup/Restore/Install mit PC-Link

PC-Link is called either by selecting menu item 9 "Free data transfer via PC-Link ... (Attention!!!)" in the menu "Restore/Backup/Install" (Fig. 1-26) or previously with the PC-Link was set with "Set I/O device" (Fig. 1-29).

The PC-Link is started via "Backup/Restore/Install/Free data transfer via PC-Link ..." (Fig. 1-26).

Further information regarding the PC-Link function is given in the README file on the CD.



Exit from PC-Link using key 

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1.6.8 Password

Software Version 5 has been expanded to include a staggered access protection for the MMC. The previous password protection (SW <= 4.6) has been expanded to offer up to 6 possible password levels. Access authorization is configured via suitable entries in the corresponding initialization files.

A description of the configuration and management of the password levels can be found in

SINUMERIK 840C
Software Version 6
OEM Version for Windows
User's Guide 09.01 Edition

Altered passwords are automatically stored in file *SIN840C.INI* by the password application.

Machine data 11 for the password no longer exists. ■

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Difference Description 2

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2.1 Overview

In addition to the MMC operating system FlexOS, Windows for Workgroups 3.11 with MS DOS 6.22 has also been integrated into the SINUMERIK 840C control, Basic Version. The other components, such as NCK, SERVO and PLC are operated without change with the current software version x.y of the SINUMERIK 840C Basic Version.

Changing the MMC operating system entails functional changes, i.e. functional improvements or restrictions between the 840C Basic Version and the OEM Version for Windows. The MMC areas, in particular, are affected.

The following sections show a list of the differences between the 840C Basic Version and the OEM Version for Windows.

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2.2 Machine

Because of the identical NCK software, there are almost no differences between the 840C Basic Version and the OEM Version for Windows in the **Machine** area.

The only difference between the two versions concerns handling of the data selector with the aid of which workpieces can be transferred from the MMC to the NCK and options for saving part program files in the other direction:

840C Basic Version

The data selector shows the FlexOS workpiece directories LOCAL and the virtual directory NCK.

- Workpieces can only be transferred from the FlexOS directory ...\LOCAL\... to the NCK memory.
- If a single workpiece is opened certain files within it are displayed.

Part program files can only be saved back to workpieces in the FlexOS directory ...\LOCAL\.....

OEM Version for Windows

As standard, only the Windows workpiece directory C:\LOCAL and the virtual directory NCK are initially displayed. If certain entries are made in the initialization file *SIN840C.INI*, it is possible to extend the data selector by any number of workpiece directories (network drives, diskette drives, FlexOS directories, etc.).

In this way the following options are possible with the OEM Version for Windows:

- Workpieces can be transferred from all directories of the data selector to the NCK memory. In this way, workpieces can be transferred from network drives to the NCK memory in a way that is transparent for the user.
- With the OEM Version for Windows, all files in the workpiece are displayed.
- If a workpiece directory refers to a FlexOS directory, only the files with the NC data type name or JOB and PATH files are displayed.
- Edited part program files can be saved to any workpiece of the data selector (network drives, disk drives, etc.).

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2.3 Parameters

Because the NCK software is identical there are no differences between the two sub-areas

- Program parameters
- Setting data

However, the different communication mechanisms between the NCK and MMC result in changes in the scope of function of the computer link in the NCK area.

2.3.1 Computer link

Both with the 840C Basic Version and with the OEM Version for Windows the use of the following SINUMERIK CP modules

- CP 315/373 (point-to-point link)
- CP 213 (SINEC-H1 interface)
- CP 1476 (MAP interface)

is possible in the NCK area. With both MMC operating system versions there are no restrictions on the file transfer between the NCK or PLC memory and the external device. The differences that exist concern the communications options with the MMC.

2.3.2 Inch/metric switchover (SW 6.3 and higher)

This function allows the control to be switched over easily from one measuring system to another. The main function, that of creating files from converted machine data and configurability, is implemented under FlexOS.

The Windows version provides only a simplified functionality allowing switchover from the inch to the metric measuring system and vice versa, i.e. if a machine manufacturer must start-up under FlexOS, he must alsogenerate the machine data blocks for the inch/metric switchover under the same operating system. After rebooting to Windows, these files can be transferred into the NCK as a reaction to clicking on the softkey ("Parameter/Setting data/Inch/metric switchover").

By clicking on the softkey "Inch/metric switchover", the NCK sends an I code to the Windows application Dataman. Dataman then displays the following dialog box when the relevant files (for loading into the NCK) are available.

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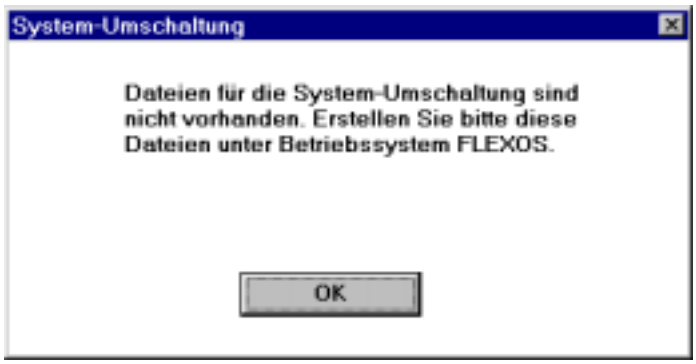
Dialog box 1

If these files are not present, an error message is output stating that these files for system switchover must first be generated under the operating system FlexOS.



Dialogbox 2

Dialog box 1 is informative and allows the user to continue or interrupt the process. The words "Metric" and "Inch" can be configured via a file (created under FlexOS). If these words (or one of the two) are missing, nothing is displayed and the OK button is shown in grey.

By clicking on the softkey "OK" in dialog box 1, the following steps are implemented:

1. The converted files are loaded into the NCK. A, a FlexOS file determines which files are to be loaded.
2. If the loading process has been concluded successfully, Dataman transfers an I code to the NCK which in turn converts the TOA and ZOA data. The conversion can also be switched off.
3. Dataman triggers an NCK Power On when the NCK has completed the conversion.

Text and file names to be configured are defined only once under the operating system FlexOS (e.g. during start-up). When rebooting to Windows, the user therefore does not have to repeat this.

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2.4 Programming

2.4.1 Data management

2.4.1.1 Directory structure

Both the 840C Basic Version and the OEM Version for Windows support workpiece-oriented data management.

840C Basic Version

The highest nodes of the file tree for storing part program data are the two directories (...\LOCAL\... and ...\GLOBAL\...). This gives the user the following options:

- Storing programs in workpiece-specific (...\LOCAL\...) subdirectories (workpieces).
- Storing program data in non-workpiece-specific (...\GLOBAL\...) subdirectories (drilling, milling, turning, measuring).

OEM Version for Windows

With the OEM Version for Windows the standard preset structure is simplified. Initially, only one node C:\LOCAL exists at the top level. With this configuration the following procedure is recommended to the user:

- All subdirectories (workpieces) of the data manager contain only workpiece-specific data. The non-workpiece-specific programs (cycles) can only be stored under cycles user in the data management.
- The user can extend the data manager by any number of workpiece directories (network drives, diskette drive, FlexOS directories, etc.) in the same way as the data selector by making entries in the initialization file SIN840C.INI.
- With workpieces that are not located under C:\LOCAL on the hard disk of the MMC, the path designation is appended to the workpiece name in the combo box of the data manager.
- With the data manager new workpieces can only be set up under C:\LOCAL.
- For files within the FlexOS directory the following restrictions also apply:
  - FlexOS part programs can only be read with the editor, writing and changing is not possible.
  - No new FlexOS part programs can be created.
  - FlexOS part programs and workpieces cannot be read in and out via RS 232 C (V.24).

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2.4.1.2 File name conventions and display

Because of the different identification method for files there are certain differences between the two MMC versions.

840C Basic Version

The data type (TOA, SEA, ZOA, etc.) of a file is identified by the file name extension. This extension is automatically assigned by the system when the file is created.

- The first eight characters of the file name can be freely chosen independently of the file type (TOA, TEA1, etc.) (exception: MPF..., SPF..., job list).
- Several files of the same data type can be stored in one directory. The file names can be selected freely regardless of the data type.
- The data selector displays the file type (TEA1, TOA, etc.).
- The difference between the file and directory is made using the data selector.

Only main programs and subroutines (MPF..., SPF...), and the job list (JOB) must have defined names. A four-figure program number can be freely selected for main programs and subroutines.

OEM Version for Windows

The files are identified by their file names. This identification scheme is subject to the following restrictions:

- The file name of a file can be freely chosen when the file is created. However, only those files with a valid NCK name are displayed in the left-hand list box of the data manager. All files are displayed in the right-hand list box of the data manager .
- Only those files with a valid NCK name can therefore be transferred to the NCK memory.

  With main programs and subroutines and the job list the same restrictions apply as in the Basic Version.
- The user can store several files of the same type (e.g. NC machine data) with different names in one directory. However, only one file with a valid NCK file name can exist in a directory. If a file is to be transferred to the NCK memory it might have to be renamed.
- There is no separate display of the object type.
- The distinction between files and directories is made automatically by the structure of data manager. Directories are only displayed in combo boxes and files in list boxes.
- Not only the integrated data manager but also the MS Windows file manager can be called up to display directories and files.

  With the file manager special sorting criteria (date, alphabetical, etc.) can be specified.

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2.4.1.3 Job lists

There are small differences between the 840C Basic Version and the OEM Version for Windows in the command syntax and applications of the job lists.

840C Basic Version

In the Basic Version the following possibilities and restrictions apply:

- Loading a file from another workpiece or another directory is possible in .../GLOBAL/...
- Cycles can be loaded only in the workpiece STANDARD using the LOADCYC instruction.
- When loading cycles via the LOADCYC instruction it is not possible to set or reset attributes for the file in the NCK memory.
- The SELECT instruction in the job list is only processed if the workpiece is loaded using the function

  SELECT WORKPIECE

  in the **Machine** area (AUTOMATIC mode).

  When loading in the Services area, the SELECT instruction is not processed.
- The machine-tool manufacturer can define his own standard job list that is automatically created when a workpiece is created.

OEM Version for Windows

Here the following possibilities and restrictions apply:

- Files from the local or another workpiece can be loaded. LOAD instructions for files can be redirected to any drive (network drive, diskette drive, etc.) using the "PATH" file.
- Cycles can be loaded from the STANDARD or USER directory into the NCK memory using the LOADCYC instruction in any job list.
- When loading cycles using the LOADCYC instruction, file attributes (read only, write, executable) can be set or reset in the NCK memory.
- The SELECT instruction in the job list is only processed if the workpiece is loaded into the NCK memory using the function

  SELECT WORKPIECE

  in the **Machine** area (AUTOMATIC mode).

  When loading in the **Programming** area, the SELECT instruction is not processed.
- In the job list, further MMC applications can be started with the CALL instruction.
- The machine-tool manufacturer (OEM user) can also define his own job list.

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2.4.1.4 Handling cycles

When handling cycles, too ,there are small differences between the two versions.

840C Basic Version

Cycles are stored in a special directory on the MMC side. This has the following consequences:

- Cycles cannot be edited on the MMC side. This is true regardless of the state of the interface signal "Cycle disable".
- Cycles can only be loaded into the NCK memory in the job list of the STANDARD workpiece. No additional attributes for the NCK memory can be set or reset (see: Job list).
- On the NCK side, the cycles are protected from unauthorized editing by the interface signal "Cycle disable".
- If "Cycle disable" is not set, cycles behave like subroutines and can be transferred to a workpiece on the MMC side.
- The subroutine in this workpiece can be declared as a cycle on the user interface and then be stored in a special directory.

OEM Version for Windows

With the OEM Version for Windows, the user cycles are stored in the directory CYCLE USER.

- Any files and thus also cycles can be individually protected against unauthorized copying, deleting and editing on the MMC side by keyswitches, password levels and the interface signal "Cycle disable".
- Cycles can be loaded into the NCK memory in any job list. Additional attributes for the NCK memory can be set (see: Job list).
- On the NCK side, the cycles are protected against unauthorized editing using the "Cycle disable" (exactly as in the 840C Basic Version).
- The copying of cycles into another directory can be individually disabled or enabled with keyswitches, password levels and the interface signal "Cycle disable".

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2.4.1.5 Editing files

In the editing features, too, there are small differences between the two MMC versions.

840C Basic Version

With the 840C Basic Version, files on the hard disk can be edited with the ASCII editor. It has the following features:

- All files (NCK and configuration files) on the hard disk can be edited with the ASCII editor.
- It is not possible to edit data in the NCK memory with the ASCII editor.
- The ASCII editor has no special modes (e.g. read only, read write)

OEM Version for Windows

With the OEM Version for Windows, the editor **WEdit** performs the task of the ASCII editor. There are the following differences:

- Any files of the data manager can be created or edited. It is not possible to edit configuration or initialization files in other directories than those of the data manager using **WEdit**.
- Configuration and initialization files must be edited with standard editors of MS DOS ("Edit") or MS Windows ("Notepad").
- With **WEdit,** part programs can also be edited in the NCK memory.
- **WEdit** can be toggled between special modes (read only, read write). These modes are set depending on the access rights (position of the keyswitch, password levels, cycle disable) of the data manager.

Both the ASCII editor and **WEdit** can be started "twice". In this way, two programs can be edited simultaneously and data can be exchanged via the clipboard.

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2.4.1.6 Graphic programming system turning and milling

840C Basic Version A program package for workpiece-oriented programming (turning and milling) is provided by Siemens as an option for the Basic Version.

OEM Version for Windows No workpiece-oriented programming is supplied by Siemens for the OEM Version for Windows.

2.4.2 Edit NC

In the NCK editor area the two MMC versions are identical.

2.5 Simulation

840C Basic Version A programming package for simulation in the technologies drilling, milling, turning is provided by Siemens as an option for the Basic Version.

OEM Version for Windows For the OEM Version for Windows, no simulation package is supplied by Siemens.

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2.6 Services

2.6.1 V.24 data transmission

In V.24 data transmission to a peripheral device there are also differences between the two control versions because of the different MMC operating systems.

2.6.1.1 Paper tape format

Both the 840C Basic Version and the OEM Version for Windows support data output in paper tape format.

840C Basic Version

All NCK-capable data, i.e. user data that can be transferred to the NCK memory, including the UMS module data, can be read in and out in paper tape format.

The PLC user program cannot be transferred in paper tape format.

OEM Version for Windows

All NCK-capable data except for the UMS data can be read in and out using the data manager in paper tape format.

The PLC user program cannot be transferred in paper tape format.

2.6.1.2 Binary/PC format

For special files (PLC user program, configuration files for interfaces, etc.) no paper tape format exists. This data must be input and output in another format.

840C Basic Version

The Basic Version supports a binary format called PC format. This format provides the following advantages:

- In this format all data, i.e. binary and ASCII files, can be read in and out.
- With PC format it is not only possible to input and output single files but also whole directories.
- The information about the directory from which the data originates is output in the leader. In this way, the data are automatically stored in the original directories if they are restored.

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OEM Version for Windows

Output of binary data or data for which no paper tape format is defined (e.g. INI files from MS WINDOWS) is possible using the data backup program PCIN 4.2. When using PCIN 4.2, it is important to observe the following.

- With PCIN 4.2, single files, such as initialization files etc. for which no paper tape format exists, can be output.
- PCIN 4.2 also provides the option of transferring a whole directory in PC format (TRANSFER DIRECTORY).
- Moreover, with PCIN 4.2 it is possible to create archives in PC format (NEW ARCHIVE) and read them out (TRANSFER ARCHIVE). In this way it is not only possible to back up and restore single files but also whole directories.
- When reading in archive files (DATA_IN PC-FORMAT) the user must first specify in which directory and under which name the archive file is to be stored. After this, the files stored in the archive can be restored to their original target directories with the function PC-FORMAT UNPACK WITH DIR (main directory: C:\).

2.6.1.3 Archive lists

Archive lists are used to simplify and automate the data backup process. In archive lists, the names of the files and/or directories to be backed up are entered. A precondition for the use of archive lists is that the PC format is supported.

840C Basic Version

The Basic Version supports the use of archive lists.

OEM Version for Windows

PCIN 4.2 supports the creation of archive lists and the associated archives. Archive lists can be edited with the integrated editor, i.e. files to be archived can be added to or deleted.

2.6.1.4 Diskette drives

Diskette drives are a common and easy-to-use alternative for backing up relatively small volumes of data.

840C Basic Version

In the Basic Version, the diskette drives FD-E1 (connected via COM2) and FD-E2 (connected via MMC interface) can be used.

Several archive files or workpieces can be stored on diskettes.

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OEM Version for Windows

With the OEM Version for Windows only the FD-E2 diskette drive can be connected via the INT-MMC.

With the OEM Version for Windows there are two options for integrating data on diskette into the data manager.

- The connected diskette drive automatically appears in the right-hand combo box of the data manager and can be selected in the same way as other devices (serial interface) for data transmission.

  In this case, workpiece-oriented data management on diskette is not possible. Single files only can be stored in the root directory of the diskette.

- The diskette drive connected can be integrated into the workpiece manager of the MMC with an entry in the *SIN840C.INI* file.

  In this case, the root directory of the diskette is used as a container for further workpieces. Single files can only be stored workpiece-oriented, i.e. in subdirectories of the root directory.

2.6.1.5 COM 3/COM 4

The serial interfaces COM3 and COM4 can be implemented using the MMC interface module.

840C Basic Version

The Basic Version supports the use of the serial interfaces COM3 and COM4 on the INT MMC.

OEM Version for Windows

With the OEM Version for Windows, the serial interfaces COM3 and COM4 of the INT MMC can only be used if the I/O address and the IRQ are set in the control panel under Parts.

The machine-tool manufacturer (OEM user) can implement further serial interfaces using commercially available PC interface cards in the AT box of central controller 3.

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2.6.1.6 PLC-controlled V.24 interface/program selection/workpiece selection (DB37)

840C Basic Version

Using the DB 37 system it is possible to transfer data of a workpiece (directory: LOCAL) to and from the serial interfaces.

OEM Version for Windows

The OEM Version for Windows also supports this function. The following changes and additions apply compared to the Basic Version:

- Input/output can be aborted which is not possible with the Basic Version.
- With data output it is possible to specify a value range (e.g. several programs).
- The job list is not processed.

In addition, the OEM Version for Windows also has the following functions:

- Where the customer has expanded the data manager or data selector by any workpiece directories, it is possible to use the DB 37 to copy workpieces from one workpiece directory to another (e.g. copying a workpiece from the network drive to the local hard disk.)
- PLC-controlled workpiece selection can be made from any workpiece directory (e.g. network drive).
- R parameters, TOA can only be set in complete blocks and not from x to ... From SW 6.4, blocks from x to y are also possible!

2.6.2 Execution from hard disk

Using the function "Execution from hard disk" it is possible to execute part programs larger than the NCK memory.

840C Basic Version

The Basic Version supports the function "Execute from hard disk". Here it is necessary to specify the parameter DISK in the SELECT instruction in the job list.

OEM Version for Windows

With the OEM Version for Windows, "Execute from hard disk" functions in the same way.

The OEM Version for Windows also provides the following option:

- Using the "PATH" file additional redirection to any path is possible so that the program can also be executed directly from the "network".

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2.7 Diagnostics

2.7.1 Start-up functions

A more extensive start-up of the control is only possible under the FlexOS operating system. In particular, the SIMODRIVE 611-D drive can only be started up via the machine data dialog.

2.7.1.1 Start-up menu

Both the 840C Basic Version and the OEM Version for Windows provide a start-up menu that permits initial clear of the NCK and the PLC with subsequent restoration of backed-up data.

This start-up function must be performed whenever a module is replaced or data is lost.

840C Basic Version

The Basic Version provides the following options and is subject to the following restrictions:

- Loading standard or user machine data in the menu Machine data , file functions. After this, initial clear and formatting of the NCK user memory in the start-up menu.

  It is possible to store several sets of user data on the hard disk and to load them into the NCK memory during start-up.
- Initial clear of drives.
- Start-up of the SIMODRIVE 611-D with backed-up TEA3 data (machine data dialog, file functions).
- Initial clear of the PLC followed by initial loading of the PLC user program.

  Initial clear of the PLC without loading the user program is only indirectly possible on the Basic Version.
- Backing up the PLC user program to hard disk.
- Forced booting of the NCK and the PLC.

OEM Version for Windows

With the OEM Version for Windows the following functions are possible:

- Loading standard or user machine data followed by an initial clear and formatting of the NCK user memory.

  It is possible to store several sets of machine data on the hard disk. However, only one data set with a valid NCK file name can exist (rename if necessary). This is then automatically loaded into the NCK memory when the start-up function is initiated.
- Start-up of the SINUMERIK 611-D is not possible.

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- Initial clear of the PLC followed by initial loading of the PLC user program.
- Initial clear of the PLC without initial loading of the PLC user program.
- Backing up the PLC user program to hard disk.
- Forced booting of the PLC (replacement of the PLC operating system).

2.7.1.2 Machine data dialog

840C Basic Version

The machine data dialog can be selected on the Basic Version. The following functions can be performed.

- Menu-guided input of the NC, PLC and drive machine data.
- Input of the IKA data
- Creation of user displays for the selective input of machine data
- Functions for the transmission and management of data on the hard disk.

OEM Version for Windows

With the OEM Version for Windows, only the machine data lists are provided. The lists permit input of NC and PLC machine data as is the case for the 805, 810, 820, 850 and 880 systems.

The OEM Version for Windows also provides the following options:

- Transfer of the IKA, NC, PLC and cycle data (cf. 1.5.1) entered under FlexOS into the MS Windows directory [MD user]. The on-line IKA data can be copied into a workpiece and then edited with the **WEdit** editor.
- Switchover to the FlexOS operating system and selection of the machine data dialog as on the Basic Version.

2.7.2 Service and Diagnostics functions

The service and Diagnostics functions are largely identical with the exception of the Service display of the SIMODRIVE 611-D digital drive.

With the OEM Version for Windows, a Service display exists for 611-D diagnostics. This displays the most important data of the connected drive.

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2.7.2.1 Alarms and messages

In the alarms and messages area there are no large differences in the functionality. Both versions provide an overview display with the current alarms and messages and display one alarm in the alarm line.

Instead of message boxes (840C Basic Version), the status line is directly underneath the alarm line (OEM Version for Windows).

Both the Basic Version and the OEM Version for Windows support paging of alarms. With the OEM Version for Windows there is an additional menu in the alarm window with which the "paging frequencies" can be set.

However, the concepts for creating alarms and integrating them into the control are completely different.

840C Basic Version

The Basic Version provides the following options for integrating alarms and messages and the associated help texts into the control

- The alarm concept is based on a language-independent and a language-dependent ASCII file.

  In the language-independent file (MELDATTR) the following is defined:

  - Alarm number, priority, class and type
  - Display location and window, color, acknowledgment condition text (alarm line or message box) and acknowledgment mode.
  - Reference to the alarm text in the language-dependent files.

  The alarm and message texts assigned to the alarm numbers are located in the language-dependent files (MELDETEXT).
- The files can be edited, for example, using the integrated ASCII editor in the control and stored on the hard disk.
- Additional help texts for the operator can be integrated into the control using the integrated editor.

OEM Version for Windows

With the OEM Version for Windows, the alarm and message texts and the associated configuring data are stored in a database.

- The following is stored in the database:
  - Alarm number, priority and acknowledgment class.
  - Display location and color. The display location can be the alarm or status line. The status line replaces the message boxes (Basic Version).
  - The alarm text (in six languages: German, English, French, Spanish, Italian, Portuguese).
- In addition, references to MS Windows help files and topics can be entered to provide context-sensitive help. The MS Windows help system then provides the operator with additional information and notes on the alarms and messages.

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Note

Please refer to the OEM documentation.

Alarm Dialog for PC
Software Version 6
OEM Version for Windows
User's Guide 03.01 Edition

for a detailed description.

- The alarm text database is written using an ACCESS tool.
- The help files for the MS Windows help system can be generated using an external program package (e.g. ROBOHELP, DOC-TO-HELP, etc.) or with RTF-capable text processing programs + help compilers (HC31 or HCP).

2.7.2.2 Alarm log 1 and 2

840C Basic Version

The alarm logs 1 and 2 are used to record alarms in ring buffers. Which alarms are stored in which log and the maximum number of entries in the alarm log can be set in a configuration file.

OEM Version for Windows

The OEM Version for Windows does not support this diagnostics function. The OEM user must integrate an application of this type into the control himself.

2.7.2.3 Integrated STEP5 package

840C Basic Version

With the 840C Basic Version it is possible to integrate the FlexOS Step5 programmer software into the control as an option. In this way the user can run more extensive PLC tests and diagnostics directly at the control.

OEM Version for Windows

As a standard no integrated Step5 software is provided by Siemens. The OEM user must integrate the appropriate MS DOS Step5 software.

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2.7.3 Other PLC functions

Only those PLC functions are listed that differ from the Basic Version and have not been mentioned in previous sections. The PLC functions already mentioned are:

PLC-controlled V.24 data transmission (Section 2.6.1.6)

Paging alarms in the alarm line (Section. 2.7.2.1)

2.7.3.1 Date and time

840C Basic Version

With the Basic Version it is possible to read and write the time using the FB61 and FB62 system function blocks.

OEM Version for Windows

The OEM Version also supports this function. It is fully compatible with the Basic Version.

2.7.3.2 Screen darkening function

840C Basic Version

In the Basic Version, a "screen darkening" function can be initiated both from the MMC area and from the PLC. If the "screen darkening" function is used with the TFT flat screen, the backlight is switched off.

OEM Version for Windows

The OEM Version for Windows supports in Software Version 4.4 not only the standard screen saver function of MS Windows that can be activated in the **control panel** but also the Siemens screen saver. It is important to observe the following:

- The use of the Windows screen saver is only helpful with the CRT version (19" operator panel).
- If the TFT flat display (14" operator panel) is used, the screen saver does not switch off the backlight of the display. The backlight is switched off only when the Siemens screen saver is activated.
- Activation of a screen saver from the PLC is only possible with the Siemens screen saver. This is not effected via the interface signal DL 0.5 (screen dark) in DB 48, however, but by starting the application "C:\MMCWIN\PC\BACKLIGH.EXE /s". No acknowledgment message is sent to the PLC.

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2.7.3.3 Control without operator panel

840C Basic Version

With the 840C Basic Version, several CNC controls can be operated with one operator panel. At any one time only one control is connected to the operator panel.

Operator panel monitoring of the other controls can be deactivated from the PLC with interface signal DL 0.2 (control without operator panel) in DB 48 in order to prevent the relevant alarm from being output.

OEM Version for Windows

The OEM Version for Windows does not support the interface signal DL 0.2 in DB 48.

With the OEM Version for Windows it is possible to deactivate the alarm monitoring of the operator panel by making the following entry in initialization file *SIN840C.INI* (Section [KYRU]):

```
Control=off
```

and then run the control without an operator panel.

2.7.3.4 Operator panel disable

840C Basic Version

In the Basic Version, it is possible to disable input via the operator panel from the PLC via interface signal DL 0.4 (operator panel disable) in DB 48.

OEM Version for Windows

The MS Windows version also supports this function. It is largely identical with the Basic Version.

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2.8 Alarms

100202	**Error in file structure <%1>**
Scan	Data management during job list processing
Effect	Processing job lists interrupted
Explanation	Error in job list (workpiece does not exist, file opening/closing error)
Remedy	Correct job list
Note	Alarm from SW 6.3

100203	**Timeout when executing an application in the job list**
Scan	Data management while executing the CALL command in the job list
Effect	The called application checks back within the WAIT time. Execution of the job is aborted.
Explanation	In the job list you have implemented a CALL instruction to initiate an MMC application. If the application does not check back properly within the projected time frame (file sin840c.ini, Section Dataman, Entry Timeout) the forenamed alarm is issued.
Remedy	Check the CALL instruction in the job list to verify that the path and application name are correct. Ascertain whether the application is available on the MMC disk.

100204	**File <%1> not transferred**
Scan	Data management while executing the LOAD command in the job list or if file transfer is initiated in an application with i-Code 421.
Effect	File is not transferred.
Explanation	This error occurs in case of incorrect syntax when several part programs are being transferred. Example: Comma omitted in MPF [1,999], i.e. entered as MPF [1999].
Remedy	Correct the syntax.
Note	Alarm from SW 6.3

100205	**Copying active <%1>**
Scan	Data management on inch/metric changeover
Effect	None
Explanation	When the inch/metric changeover is initiated, a message is issued to indicate that the relevant machine data is being loaded.
Remedy	not applicable
Note	Alarm from SW 6.3

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100402 V24 data output active %0 %1

Scan Serial communication via V24

Effect None

Explanation On successful initiation of data transfer via V.24 this message is output in the message line.

Remedy Not applicable

Note: Alarm from SW 6.3

100403 V24 data input running %0 %1

Scan Serial communication via V24

Effect None

Explanation On successful initiation of data transfer via V.24 this message is output in the message line.

Remedy Not applicable

Note Alarm from SW 6.3

100404 Interface already assigned (Port %0)

Scan Serial communication via V.24

Effect Data transfer does not take place.

Explanation The serial interface cannot be opened.

Remedy Check whether:
specified hardware is available
baud rate and other settings are correct
interface is already in use

Note Alarm from SW 6.3

100405 V24: Call parameter missing/incorrect %0

Scan Serial communication via V24

Effect None.

Explanation The Interface parameters are incorrect or missing.

Remedy Check parameters. Permitted parameters are workpiece, program, transmission direction (IN, OUT). Combining the parameters "IN" and device type "Printer" is not allowed.

Note Alarm from SW 6.3

100406 V24: ASCII string too long

Scan Serial communication via V24

Effect Transmission is aborted

Explanation Line in source file is too long; the maximum permissible length is 255 ASCII characters.

Remedy Check source file.

Note Alarm from SW 6.3

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100407	**V24: Invalid path**
Scan	Serial communication via V.24
Effect	The file not transferred
Explanation	The stated file path is incorrect
Remedy	Correct the path
Note	Alarm from SW 6.3

100408	**V24: no write access**
Scan	Serial communication via V24
Effect	The file is not transferred
Explanation	An attempt was made to write a write-protected file
Remedy	Remove write access rights
Note	Alarm from SW 6.3

100410	**V.24: no free memory available**
Scan	Serial communication via V.24
Effect	The file is not transferred
Effect	Memory of hard disk is exhausted
Remedy	Delete files and directories that are no longer required
Note	Alarm from SW 6.3

100411	**V.24: invalid number of digits**
Scan	Serial communication via V.24: read in via punched tape
Effect	The file is not transferred.
Explanation	The syntax of the file being transferred is incorrect.
Remedy	Correct the file name
Note	Alarm from SW 6.3

100412	**V24: object type unknown**
Scan	Serial communication via V24: punched tape format
Effect	The file is not transferred
Explanation	An unknown object type was discovered.
Remedy	Correct the data type (correct syntax must be observed, e.g. MPF, SPF, TEA1 ...)
Note	Alarm from SW 6.3

100413	**V24: Time-out triggered**
Scan	Serial communication via V24
Effect	Data not read in or out
Explanation	No data were not read in or retrieved during the parameterized period (file par_v24.ini)
Remedy	Check the communication parameters.
Note	Alarm from SW 6.3

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100414	**V24: Port cannot be closed (incorrect ID)**
Scan	Serial communication via V24
Effect	Possible communication difficulties
Explanation	Internal error on terminating communication
Remedy	Check OEM application for faulty communication with serial interface
Note	Alarm from SW 6.3

100503	**File <%1> not loaded**
Scan	When loading servo and drive data
Effect	File is not transferred
Explanation	The disk does not contain the file to be loaded from among the initial program loader files in directory c:\mmc.001\siem.069\servo.111 or c:\mmc.001\user.005\servo.111 directory not existent on disk.
Remedy	Copy file <%1> to the hard disk.
Note	Alarm from SW 6.3

100803	**No connection to operator panel**
Scan	On power-up of control
Effect	Operator panel does not respond
Explanation	An error occurred while the control was powering up and communication was being established between the operator panel and MMC.
Remedy	Check whether • the link between the operator panel and the MMC is in good condition • V24 is functioning • latest version of operator panel firmware is available
Note	Alarm from SW 6.3

101200	**Insufficient memory for UMS**
Scan	On start-up of control
Effect	USM is not loading
Explanation	USM (of customer or Siemens) cannot be loaded with the current memory configuration because it is larger than the setting in NC MD 60000 (from SW 4; fixed setting 512 KB until SW 3).
Remedy	Change memory configuration (from SW 4); set MD 60000 accordingly.
Note	Alarm from SW 6.3

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101201	**Standard memory configuration – error in configuration file**
Scan	On start-up of control after data loss
Effect	Booting with standard configuration
Explanation	Memory configuration could not be loaded and activated. Error in user configuration.
Remedy	Create new user configuration.
Note	Alarm from SW 6.3

101202	**File %1 not transferred**
Scan	Start-up of control if the user wishes to load files to the NC using load840c.ini
Effect	File %1 is not transferred to NC
Explanation	The User entered name of the files he wishes to load to the NC in the file called load840c.ini. One of the files cannot be transferred.
Remedy	Check file name (including path).
Note	Alarm from SW 6.3

105001	**Too many messages**
Scan	Setting of alarms/messages
Effect	New alarm occurrences are not indicated until further alarms are acknowledged.
Explanation	There are too many unacknowledged alarms/messages and a new alarm/message needs to be issued.
Remedy	Cancel alarms/messages (Power on) or increase the number of alarms in the file SIN840C.INI [alarm]. Entries= <no. of alarms>, value <increase number of alarms
Note	If no value has been entered, the default value for <no. of alarms> is 500. Entries = 0 deactives the limit!

105004	**NCK reset – please wait ...**
Scan	Data management during inch/metric switchover
Effect	None
Explanation	If a Power On is requested during inch/metric switchover, a message is displayed.
Remedy	Not applicable
Note	Alarm from SW 6.3

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105057	**ATTENTION: Virus alarm!!!**
Scan	On powering up control after SysLock has triggered a virus alarm.
Effect	None
Explanation	If the program SysLock program finds that the size of the main memory has changed since its first initialization, a virus alarm is triggered
Remedy	If this virus alarm is triggered, the system has to be examined and decontaminated with a virus scanner. In order to allow the virus scanner to work properly, it is essential that the system is started up with a boot disk that is not infected with a virus.
Note	Alarm from SW 6.3

110049	**V24: check interface parameterization**
Scan	Serial communication via V24
Effect	Data are not read in properly
Explanation	If data transfer is interrupted to ask the user whether an existing file is to be overwritten, and if no data transfer log (e.g. RTS/CTS) has been agreed, then the transfer is interrupted displaying this message.
Remedy	Set type of log and select again
Note	Alarm from SW 6.3

110058	**V24: Transfer aborted**
Scan	Serial communication via V24
Effect	Not all the data was transferred.
Explanation	Abort occurred while file was being transferred.
Remedy	Check cable and peer
Note	Alarm from SW 6.3 ■

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Abbreviations

3

ASCII	American Standard Code for Information Interchange
BCD	Binary coded decimal
BRK	Break (program control)
CLR	Clear (program control)
COR	Coordinate rotation
CPU	Central processing unit
CSB	Central Service Board
CTS	Clear to send
DAC	Digital-to-analog converter
DB	Data block
DIO	Data transfer display (data input/output)
DRAM	Dynamic RAM, dynamic read/write memory
DRF	Differential resolver function
DRY	Dry run feedrate
DSB	Decoding single block
DSR	Data set ready
DW	Data word
EIA code	Special tape code, number of perforations per character
EPROM	Erasable programmable read only memory
ETC	ETC key, extends the text bar
FIFO	First in first out
FST	Feed stop
GEO	Geometry

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GI	Gearbox interpolation
HMS	High-resolution measuring system
HW limit switch	Hardware limit switch
IKA	Interpolation and compensation with tables
INC	Incremental dimension
ISO code	Special tape format, number of perforations per character always even
JOG	Jog mode
KYRU	Key request unit
LEC	Leadscrew error compensation
LED	Light-emitting diode
LF	Marks end of block of data in ISO code (line feed)
MCP	Machine control panel
MD	Machine data
MDA	Manual data automatic
MMC	Man-machine communication (PC area in SIN 840C)
MPF	NC part program (Main Program File)
NC	Numerical control
NCK	Numerical control kernel
PLC	Programmable logic controller
PST	Procedure-step (program control)
RAM	Random access memory (read-write memory)
RDY	Ready
ROV	Rapid override
RPA	R parameter active, memory area in NCK for R parameter numbers
RTS	Request to Send
SBL	Single block
SD	Setting data
SEA	Setting data active, setting data in the NCK

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SKP	Skip (block)
SPF	Subroutine (subprogram file)
SW limit switch	Software limit switch
TEA	Testing data active (machine data)
TO	Tool offset
TOA	Tool offset active, memory area for tool offsets
TRC	Tool radius compensation
UMS	User memory submodule
ZOA	Zero offset active

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Suggestions

Corrections

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