SIEMENS

Graphic Programming System on MS–DOS® PC
Software Version 6

Environment Description 07.97 Edition

User Documentation
SINUMERIK 840C / OEM Version for Windows

User Documentation

- 840C SINUMERIK
- Catalog NC 36
- Catalog NC Z
- Accessories SINUMERIK

User/Manufacturer/Service Docum.

- ACR 20/80SSM/840C SINUMERIK
- Link to SINEC L2-DP with Module
  - IM328-N, Slave
  - IM329-N, Master and Slave

Manufacturer Documentation

- Operator’s Guide
  - OEM Version for Windows
  - Standard Diagnostics Guide
- Programming Guide
- User’s Guide
  - Graphic Programming System
  - Drilling/Boring and Milling
    - Parts 1+2
    - Turning Parts 1+2
    - On PC
    - Environment Description 840C
- Cycles, Programming Guide
- Measuring Cycles Version 20
- User’s Guide
  - Simulation Milling and Turning

Manufacturer Documentation

- Interface:
  - Signals
  - Connection Conditions
- Function Block Packages
- Function Macros
- PLC 135 WB/WB2/SD
- Quick Reference, Planning
  - S5-HLL
- SINUMERIK WS 800A
- CL800 Cycle Language
- User’s Guide
- Planning Guide
  - Graphic Programming System
- OEM Version for Windows
- User’s Guide
- Alarm Dialog for PC

Service Documentation

- Installation Guide
  - Instructions
  - Lists
  - General Description
  - Windows
- Measuring Cycles Version 20
- Start-up Guide
- Spare Parts List

Description of Functions
- Safety Integrated

Computer Link
- SINT
- SIN PS 231
- SIN PS 315

Computer Link
- Message Frame
- General Description
Graphic Programming System on MS–DOS® PC
Software Version 6

Environment Description
User Documentation

Valid for

Control Software Version
SINUMERIK 840C/CE as from SW 4
(Standard/Export Version)

07.97 Edition
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.

If factual changes have been made on the page since the last edition, this is indicated by a new edition coding in the header on that page.

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<th>Order No.</th>
<th>Remarks</th>
</tr>
</thead>
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<tr>
<td>03.95</td>
<td>6FC5198–5AB10–0BP0</td>
<td>A</td>
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<td>6FC5198–6AB10–0BP0</td>
<td>C</td>
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<tr>
<td>07.97</td>
<td>6FC5198–6AB10–0BP2</td>
<td>C</td>
</tr>
</tbody>
</table>
Preliminary Remarks

The documentation for your Graphic Programming System is divided into three parts.

- “Environment Description for Graphic Programming System”

This Environment Description of the Graphic Programming System on PC describes

- installation,
- starting,
- special operating functions as well as
- operating procedures by way of examples.

Note

Before using the functions with the Graphic Programming System you should have worked through the programming examples in Part 1 and carefully read through Part 2 of the User’s Guide.

The User’s Guide does not contain detailed examples of all the functions provided by the system and all possible operator actions. For this reason, the Graphic Programming System features a powerful help function that is available in almost all operating situations.

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1 Introduction

This User’s Guide describes the operator actions and programming functions of the graphic programming system for a personal computer.

Using a workpiece drawing you define:

- the workholders (for turning only),
- the tools,
- the blank contour,
- the finished part contour,
- the type of machining

using graphic functions and a part program in DIN code is generated automatically.

You can simulate the programmed traversing movements and display these on the screen.

The part program generated can be edited at a later time.

Powered tools can machine the end face or peripheral surface of a turned part with drilling or milling operations on condition that the machine has a C axis and the option Transmit.

The automatically generated part program can, for example, be sent to the CNC control using a data transmission program.
2 Installation and Operation

Section 2 describes the installation and operation of the Graphic Programming System on the PC in detail.

- The first part explains how the software is supplied to the user.
- The second part describes the required hardware and software on your PC.
- The next section gives detailed instructions on how to install and start the Graphic Programming System.
- The fourth part explains the user interface and the individual keys that differ from those on the operator panel of the SINUMERIK 840C.
- The fifth section of the User’s Guide explains special operator actions on the PC.

This section describes
- file functions and
- transmission functions

that differ from those on the SINUMERIK 840C.

2.1 How it is supplied

SIEMENS supplies the software package for the Graphic Programming System on PC on 3 1/2" diskettes.

You should make a back-up copy of the supplied diskettes before you install the Graphic Programming System onto your hard disk.
2.2 Hardware and software requirements

The following list contains the minimum requirements for the system environment.

**Computer**
You require a personal computer with
- at least a 486 DX microprocessor,
- DOS Version 6.2 or higher,
- Microsoft Windows Version 3.1 or higher,
- a hard disk,
- a 3 1/2" disk drive,
- at least 8 MB RAM user memory
- a VGA graphics card with a screen resolution that can display at least 16 colors and
- a monitor that is compatible with the graphics card being used.

**Free memory space on the hard disk**
To install the Graphic Programming System,
- you require at least 45 MB free memory space on an uncompressed hard disk drive.
  of this disk space the Graphic Programming System uses approx. 10 MB for the working area of the DOS extender.

**Operating systems**
MS–DOS and Windows, Version 3.1, must already be installed on your personal computer.
The Graphic Programming System can run under
- DOS as well as
- in a full–screen DOS window under Windows.
It is not possible to run the system in a window under Windows.

**Basic settings**
The system takes the basic settings for the
- technology (turning or milling)
- language
- machine type and
- workpiece name
from a configuration file.

**Use under Windows**
If the system is installed under Windows, the standard VGA driver must be configured with 640x480 pixels for 16 colors.
Problems could arise if any other graphics drivers are used.
2.3 Installation and starting

This section explains how you
- install and
- start

the Graphic Programming System on your personal computer.

Note
The number of diskettes to be installed depends on the size of the ordered software.

Procedures

1. Call up Windows and select Program Manager (WIN 3.1) or you are on the operator interface of WIN 95.
2. Place diskette 1 in the disk drive.
3. Open the File (WIN 3.1) or Start (WIN 95) menu.
4. Select the command Run.
   This opens the dialog box “Run”.
5. Enter: [Drive]\setup in the command line.
   Confirm with the Input key.
   The following display appears:

   Fig. 2.1 Installing a Graphic Programming System on PC

6. Select the target drive (without details of the directory) in the menu displayed and confirm with the Input key (Continue).

The software must not be installed in a subdirectory.
Once you have started the installation program from diskette 1, the following menu appears:

![Installation Menu](image)

**Fig. 2.2 Menu for installing the Graphic Programming System**

Select the components that you wish to install:

- All the possibilities are displayed in the field “to install”.
- Click **Remove** (the selected component is transferred to the field “to ignore”) if you do not require a component or language.
- Once you have deselected all the components that you do not require, click **Continue**.
- If you make a mistake or if you repeat the setup routine you can mark the deselected components in the field “to ignore” and put them into the field “to install” by clicking **Add**.

As soon as all the required components are listed in the field “to install” you can click **Continue**.

If you have made the following selection:

![Selection Menu](image)

**Fig. 2.3 Selection for English and German only**

and clicked **Continue** twice, follow the instructions displayed on the screen to change the diskettes.

When you have completed installation, the instruction:

“End Windows and select directory \WOP and execute command: install.bat” is displayed. Execute these operations.
First start up Windows.

The Graphic Programming System generates a **WOP–T/M program group** on the Windows user interface.

**Fig. 2.4 WOP–T/M program group with the applications WOP and PCIN**

The program group contains the applications
- graphic programming (**WOP–T_M**) and
- data transmission (**PCIN**).

### Starting under Windows

If you are starting the Graphic Programming System under Windows go into the program group and press the following key combination:

1. **Double click** the **WOP–T_M** icon with the **mouse** to activate the Graphic Programming System or select **START/PROGRAMS/WOP–T_M** under **WIN 95**.

   Note:
   - If you install the system with several languages and with the turning and milling options, then the last of these to be installed will be active when the system is started up for the first time.

2. You can return to the Windows user interface by pressing **Alt–Esc** (the Graphic Programming System remains active in the background)

3. and, for example, call up the data transmission program **PCIN** by **double clicking** on the **PCIN** icon with the **mouse**.

### Starting under DOS

The following conditions must be fulfilled if you wish to start the Graphic Programming System under DOS:

You have added the following entries to your “autoexec.bat” file:

```plaintext
set path=%path%; [LW]:wop
```

1. Enter the command “wop”
2. Start the Graphic Programming System by pressing the **input key**.
2 Installation and Operation
2.4 PC user interface and keyboard

2.4 PC user interface and keyboard

If you have installed the software for the Graphic Programming System for turning and no foreign language on your PC, then Fig. 2.5 below will appear on screen when you start up the Graphic Programming System.

![Graphic Programming on PC](image)

Fig. 2.5 Graphic programming on PC

The Graphic Programming System is operated on the PC via the PC keyboard.

You can set a variable in the configuration file (see also Section 4.2, Page 4–4) to define whether the key code is to correspond to a

- PC keyboard or
- a full keyboard (see User’s Guide “Graphic Programming Turning Part 2, Section “Operation”).

The file is called “progsys1.cfg”.

The key code default setting is for a PC keyboard.

If you activate the Graphic Programming System under Windows, you can return to Windows by pressing Alt–Esc and then activate the transmission program PCIN.

When you have completed the transfer operation you can return to the Graphic Programming System by pressing Alt–W.
The following table lists all the keys of the PC keyboard and the 840C operator panel because User’s Guide “Part 1 and Part 2” uses the key symbols of the operator panel.

<table>
<thead>
<tr>
<th>840C op. panel</th>
<th>PC keyboard</th>
<th>General function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal softkeys</td>
<td>F1 . . . F7</td>
<td>Press the function keys and then activate the functions of the horizontal softkeys (F1=left).</td>
</tr>
<tr>
<td>Vertical softkeys</td>
<td>&lt;shift&gt; F1 . . . &lt;shift&gt; F7</td>
<td>Press the &lt;shift&gt; key plus the required function key on the PC keyboard and then activate the functions of the vertical softkeys (F1=topmost softkey).</td>
</tr>
<tr>
<td></td>
<td>F 8</td>
<td>With the help key you can call up a windows containing a help text for each horizontal softkey menu. This window contains explanations of the individual softkey functions. If a dialog box is displayed on the screen you can call up graphic help about the parameters by pressing this key.</td>
</tr>
<tr>
<td></td>
<td>ESC</td>
<td>The RECALL key aborts dialog form entry, the system ignores any entries that are made. The RECALL key closes the help windows. On the PC this function is performed by the ESCAPE key.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You end dialog form entry and accept the entries with the INPUT key. On the PC, this is the ENTER key or the input key.</td>
</tr>
<tr>
<td></td>
<td>Ctrl N</td>
<td>You can call up the calculator function with this key if a dialog box is displayed on the screen and the cursor is positioned in a numerical entry field.</td>
</tr>
<tr>
<td></td>
<td>Ctrl N</td>
<td>With this key combination or key you can combine the individual work schedule steps to a block.</td>
</tr>
<tr>
<td></td>
<td>Ctrl N</td>
<td>If the cursor is positioned on a text selection field you can display the texts in this field one after the other with this key combination or key. (“TOGGLE”)</td>
</tr>
</tbody>
</table>
2.5 Special operating functions

This PC version of the Graphic Programming System user interface provides different programming functions to those of the SINUMERIK 840C.

This section describes
- file functions and
- transmission functions.

2.5.1 File functions

The following vertical softkey functions are important if you are working with the Graphic Programming System on the PC (see Fig. 2.6):

- Save
- Read

The following section describes these functions in more detail as they differ from those on the SINUMERIK 840C.

Section 2.5.2 “Transmission functions” describes the procedures of the transmission functions

- File import
- File export

in detail.

The other functions are described in “Part 2: Operating/Programming Functions” in the sections “Programming functions” and “Appendix”.

<table>
<thead>
<tr>
<th>840C op. panel</th>
<th>PC keyboard</th>
<th>General function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ctrl</td>
<td>A</td>
<td>This key combination is used to view the part program you have created. Press the <strong>ESCAPE key</strong> to quit this function.</td>
</tr>
</tbody>
</table>
Fig. 2.6 displays all the functions that are described in the table below (shaded in grey) in the form of a menu tree:

**Menu tree**

Fig. 2.6 Vertical functions: **Save, Read**
This table only contains the functions that are displayed with a grey background in Fig. 2.6. The other functions are described in the User’s Guide “Part 2” in the “Appendix”.

<table>
<thead>
<tr>
<th>Menu tree no.</th>
<th>Functions</th>
<th>Function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Save</td>
<td>The <strong>Save</strong> function branches into the submenus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Save original,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Save as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ File export</td>
</tr>
<tr>
<td>1.1</td>
<td>Save original</td>
<td>You save the files belonging to the current workpiece.</td>
</tr>
<tr>
<td>1.2</td>
<td>Save as</td>
<td>You save the files belonging to the current workpiece under a new workpiece name.</td>
</tr>
<tr>
<td>1.6</td>
<td>File export</td>
<td>The function <strong>File export</strong> branches into the submenus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Export workpiece</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Export magazine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Export mach. type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ PC → floppy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ PC → NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Delete transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Graphic Programming System loads the exported files into a transfer directory.</td>
</tr>
<tr>
<td>1.6.1</td>
<td>Export workpiece</td>
<td>You select a workpiece file and export it to the transfer directory by pressing the <strong>input key</strong>.</td>
</tr>
<tr>
<td>1.6.2</td>
<td>Export magazine</td>
<td>You select a user magazine and export it to the transfer directory by pressing the <strong>input key</strong>.</td>
</tr>
<tr>
<td>1.6.3</td>
<td>Export mach. type</td>
<td>You select a machine type and export it to the transfer directory by pressing the <strong>input key</strong>.</td>
</tr>
<tr>
<td>1.6.5</td>
<td>PC→floppy</td>
<td>The previously exported files are transferred to a floppy disk.</td>
</tr>
</tbody>
</table>
### Menu tree no. | Functions | Function description
--- | --- | ---
1.6.6 | PC→NC | The previously exported files are transferred from the transfer file to the NC using the PCIN program. A zero modem cable is required. **Note:** Data_in must be active on the NC.
1.6.7 | Delete transfer | This erases the contents of the transfer directory, for example, to import or export new files.
2 | Read | The function Read branches into the submenus
- Read original
- Read autosave
- Initialize workpiece
- Workpiece new
- Machine type
- File import
2.1 | Read original | You read the last geometry file that you saved. The geometry data generated in the graphics display are lost.
2.2 | Read autosave | The Graphic Programming System saves the geometry and machining you have programmed at predefined intervals. This interval can be viewed at any time using this softkey.
2.3 | Initialize workpiece | All the geometry and machining data are lost. You program Workpiece new **under the same** name.
2.4 | Workpiece new | You program a new workpiece under a new name. **Note:** If you want to save the old workpiece, press Save/Save as.
On each system start, the selections for

- the workpiece name,
- the machine
- the language and
- the programming system

are taken from the last session (see Section 4.2, “Configurations”).

**Operating sequence:**

1. Select the softkey function **Machine type**

2. Open a selection field with this key

3. Make your selection using the cursor keys

4. Complete your selection with the **input key**.

**Note:**

When you change to a different programming system (M or T), you must always select a new workpiece and a new machine type or, when selecting a new machine type, a new workpiece.
<table>
<thead>
<tr>
<th>Menu tree no.</th>
<th>Functions</th>
<th>Function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6</td>
<td>File import</td>
<td>The function <strong>File import</strong> branches into the submenus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import workpiece</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import magazine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import machine type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Floppy → PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- NC → PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delete transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The files transferred from the CNC are available for graphic programming once they have been imported.</td>
</tr>
<tr>
<td>2.6.1</td>
<td>Import workpiece</td>
<td>You transfer a workpiece file from the transfer directory to the <strong>PC directory</strong> for graphic programming on the PC.</td>
</tr>
<tr>
<td>2.6.2</td>
<td>Import magazine</td>
<td>You transfer a magazine file from the transfer directory to the <strong>PC directory</strong> for graphic programming on the PC.</td>
</tr>
<tr>
<td>2.6.3</td>
<td>Import mach. type</td>
<td>You transfer a magazine type from the transfer directory to the <strong>PC directory</strong> for graphic programming on the PC.</td>
</tr>
<tr>
<td>2.6.5</td>
<td>Floppy→PC</td>
<td>PC is ready to receive data from the floppy disk. The data is loaded into the TRANSFER tree, and the files are imported from there to the system using:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import workpiece</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import magazine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Import type</td>
</tr>
</tbody>
</table>

**Note:**
The diskette contains data that have been transferred in PC format on the NC with data output. These data are unpacked to the TRANSFER directory using the PCIN program.
<table>
<thead>
<tr>
<th>Menu tree no.</th>
<th>Functions</th>
<th>Function description</th>
</tr>
</thead>
</table>
| 2.6.6        | NC→PC           | The PC is ready to receive data from the NC. The data is loaded into the TRANSFER tree, and the files are imported from there to the system using:  
<p>|              |                 | - Import workpiece.                                     |
|              |                 | - Import magazine.                                      |
|              |                 | - Import machine type.                                  |
|              |                 | A zero modem cable is required.                         |
| 2.6.7        | Delete transfer | This erases the contents of the transfer directory, for example, to import or export new files. |
| 6            | Program info    | This function provides you with information about:      |
|              |                 | - elements created with the function Oriented geometry or Construction geometry |
|              |                 | - the distance or angle between two elements (created using the function Oriented geometry or Construction geometry) |
|              |                 | - system status                                         |
|              |                 | - the log functions                                     |
|              |                 | - collision check                                        |
| 6.6          | Log functions   | The log functions branch into:                          |
|              |                 | - Create log                                            |
|              |                 | - Play back log                                          |
|              |                 | - Append log                                             |
|              |                 | - Delete log                                             |
|              |                 | - Stop recording                                         |</p>
<table>
<thead>
<tr>
<th>Menu tree no.</th>
<th>Functions</th>
<th>Function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6.1</td>
<td>Create log</td>
<td>This function records your keyboard entries. The operator actions previously recorded in a log file are overwritten.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>You must always start recording immediately after you start up the Graphic Programming System.</td>
</tr>
<tr>
<td>6.6.2</td>
<td>Play back log</td>
<td>By pressing one of the keys, the Graphic Programming System plays back the selected log step by step.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can control playback with the following keys:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>![Keyboard keys]</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>2...9</strong> = speed</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>0</strong> = single steps</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1</strong> = highest speed</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>*</strong> = abort</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Like the recording function, you must start this function at the initial level when you start up the system.</td>
</tr>
<tr>
<td>6.6.3</td>
<td>Append log</td>
<td>This function continues a log already recorded.</td>
</tr>
<tr>
<td>6.6.4</td>
<td>Delete log</td>
<td>You delete the recorded operator actions.</td>
</tr>
<tr>
<td>6.6.5</td>
<td>Stop recording</td>
<td>You terminate log recording.</td>
</tr>
</tbody>
</table>
2.5.2 Transmission functions

With the functions

- **File export** (PC to CNC),
- **File import** (CNC to PC)

Data transmission program PCIN

- the file transmission program **PCIN**

You can transfer files in PC format to the control or from the control with the Graphic Programming System.

These transmission functions are described in this section of the User's Guide.

A detailed description of PCIN is to be found in the Manufacturer Documentation:
- SINUMERIK 800
- PCIN
- Software Version 4
- Data Transmission NC–PC
- User's Guide 07.94 Edition

Transfer directory

It is important to remember that data transmission from the PC to the SINUMERIK 840C is only possible with a transfer directory (e.g. TRANSFER).

The name of this directory can be defined in a configuration file.

This file is called: "progsys1.cfg".

The default setting in this file is "\TRANSFER".

*Note*

In the following section, the default name **TRANSFER** is used as the name for the transfer directory.

You may, however, define a different name for this directory.

Please remember:

- the name of the transfer directory under DOS must be the same as the name entered in the configuration file "progsys1.cfg".
2.5.3 Data transmission from the PC to SINUMERIK

The following is a description of

- data transmission from the PC to the SINUMERIK 840C or
- to another CNC of the system family 800.

**Procedures**

*Data from the PC to the SINUMERIK 840C*

You export the files of the Graphic Programming System

- to the transfer directory (e.g.: TRANSFER) and then
- from the transfer directory to the CNC.

![Diagram](image)

*Fig. 2.7 Data transmission from PC to CNC*

**Requirements**

You have activated the Graphic Programming System.

*Fig. 2.7 A*

First of all, press the softkey **Save**

and then use the **File export** function to individually copy the files you require (workpiece or tool or machine type) into the transfer file.

You export with the softkeys

**Export workpiece** or

**Export magazine**
Export mach.type

all data to an archive directory for data transfer, e.g. TRANSFER/MMC.001/USER.005/WOP.006/TEST.016

With Export mach.type function, you transfer all data characterizing the machine behaviour, for example:

- Screen forms
- Empirical value file
- Configuration file
- Graphics macro file
- NC macro file

Requirements

You have exported files into a transfer directory.

You transfer these files from this transfer directory (e.g.: TRANSFER) to the CNC.

Procedures

Fig. 2.7 B

1. You activate Services/Data_in on the SINUMERIK 840C and establish the cable connection for the data transfer or use a floppy disk.

Fig. 2.7 C

PC --> NC or

PC --> Floppy

2. After operation of the Save and File export softkeys, you start the PCIN program on the PC by means of PC --> NC or PC --> Floppy.

3. The archive directory is selected automatically and packed in PC format. The transfer is executed from the transfer directory with:
   - Transfer PC --> NC
     e.g. TRANSFER/MMC.001/USER.005/WOP.006/Test1.016
   - Transfer PC --> Floppy
     z. B. TRANSFER.001 (stored in drive A)
2.5.4 Data transmission from the SINUMERIK to the PC

The following is a description of data transmission from the SINUMERIK 840C to the PC.
3 Programming Examples

As an exercise, this section describes how to
- call up the graphic programming system and create a workpiece directory,
- terminate graphic programming and then from the “Windows user interface”.

3.1 Workpiece new

Purpose of the exercise

The following section describes how you
- call up the graphic programming system and
- create a workpiece directory.

Initial situation

You are at the Windows user interface level:
- You have installed the program group WOP–T/M.
- The program group contains the icon WOP–T_M.

Your starting point, for example, is the user interface shown in Fig. 3.1 (with WIN 3.1):

![Fig. 3.1 Windows user interface with the WOP–T_M program group](#)

Under WIN 95, start with START/PROGRAMS/WOP–T_M.
Procedures

You initiate graphic programming for turning by **double clicking** on the WOP-T_M icon.

This activates the graphic programming system and the following display appears:

![Graphic Programming System Display](image)

The settings in the dialog box **Machine type** on each system start for:
- the workpiece name (e.g. “DEMO001”),
- the machine (e.g. “TYP_A”),
- the languages (e.g.: “ENGLISH”) and
- the programming system (e.g.: “T” for turning)

are always those of the previous graphic programming session.

**Exercise**

The cursor is positioned in the selection field Workpiece ready for you to create a new **workpiece** name.

![Selection Field](image)

Press the **ESCAPE key**.

The graphic programming system displays the dialog box **Create new workpiece**.

![Create New Workpiece Dialog](image)
To give the workpiece a new name, enter the name you wish to give the workpiece using the alphanumeric keys, e.g.: “PART1”.

The name must be no longer than eight characters.

You confirm the name with the **input key**.

**Note**

The workpiece name “PART1” is the generic term for all files created under this workpiece.

**Exercise**

For the first programming example (see User’s Guide “Part 1: Programming Examples”) you have created

- under machine type “A” (directory name: “TYP_A.006”).
- a new workpiece directory “PART1” (directory name: “PART1.064”)

When you have completed the exercise, the created main program “MPF1” is located under this workpiece directory “..T.006\TYP_A.006\PART1.064”.

Continue the exercise in the User’s Guide “Part 1: Programming Examples” starting from Section “Graphic programming” from the level shown in Fig. 3.5

---

**Fig. 3.5** Graphic programming

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SINUMERIK 840C (BN)
3.2 End WOP

Purpose of the exercise

The following section describes how you terminate graphic programming.

- terminate graphic programming.

Initial situation

You have programmed a part to be turned (User’s Guide “Part 1: Programming Examples”)

The system displays the following turned part geometry in the graphic area:

![Fig. 3.6 Workpiece “Programming example 1”](image)

Procedures

Terminate graphic programming by pressing the vertical softkey End (corresponds to F7).

The graphic programming system displays the dialog box Save workpiece geometry?

Place the cursor on the field yes.

Using the input key save the workpiece program and exit the graphic programming system.

Note

Once you have completed the function Create part program, the graphic programming system stores the part program in your workpiece directory (e.g. “PART1”). You do not have to save it yourself.
4 General Notes

Section 4 describes

- the file environment, gives
- configuration information and contains a
- compatibility table.
4.1 File environment DOS operating system

Once you have installed the graphic programming system on your PC according to the instructions given in Section 2.3, you create the files as follows.

Two main directories

- [Drive]:\WOP with all system files and
- [Drive]:\840C with all workpiece files.

SIEMENS supplies the following PC software

- Graphic programming for turning (WOP–T_M) and
- PCIN data transmission program

This User’s Guide provides a description for WOP–T (turning).

Transfer directory

Please remember that file transfer from the PC to the SINUMERIK 840C can only be performed if a transfer directory (e.g.: TRANSFER) exists.

Section 2.5.2 “Transmission functions” describes how you create such a directory.

The following table lists the file type together with its short designation for the Turning Version:

<table>
<thead>
<tr>
<th>File type</th>
<th>Name or short designation in the file directory (DR = drive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool master data</td>
<td>[DR]\WOP\T.006\WKZ.016\1) or [DR]\WOP\T.006\TYP_A.006\WKZ.016\2)</td>
</tr>
<tr>
<td>User magazines</td>
<td>[DR]\WOP\T.006\TYP_A.006*.016\1)</td>
</tr>
<tr>
<td>Workpiece directories</td>
<td>[DR]\840C\T.006\TYP_A.006*.064\1)</td>
</tr>
<tr>
<td>Empirical value file</td>
<td>[DR]\WOP\T.006\EXAM.033\erfahr.034\1) or [DR]\WOP\T.006\TYP_A.006\EXAM.033\erfahr.034\2)</td>
</tr>
<tr>
<td>Configuring file</td>
<td>[DR]\WOP\T.006\EXAM.033\projekt.034\1) or [DR]\WOP\T.006\TYP_A.006\EXAM.033\projekt.034\2)</td>
</tr>
<tr>
<td>Part program</td>
<td>[LW]\840C\T.006\TYP_A.006*.064\mpf***.013\1)</td>
</tr>
</tbody>
</table>

Fig. 4.1 the next page shows some of the directories that are of importance to you.

Subdirectory “TYP_A” represents (for example) a created machine type.

---

1) Standard file
2) File relating to the machine type (created by user)
Fig. 4.1 Important directories

SINUMERIK 840C directories which correspond to DOS PC directories are highlighted. The patterned background indicates corresponding directories.
4.2 Configurations

You can influence, for example, the following on your PC:

- Machine type
- Languages
- Empirical values
- Control type (T or M).

For this, the graphic programming system provides

- three configuration files
- two configuring files (one for each M and T) and
- two empirical value files (one for each M and T).

If you make changes to machine-specific files (e.g. in the empirical value file), then you should also make the changes in the assigned machine directory.

Procedures:

- Copy the file in question from the main directory into the machine type related directory
- and then change.

Creating and editing files under DOS

All file management functions such as

- editing an empirical value file or
- editing a part program

are performed using the conventional copy and edit functions under DOS or Windows.

You can create a new machine type using the graphic programming system.

Proceed as follows:
Procedures for creating a machine type

With the function **Import mach. type** you can also create a new machine type directory.

Requirement

Before you can start file transmission with the File import function, you must create a transfer directory, e.g. with the function **File export**.

Operating sequences

To create a new machine type, press the following keys one after the other:

- Read
- File import
- Import mach. type

Enter a **new** name for the new machine type in the overlaid dialog box **Create new machine** and press the **INPUT key** to confirm.

Note

Once you have created a new machine type, you can configure a new machine type (e.g. with C axis), for example under DOS by copying the configuring file in directory

```
[Drive]\WOP\T.006\TYP_NEU.006\EXAM.033
```

and then editing this file.

Defining the control type

The system stores all data necessary for system start-up in various configuration files.

These files are located in directory “[Drive]\WOP”.

These configuration files have a uniform structure with different keys.

Each line consists of a key and a value in the following notation

```
“Symbol = |VALUE|”
```

e.g. in “[Drive]\WOP\propsys1.cfg” configure

```
PARTPROG=840C
KEYBOARD=0
CONTROL=840C
TRANSFER=TRANSFER
```
The following table lists the data of the three configuration files

- progsys1.cfg
- progsys2.cfg
- progsys3.cfg

<table>
<thead>
<tr>
<th>File name</th>
<th>Symbol</th>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>progsys1.cfg</td>
<td>Part-prog</td>
<td>drive:\path</td>
<td>Static configuration data</td>
</tr>
<tr>
<td></td>
<td>Keyboard</td>
<td>0 1 2</td>
<td>Start node and drive of machine–specific part programs</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>840C</td>
<td>PC standard 840C keyboard</td>
</tr>
<tr>
<td></td>
<td>TRAN SFER</td>
<td>drive:\path</td>
<td>User interface as for 840C</td>
</tr>
<tr>
<td>progsys2.cfg</td>
<td>System</td>
<td>T M</td>
<td>Dynamic data for system start</td>
</tr>
<tr>
<td></td>
<td>Machine</td>
<td>********</td>
<td>Real machine designation: max. 8 characters</td>
</tr>
<tr>
<td></td>
<td>Workpiece</td>
<td>********</td>
<td>Workpiece designation: max. 8 characters</td>
</tr>
<tr>
<td>progsys3.cfg</td>
<td>Language</td>
<td>DEUTSCH ENGLISH ESPANOL FRANCAIS ITALIANO</td>
<td>Language configuration</td>
</tr>
</tbody>
</table>

1) Standard configuration file
2) Initial setting for system call (contents of the entry of the last graphic programming session in dialog box Machine type)
### 4.3 Compatibility table

Every software version of the graphic programming system is upwards compatible.

You can find out which software version you have with the functions **Program info/System status**.

The following table lists the possible versions for
- the graphic programming system for turning and
- the graphic programming system for drilling and milling.

An “X” in the table indicates the compatibility of the created geometry files.

**Compatibility table: “Graphic programming system for drilling and milling”**:

<table>
<thead>
<tr>
<th>from/to</th>
<th>V1.1</th>
<th>V2.1</th>
<th>V3.3</th>
<th>V6.1</th>
<th>V6.1C¹</th>
<th>V6.2</th>
<th>V6.2C¹</th>
<th>V6.4</th>
<th>V6.4C¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.1</td>
<td>x</td>
<td>x</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
</tr>
<tr>
<td>V2.1</td>
<td>x²</td>
<td>x²</td>
<td>x²</td>
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<td>x²</td>
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<tr>
<td>V3.1</td>
<td>x</td>
<td>x²</td>
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<tr>
<td>V3.3</td>
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<td></td>
<td></td>
<td>x</td>
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<tr>
<td>V6.1</td>
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<td>x</td>
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<tr>
<td>V6.1C¹</td>
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<td>V6.4C¹</td>
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</tbody>
</table>

1) A C following the version number indicates that multi-side machining has been set with WOP-M and that the C-axis option is active with WOP-T.
2) Problems may be encountered when taking over machining operations.
Compatibility table: “Graphic programming system for turning”:

<table>
<thead>
<tr>
<th>from/to</th>
<th>V3.1</th>
<th>V3.2</th>
<th>V4.1</th>
<th>V4.1C&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>V5.2</th>
<th>V5.2C&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>≥ V5.3</th>
<th>≥ V5.3C&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>V6.1</th>
<th>V6.1C&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>V6.2</th>
<th>V6.2C&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>V6.4</th>
<th>V6.4C&lt;sup&gt;1)&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>V3.1</td>
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1) A C following the version number indicates that multi–side machining has been set with WOP–M and that the C–axis option is active with WOP–T.
2) Problems may be encountered when taking over machining operations.
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