**Overview of SINUMERIK 840D/810D/FM-NC Documentation (12.98)**

### General Documentation
- Brochure
- Catalog Ordering
- Technical Info. NC 60.2
- Catalog Accessories NC-Z

### User Documentation
- AutoTurn
  - Short Guide
  - Programming (1)
  - Setup (2)
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  - Operator Panel
- Diagnostics Guide
- Operator’s Guide
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  - Operator’s Guide

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  - ShopMill
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- Configuring Kit
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### Electronic Documentation
- DOC ON CD
  - The SINUMERIK System

### Manufacturer / Service Documentation
- Description of Functions
  - Fanuc Programs for SINUMERIK

*) These documents are a minimum requirement for the control.
SINUMERIK 840D/810D/FM-NC

Short Guide
Operation

Valid for

<table>
<thead>
<tr>
<th>Control</th>
<th>Software version</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINUMERIK 840D</td>
<td>5</td>
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</tr>
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<tr>
<td>SINUMERIK FM-NC</td>
<td>3</td>
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12.98 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.

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.

<table>
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<td>6FC5298-0AA10-0BP0</td>
<td>A</td>
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<tr>
<td>04.95</td>
<td>6FC5298-2AA10-0BP0</td>
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</tr>
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<td>12.98</td>
<td>6FC5298-5AA10-0BP0</td>
<td>C</td>
</tr>
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This manual is included in the documentation on CD-ROM (DOCONCD)

<table>
<thead>
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<th>Edition</th>
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</tr>
</thead>
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Further information is available on 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.

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Introduction

Validity
Unless stated otherwise, this operator's guide applies to the SINUMERIK 840D/810D and SINUMERIK FM-NC controls.

How to use this booklet
This booklet is an operator's guide describing all the main programming steps. The aim is to provide the operator with some quick help and a memory aid especially for commands that are used infrequently or to offer a quick reference on various parameters.

This guide therefore has little text!
First familiarize yourself with the symbols below so that you understand them better whenever they occur on the following pages.

The symbols

- Gives you a tip or background information
- Screen displays
- Operation via softkeys
- Input through the operator keyboard
- Input through the machine control panel
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<td>Part Programming</td>
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<td>Automatic Mode</td>
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<td>Alarms and Messages</td>
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1.1 Key assignments slimline operator panel OP 031

1 Machine area key
2 Recall
3 Softkey bar (horizontal)
4 ETC key (menu extension)
5 Area changeover key
6 Softkey bar (vertical)
7 Alphanumeric key
8 Correction/cursor block with control keypad and Input key
1.2 Key assignments slimline operator panel OP 032

1. Machine area key
2. Recall
3. Softkey bar (horizontal)
4. ETC key (menu extension)
5. Area changeover key
6. Softkey bar (vertical)
7. Alphablock
8. Correction/cursor block with control keypad and Input key
9. Numeric block
10. Slot for PCMCIA adapter
### 1.3 Key assignments operator panel

#### Meaning of the key symbols:

The keys marked with * correspond to the US layout.

<table>
<thead>
<tr>
<th>Key Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Switch over channel</td>
</tr>
<tr>
<td>X</td>
<td>Acknowledge alarm</td>
</tr>
<tr>
<td>Y</td>
<td>Information</td>
</tr>
<tr>
<td>?</td>
<td>Select window</td>
</tr>
<tr>
<td>$</td>
<td>Move cursor</td>
</tr>
<tr>
<td>PAGE UP</td>
<td>Page up</td>
</tr>
<tr>
<td>BACK SPACE</td>
<td>Delete character</td>
</tr>
<tr>
<td>BLANK</td>
<td>Blank</td>
</tr>
<tr>
<td>SELECT</td>
<td>Selection key/toggle key</td>
</tr>
<tr>
<td>INSERT</td>
<td>Edit/Undo</td>
</tr>
<tr>
<td>SHIFT</td>
<td>Shift</td>
</tr>
<tr>
<td>PAGE DOWN</td>
<td>End of line</td>
</tr>
<tr>
<td>INPUT</td>
<td>Page down</td>
</tr>
<tr>
<td>INPUT</td>
<td>Input (accept)</td>
</tr>
</tbody>
</table>

For keys with double assignments:

Shift with key "Shift"
1.4 Key assignments external machine control panel

The keys marked with * correspond to the US layout.

1. Emergency stop pushbutton
2. Mode and machine functions
   - Jog
   - MDA
   - Automatic
   - Teach In

Machine control panel for turning machines

Machine control panel for milling machines
1.4 Key assignments external machine control panel

3 Incremental travel

4 Program control

5 Axis keys for turning machines

Axis keys for milling machines
1.4 Key assignments external machine control panel

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<th>Spindle control</th>
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</thead>
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<td></td>
<td>Spindle override</td>
</tr>
<tr>
<td></td>
<td>Spindle stop</td>
</tr>
<tr>
<td></td>
<td>Spindle start</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7</th>
<th>Feed control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feed/rapid traverse override</td>
</tr>
<tr>
<td></td>
<td>Feed stop</td>
</tr>
<tr>
<td></td>
<td>Feed start</td>
</tr>
</tbody>
</table>

| 8 | Keyswitch |

MMC 100.2  MMC 103
1. Operator Control

1.5 Graphical user interface

Machine

Channel reset

Program aborted

1. Operating area
2. Channel status
3. Program status
4. Channel and mode group
5. Alarm and message line
# 1.5 Graphical user interface

<p>| | | |</p>
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<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mode</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Program name</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Channel operational messages</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Channel status display</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Information relating to the menu bar</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Work windows and NC displays</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Dialog line with notes for operator</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Focus</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Horizontal softkey bar</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Vertical softkey bar</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Recall</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>etc.</td>
</tr>
</tbody>
</table>
1.6 Operating areas

The standard functions in the control are organized into the following operating areas:

![Operating areas diagram]

When you press the "Area changeover" key, the operating areas in the main menu appear in the horizontal softkey bar. You can use this key to switch from any menu to the main menu.
1.7 Operating principle

The MMC 100.2 and MMC 103 provide a range of key and softkey assignments which have the same function in all operating areas and menus.

**Area changeover:**

Switch back from any menu to the main menu of your control.

**Softkeys:**

**Horizontal softkeys:**
These keys subdivide each operating area into further menu levels. Each horizontal menu item has a vertical menu bar/softkey assignment.

**Vertical softkeys:**
Assigned with functions for the currently selected horizontal softkeys.
1.7 Operating principle

**Navigation in the menu window:**

- **Change menu windows:** Change the focus to the selected menu window.
- **Scroll in the menu window:** Scroll one screen page down or up.
- **Position cursor in the menu window:** Position the cursor at the desired point in the menu window.
### 1.7 Operating Principle

#### MMC 100.2

**Navigation in the directory tree:**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Select directory/file:" /></td>
<td>Position the cursor on the desired directory/file.</td>
</tr>
<tr>
<td><img src="image" alt="Open/close directory:" /></td>
<td>Open or close the selected directory.</td>
</tr>
<tr>
<td><img src="image" alt="Open file:" /></td>
<td>Open the desired file, e.g. if you want to edit the file in the ASCII editor (in this case the editor is opened automatically).</td>
</tr>
<tr>
<td><img src="image" alt="Select file (MMC103):" /></td>
<td>Select the desired file.</td>
</tr>
<tr>
<td><img src="image" alt="Select several files (MMC103):" /></td>
<td>Hold down the &quot;Shift&quot; and &quot;Cursor Down&quot; keys. Neighboring files are selected when you hold down the &quot;Cursor Up&quot; or &quot;Cursor Down&quot; keys.</td>
</tr>
<tr>
<td><img src="image" alt="Deselect selected files." /></td>
<td>Deselect selected files.</td>
</tr>
<tr>
<td><img src="image" alt="Cancel all selections." /></td>
<td>Cancel all selections.</td>
</tr>
</tbody>
</table>
1.7 Operating principle

Edit inputs/values:

If you want to edit inputs/values, the corresponding key is always displayed automatically on the right of the input field. The following input fields are available:

1. **Option fields** (radio buttons or check boxes): Activate or deactivate the option field.

2. **Input fields**: Switch to input mode.

Enter the value or word (e.g. file name, type, etc.) on the numeric keypad.

You automatically switch to input mode if you first position the cursor on the input field.

Always confirm your input with the "Input" key. The value is accepted.
1.7 Operating principle

You can use the "Toggle" key to select one of several default values.

3. Selection list (MMC 103):
Display the preselection of possible values.

Open selection list

Position the cursor on the desired values.

Always confirm your input with the "Input" key. The value is accepted.

Switch to the next value in the selection list without displaying the entire list.
1.7 Operating principle

**Confirm/cancel input:**

- **OK**
  - **Confirm input:**
    - Save the inputs and exit the current menu (you automatically return to the calling menu).

- **Cancel**
  - **Cancel input:**
    - Reject the inputs and quit the current menu (you automatically return to the calling menu).
    - Reject the inputs and quit the current menu (you automatically move up one level).
  - **Clear the current input but remain in the current menu.**
1.7 Operating principle

Operation with the mouse:

If you have installed a mouse, operation is facilitated as follows:

1 "click"

1 click means:
• Activate the menu window.
• Position the cursor on the desired input field.
• Select directory.
• Activate softkey.
• Activate/deactivate radio button/check box.
• Activate input field.
• Open selection list.

2 "clicks"

2 clicks mean:
• Accept value/input.
• Open directory.
2. Set-up

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2.3 Calculate tool offsets 2-30

2.4 Enter/alter zero offset (MMC100.2) 2-31

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2.7 Scratching method/determine zero offset (MMC103) 2-35

2.8 Program the setting data 2-36
## 2.1 Approach reference point

### Caution:
Position the axes if they are not already located at a safe position.
Always follow the axis movements directly on the machine. Ignore the actual value display as long as the axes are not referenced (the software limit switches are not effective).

<table>
<thead>
<tr>
<th>Machine</th>
<th>Select &quot;Machine&quot; operating area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jog</td>
<td>Choose &quot;Jog&quot; or &quot;MDA&quot;.</td>
</tr>
<tr>
<td>MDA</td>
<td></td>
</tr>
</tbody>
</table>

**Machine**

Select "Ref" machine function.

**Turning machine:**
Traverse axes.

**Milling machine:**
Select axes and traverse axes.

Stop axis before reference point is reached.

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2.2 Enter tool offsets

Select "Parameter" operating area.

Select "Tool offset" menu.

Choose the desired function:
- Select tool (T no.).
- Select tool edge (D no.).
- Delete tool/tool edge
- Find tool
- List existing tools.
- Create new tool/tool edge.

Enter the new values.
2.3 Calculate tool offsets

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MMC 100.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool offset</td>
<td>MMC 103</td>
</tr>
</tbody>
</table>

Select "Parameter" operating area.

Select "Tool offset" menu.

Position cursor on desired tool parameter.

Select axis and enter reference value.

The current position and the reference value of the selected tool parameter are calculated automatically.
2.4 Enter/alter zero offset (MMC100.2)

- Select “Parameter” operating area.
- Select “Zero offsets” menu.
- Select zero offsets:
  - settable
  - active settable
  - active programmable
  - sum of active ones
  - external ones
  - basic offsets
- Position the cursor on the desired field and enter/alter the value, or use the “Toggle” key to choose a new value.
- Save the values.
2.5 Enter/alter zero offset (MMC103)

Select "Parameter" operating area.

Select "Overview of settable zero offsets" menu.

Select zero offset:
Changes to the defined zero offsets of the next or previous axis.

Change display mode of the currently displayed zero offset. The display shows either the absolute offsets or the proportional values of rotation, scaling or mirroring.

Enter/change zero offset:

Display all the defined basic zero offsets.

Display all the defined settable zero offsets.
2.5 Enter/alter zero offset (MMC103)

Position the cursor on the desired field and enter/alter the value.

Please note:
Changes in the zero offset are updated at entry.
2.6 Scratching method/determine zero offset (MMC100.2)

Select “Parameter” operating area.

Select “Jog” mode.

Select “Zero offsets” menu.

“Determine ZO (scratching)" window, enter
- the tool (T no.),
- the tool edge (D no.),
- the corresponding length parameters (1, 2, 3) and the direction (+, −, none),
- the allowance and direction of the radius (+, −, none),
- the allowance and direction of a user-definable offset (+, −, none).

You can select values using the “Toggle” key.

Traverse axes (scratching).

With “OK” all the values are entered into the selected zero offset.
2.7 Scratching method/determine zero offset (MMC103)

Select "Machine" operating area.

Active level, active zero offset and active tool are selected.

Select axis which shall be traversed, with the cursor.

Traverse axis to the workpiece, enter desired set position and confirm with "Input". The offset is calculated.

With "OK" all the values are entered into the selected zero offset.

Please note:
The calculation of the offset always refers to the current workpiece coordinate system (WCS).

In order to take account of the tool geometry, position the cursor in the column "Geometry + wear" on the axis which shall be traversed and select with "Toggle" key, how the tool offset shall be calculated.
## 2.8 Program the setting data

### MMC 100.2

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th>Select “Parameter” operating area.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting data</strong></td>
<td>Select the “Setting data” menu.</td>
</tr>
</tbody>
</table>

### MMC 103

**Define operating states using setting data:**
- Change working area limitation.
- Change jog data.
- Change spindle data.
- Change dry run feedrate for DRY test mode.
- Change starting angle for thread cutting.
- Display miscellaneous setting data.
- Choose level for protection zone.
2.8 Program the setting data

Position the cursor on the desired field and change the value, or select a new value using the "Toggle" key.
3. Manually Controlled Operation

3.1 Jog/Jog-Inc mode 3-40
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3.3 Teach In mode 3-43
3.1 Jog/Jog-Inc mode

Select "Machine" operating area.

Select "Jog" mode.

"Reference point approach" is deactivated.

Turning machine:
Traverse axes.

Milling machine:
Select axis and traverse.

The traversing velocity is stored in the "setting data".

If necessary, use the override to set the velocity.

If necessary, move axes with rapid traverse.
3.1 Jog/Jog-Inc mode

Select/enter increment value for traversing position ("Inc"):
Traverse axes in defined increments, or enter the desired increment.
Traverse axis with the entered increment.
## 3.2 MDA mode

<table>
<thead>
<tr>
<th>MMC 100.2</th>
<th>MMC 103</th>
</tr>
</thead>
</table>

- **Machine**
  - Select "Machine" operating area.

- **MDA**
  - Select "MDA" mode.

- **Teach In** mode, it is only possible to insert blocks at points in the program which have not yet been executed.

- **Enter NC block (one or several consecutive program blocks).**
  - Confirm input.

- **Execute NC block.**

- **MDA-Prog. sichern**
  - Save program in MDA buffer.

If no program name is entered, the program is automatically stored in the MDA buffer with the name OSTORE.MPF (MMC100.2) or MDAX.MPF (MMC103).
3.3 Teach In mode

In "Teach In" mode, it is only possible to insert blocks at points in the program which have not yet been executed.

1. Manual positioning:

**Turning machine:**
Traverse axes.

**Milling machine:**
Select axis and traverse.

The axis name and the traversed path are displayed in the "Teach In program" window.
3.3 Teach In mode

2. Manual input of coordinates:

- Enter coordinates of traversing positions and
- enter additional functions (preparatory conditions, miscellaneous functions, etc.) in the "MDA program" window.

MMC100.2
Delete block
Delete the current block.

Insert block
Insert an empty line before the current block.

Save block
Save new axis positions and additional functions.

MMC103
Enter and delete blocks on keyboard.
Positions are automatically saved at entry.
4. Part Programming

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4.3 Create new workpiece/part program 4-49
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4.5 Copy/paste, rename, delete, enable 4-51
4.6 Load/unload program (MMC 103) 4-53
4.1 Select/enable workpiece/part program

Select "Program" operating area.

Select workpiece/part program:

- Select the level:
  - Workpieces
  - Part programs
  - Subroutines
  - Standard cycles (MMC100.2)
  - User cycles
  - Clipboard

Position the cursor on the desired file in the directory tree.
### 4.2 Open/edit part program

<table>
<thead>
<tr>
<th>MMC 100.2</th>
<th>MMC 103</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program</strong></td>
<td><strong>Open part program:</strong></td>
</tr>
<tr>
<td>Position the cursor on the desired file in the directory tree.</td>
<td>Press the &quot;Input&quot; key.</td>
</tr>
<tr>
<td><strong>Open program in ASCII editor:</strong></td>
<td><strong>Activate interactive programming (MMC103):</strong></td>
</tr>
<tr>
<td>Press softkey &quot;Interactive progr.&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
4.2 Open/edit part program

**Edit part program:**

- **Overwrite**: Toggle between insert and overwrite mode.
- **Mark block**: Mark the beginning of block.
- **Copy block**: Save the block in the Clipboard.
- **Delete block**: Delete block.
- **Insert block**: Paste the block from the Clipboard.
- **Search/go to ...**: Position on block no., beginning of file, end of file or search string.
- **Search**: Enter search string.
- **Substitute**: Enter substitute.
- **Continue search**: Next occurrence of search string.
- **Go to ...**: Enter block no.
- **Save file**: Save part program.
- **Close editor**: Close text editor.
4.3 Create new workpiece/part program

MMC 100.2

MMC 103

Select "Program" operating area.

Select "Workpieces", "Part programs" or "Subroutines".

Open directory.

Enter name of workpiece, main program or subroutine and

select "File type".

MMC103:

Select key
• text editor
• activate interactive programming.
### 4.4 Execute workpiece/part program

**Select “Program” operating area.**

**Select workpiece:**
- Mark the desired workpiece with the cursor in the workpiece overview.
- Select the workpiece.

**Select part program:**
- Mark the desired workpiece with the cursor in the part program overview.
- Select the part program.

**Start the workpiece/part program.**

**You can also run part programs directly from the Clipboard.**
### 4.5 Copy/paste, rename, delete, enable

<table>
<thead>
<tr>
<th>Program</th>
<th>Select “Program” operating area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMC103:</td>
<td>MMC103: Select “Manage programs”.</td>
</tr>
<tr>
<td>Copy/paste program:</td>
<td>Copy/paste program:</td>
</tr>
<tr>
<td>Copy</td>
<td>Select the source file.</td>
</tr>
<tr>
<td>Paste</td>
<td>Save the source file in the target directory.</td>
</tr>
<tr>
<td>Rename the program:</td>
<td>Rename the program:</td>
</tr>
<tr>
<td>Rename</td>
<td>Press the “Rename” softkey and enter new name.</td>
</tr>
<tr>
<td>Use the “Toggle” key to select the file type.</td>
<td>Use the “Toggle” key to select the file type.</td>
</tr>
</tbody>
</table>
### 4.5 Copy/paste, rename, delete, enable

<table>
<thead>
<tr>
<th>MMC 100.2</th>
<th>MMC 103</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

#### Delete program:
- **Delete**
  - Delete the program from the directory.

#### Change enable:
- **Change enable**
  - Set (x) or cancel ( ) enable.
4.6 Load/unload program (MMC 103)

Select “Program” operating area.

Position the cursor on the desired file in the directory tree.

Load the program into the CNC memory.

Save the program to hard disk.

Please note:
When you activate “Load”, the program is automatically deleted from the hard disk. When you activate “Unload”, the program is automatically cleared from the CNC memory.
5. Manage data

5.1 Transfer data (MMC 100.2) 5-56
5.2 Transfer data (MMC 103) 5-59
5.3 Create new file/directory (MMC 103) 5-61
5.4 Load/unload program (MMC 103) 5-62
5.5 Copy/paste, delete (MMC 103) 5-63
5.6 Directory/file/archive properties (MMC 103) 5-64
### 5.1 Transfer data (MMC 100.2)

#### Select "Services" operating area.

#### Read out data:

Select "Data out" menu.

#### Select interface:

- **V.24 user**
- **V.24 printer**
- **V.24-PG/PC**

#### Position the cursor on the desired file in the directory tree.

#### Start "Data out".

#### Interrupt "Data out".
5.1 Transfer data (MMC 100.2)

Read in data:
Select "Data in" menu.

Select interface:
- V.24 user
- V.24-PG/PC

Position the cursor on the desired file in the directory tree.
### 5.1 Transfer data (MMC 100.2)

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start</strong></td>
<td>Organize data according to the existing path:</td>
</tr>
<tr>
<td></td>
<td>Path/workpiece from archive file</td>
</tr>
<tr>
<td></td>
<td>Store all files in the directory, irrespective of archived path:</td>
</tr>
<tr>
<td></td>
<td>Path/workpiece from archive file</td>
</tr>
<tr>
<td></td>
<td>Store all files in the Clipboard, irrespective of archived path:</td>
</tr>
<tr>
<td></td>
<td>Read into the Clipboard</td>
</tr>
<tr>
<td><strong>OK</strong></td>
<td>Start &quot;Data in&quot;.</td>
</tr>
<tr>
<td><strong>Stop</strong></td>
<td>Interrupt &quot;Data in&quot;.</td>
</tr>
</tbody>
</table>

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### 5.2 Transfer data (MMC 103)

<table>
<thead>
<tr>
<th>MMC 103</th>
</tr>
</thead>
</table>

**Select “Services” operating area.**

**Read out data:**

- Select “Programs/data” menu.

**Select data in the directory tree.**

**Select target area:**

- V.24 interface
- Programming device
- Diskette drive
- "Archive" on hard disk
- NC Card

**Start transfer:**

- Initiate data transfer on disk/archive (softkey label changes to “Stop”).
5.2 Transfer data (MMC 103)

Read in data:
Select "Programs/data" menu.

Select data in the directory tree.

Select source area:
- V.24 interface
- Programming device
- Diskette drive
- "Archive" on hard disk
- NC Card

Start transfer:
Initiate data transfer on disk/archive (softkey label changes to "Stop").

The data transfer is initiated automatically. You can interrupt data transfer at any time by pressing the softkey again.
### 5.3 Create new file/directory (MMC 103)

<table>
<thead>
<tr>
<th>Services</th>
<th>Select &quot;Services&quot; operating area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage data</td>
<td>Select &quot;Manage data&quot; menu.</td>
</tr>
<tr>
<td>New...</td>
<td>Enter program name and select type of program.</td>
</tr>
<tr>
<td>End</td>
<td>By selecting the &quot;End&quot; softkey, you can switch between the areas &quot;Name&quot; and &quot;Type of file&quot;.</td>
</tr>
<tr>
<td>OK</td>
<td>New file/directory will be created.</td>
</tr>
</tbody>
</table>
### 5.4 Load/unload program (MMC 103)

**Services**
Select "Services" operating area.

**Manage data**
Select "Manage data" menu.

**Position the cursor on the desired file in the directory tree.**

**Load**
Load the file from the hard disk into the CNC memory.

**Unload**
Unload the file from the CNC memory to the hard disk.
### 5.5 Copy/paste, delete (MMC 103)

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services</td>
<td>Select &quot;Services&quot; operating area.</td>
</tr>
<tr>
<td>Manage data</td>
<td>Select &quot;Manage data&quot; menu.</td>
</tr>
<tr>
<td>Source file</td>
<td>Position the cursor on the source file in the directory tree.</td>
</tr>
<tr>
<td>Copy</td>
<td>Select target directory.</td>
</tr>
<tr>
<td>Programs data</td>
<td>Close target window.</td>
</tr>
<tr>
<td>Paste</td>
<td>Copy source file to target directory.</td>
</tr>
<tr>
<td>Clipboard</td>
<td>Copy to or from Clipboard.</td>
</tr>
<tr>
<td>Diskette</td>
<td>Copy to or from diskette.</td>
</tr>
<tr>
<td>Delete</td>
<td>Delete selected file.</td>
</tr>
</tbody>
</table>

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5.6 Directory/file/archive properties (MMC 103)

- Select "Services" operating area.

- Position the cursor on the desired file in the directory tree.

- Select "Properties" menu.

- Rename file
- Convert file type
- Change access rights for file/directory
- Display contents of all files

The access level can only be changed with the appropriate access rights.
6. Automatic Mode

6.1 Select workpiece/program

6.2 Start/stop/cancel program

6.3 Repos – Reposition after interruption

6.4 Overstore

6.5 Display program level

6.6 Program correction

6.7 Execution from V.24 (MMC 100.2)

6.8 Load/unload program from hard disk (MMC 103)

6.9 Execution from hard disk (MMC 103)
### 6.1 Select workpiece/program

<table>
<thead>
<tr>
<th>MMC 100.2</th>
<th>MMC 103</th>
</tr>
</thead>
</table>

| Machine | Select "Machine" operating area. |
| AUTO | Select "Automatic" mode. |

| Program overview | Select "Program overview" menu. |
| Workpieces | Select desired workpiece/part program with the cursor in the workpiece/part program overview. |
| Part programs | Select workpiece/part program. |
| Selection | |
| Change enable | Set (x) or cancel ( ) enable. |
6.2 Start/stop/cancel program

Please check that:
No alarms are active.
The program is selected.
The feed enable is active.
The spindle enable is active.

A part program which has been interrupted by "NC Stop" can be resumed with "NC Start".

A part program which has been interrupted by "Reset" runs from the start when you press "NC Start".
6.3 Repos – Reposition after interruption

After a program interrupt ("NC Stop") you can move the tool away from the contour in the manual mode. The control saves the coordinates of the interruption point. The traversed path differences of the axes are displayed.

- **Machine**
  - Select "Machine" operating area.
- **Jog**
  - Select "Jog" mode.

- **Reposition after program interruption.**

  - **Turning machine:**
    - Traverse axes up to the point of interruption.
  - **Milling machine:**
    - Select axis and traverse axes up to the interruption point.

**Caution:**
Travel beyond the interruption point is inhibited. The feed override switches are active.
6.3 Repos – Reposition after interruption

Select "Machine" operating area.

Select "Automatic" mode.

Continue machining.
6.4 Overstore

MMC 100.2
MMC 103

Select "Machine" operating area.

Select "Automatic" mode.

Overstore with single block:
The program automatically stops at the next block boundary.

Overstore without single block:
Stop part program.

Enter the values and functions to be executed.

Run the entered block.
6.5 Display program level

- **Machine**: Select "Machine" operating area.
- **AUTO**: Select "Automatic" mode.
- **Program level**: Display block numbers for main programs and subroutines with the respective pass counts (P).
- **Current block**: Display the blocks of the current program.

Pressing the "Program level" softkey automatically changes the level to and from "current block".
6.6 Program correction

MMC 100.2

- Select "Machine" operating area.

MMC 103

- Select "Automatic" mode.

The control has detected a system error in the part program. Execution of the part program is automatically interrupted.

- Correct the program block with the error.

- Continue machining.
## 6.7 Execution from V.24 (MMC 100.2)

Select "Machine" operating area.

Select "Program overview" menu.

Select "Execution from external source" menu.

Position the cursor on the desired file in the directory tree.

Start execution from V.24.

Executed blocks appear in the current block window.

Alternatively, it is possible to start execution in the "Services" operating area. You can change the transfer parameters in the "Services" operating area. The transfer is recorded in the error log.
## 6.8 Load/unload program from hard disk (MMC 103)

<table>
<thead>
<tr>
<th>MMC 103</th>
</tr>
</thead>
</table>

Select "Machine" operating area.

Select "Program overview " menu.

Position the cursor on the desired file in the directory tree.

Load the program into the CNC memory.

Save the program on the hard disk.

---

**Please note:**
When you activate "Load", the program is automatically deleted from the hard disk. When you activate "Unload", the program is automatically cleared from the CNC memory.
6.9 Execution from hard disk (MMC 103)

- **Machine**: Select "Machine" operating area.
- **Program overview**: Select "Program overview" menu.
- **Position**: Position the cursor on the desired file in the directory tree.
- **Press**: Press the "NC Start" key.
- **Execution fr. hard disk**: Start/cancel read-in and execution.

The program remains stored with "Execution from hard disk".
7. Alarms and Messages

7.1 Alarms/messages 7-78
7.1 Alarms/messages

Select "Diagnosis" operating area.

Display alarms:

Display alarms with "alarm number", "date", "explanation" and "cancel criterion".

Delete alarm:

Switch the control off and on again.

Press "Reset".

Press "Acknowledge alarm".

Alarm is canceled with "NC Start".

Alarm is canceled with "Recall".
## 7.1 Alarms/messages

### Display messages:

- **Messages**

  Display PLC error messages and PLC operational messages.

### Caution:

PLC error messages must always be acknowledged.

### Display alarm log:

- **Alarm log**

  Display complete log of alarms and messages which have occurred.

- **Display new**

  Update alarm log.

### MMC 103:

- **Acknowledge MMC alarm**

  Select and delete MMC alarm.
<table>
<thead>
<tr>
<th>Suggestions and/or corrections</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>From</th>
<th>Short Guide Operation</th>
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</thead>
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<td>Order No.: 6FC5298-5AA10-0BP0</td>
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<tr>
<td></td>
<td>Edition: 12.98</td>
</tr>
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</tbody>
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