Description of Functions 04/2005 Edition

motion control information system

NC program management DNC
SINUMERIK 840D/840Di/810D

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DNC Plant / DNC Cell 1
Manual 1

DNC IFC SINUMERIK 2
Manual 2

Motion Control Information System

SINUMERIK 840D/840Di/810D NC Program Management DNC

Description of Functions

Valid for

Motion Control Information System	DNC	Software version 2

Appendix A

Index I

04.05 Edition

MCIS DNC Documentation

Version history

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

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

Status code in the "Remarks" column:

A .... New documentation
B .... Unrevised reprint with new order number
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.

Edition	Order No.	Remarks
03.03	6FC5 297-1AE80-0BP0	**A**
04.05	6FC5 297-2AE80-0BP0	**C**

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

Edition	Order No.	Remarks
10.04	6FC5 298-7CA00-0BG1	**C**

More information is available on the Internet at:
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 the content of this document for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual is reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcome.

Technical data subject to change

Order No. 6FC5 297-2AE80-0BP0
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Siemens Aktiengesellschaft

Preface

Audience

This description of functions is intended for CNC production users.
It is also intended for interested parties and **DNC** users, and
contains information about planning, commissioning and starting up NC program management.

Objective

The areas of application and range of functions of **DNC** are described.
The following aspects are covered:

- Functionality
- Configuration options
- Interface parameters

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SINUMERIK 840D powerline

Since September 2001 the
- SINUMERIK 840D powerline and
- SINUMERIK 840DE powerline

have been available with improved performance. The hardware description below contains a list of the available **powerline** modules:
References: /PHD/, SINUMERIK 840D Configuration Manual

SINUMERIK 810D powerline

Since December 2001 the
- SINUMERIK 810D powerline and
- SINUMERIK 810DE powerline

have been available with improved performance. The following hardware description contains a list of the available **powerline** modules:
References: /PHC/, SINUMERIK 810D Configuration Manual

For whom is the manual intended?

- Project engineers
- Maintenance and service personnel

Finding information

To help you to find your way around, the manual includes a table of contents and two appendices:
- List of References
- Index

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Danger and warning symbols

The following danger and warning symbols are used in this document.
Explanation of symbols used:

Danger

This symbol indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury or in substantial property damage.

Warning

This symbol indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury or in substantial property damage.

Caution

This symbol (with a warning triangle) indicates that minor injury or damage to property **may** result if appropriate precautions are not taken.

Caution

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Notice

This symbol indicates a potential situation which, if not avoided, **may** result in an undesirable result or state.

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Other information

Important

This notice indicates important facts that must be taken into consideration.

Note

This symbol always appears in this documentation where additional explanatory information is provided.

Machine manufacturer

This pictorial symbol always appears in this document to indicate that the machine manufacturer can affect or modify the function described. Note the machine manufacturer's instructions.

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Motion Control Information System

SINUMERIK 840D/840Di/810D
NC Program Management DNC

DNC Plant / DNC Cell (FBDN1)

1 Introduction FBDN1/1-11

1.1 Product brief FBDN1/1-12
1.1.1 MCIS for machine tools FBDN1/1-13
1.1.2 NC program management DNC FBDN1/1-14

1.2 Application ranges and system versions FBDN1/1-15
1.2.1 DNC Plant FBDN1/1-15
1.2.2 DNC HMI FBDN1/1-16
1.2.3 DNC Cell FBDN1/1-17
1.2.4 DNC IFC SINUMERIK FBDN1/1-18
1.2.5 DNC Compare FBDN1/1-18
1.2.6 DNC IFC Serial FBDN1/1-19
1.2.7 DNC IFC Dialog (dialog function) FBDN1/1-19
1.2.8 DNC IFC File System FBDN1/1-19
1.2.9 DNC Machine FBDN1/1-19

2 Plant Structure FBDN1/2-21

2.1 Plant topology FBDN1/2-22

2.2 DNC functions on hardware components FBDN1/2-25
2.2.1 DNC Cell computer FBDN1/2-25
2.2.2 DNC Plant computer FBDN1/2-25
2.2.3 DNC HMI computer FBDN1/2-25
2.2.4 Station PC FBDN1/2-26
2.2.5 NC programming system FBDN1/2-26
2.2.6 Control FBDN1/2-26
2.2.7 Tool setting station FBDN1/2-27

3 Operator Interface FBDN1/3-29

3.1 Layout of DNC and DNC Admin Explorer FBDN1/3-30
3.1.1 Explorer structure FBDN1/3-30
3.1.2 Display formats FBDN1/3-34

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3.1.3 Operation FBDN1/3-35
3.1.4 Languages FBDN1/3-35

3.2 View filter FBDN1/3-36
3.2.1 Create or edit a filter FBDN1/3-39
3.2.2 View filter examples FBDN1/3-42

4 NC Data Management FBDN1/4-47

4.1 Maintenance functions FBDN1/4-48
4.1.1 Create/Edit management data FBDN1/4-48
4.1.2 Import NC data FBDN1/4-53
4.1.3 Edit NC data FBDN1/4-57

4.2 Download functions FBDN1/4-58
4.2.1 Download NC data FBDN1/4-60
4.2.2 Download NC data to SINUMERIK 810D/840DI/840D with DNC IFC SINUMERIK FBDN1/4-61
4.2.3 Upload NC data FBDN1/4-62
4.2.4 Upload NC data from SINUMERIK 810D/840DI/840D FBDN1/4-64

4.3 Version management and release/trial cut identifiers FBDN1/4-66
4.3.1 Version management FBDN1/4-66
4.3.2 Release/Trial cut identifier FBDN1/4-69

4.4 DNC Compare FBDN1/4-71
4.4.1 Match machines for SINUMERIK 840D/840DI/810D FBDN1/4-71
4.4.2 NC data single comparison FBDN1/4-73

4.5 Archiving (manual) FBDN1/4-74
4.5.1 General FBDN1/4-74
4.5.2 Comparison results FBDN1/4-74

4.6 Data organization FBDN1/4-75
4.6.1 Database FBDN1/4-75
4.6.2 File system FBDN1/4-82

4.7 Consistency check FBDN1/4-84
4.7.1 General FBDN1/4-84
4.7.2 Consistency check on DNC Admin startup FBDN1/4-85
4.7.3 Consistency Check dialog FBDN1/4-85

5 User Administration FBDN1/5-91

5.1 Structure of user administration FBDN1/5-92

5.2 Manage user FBDN1/5-93
5.2.1 General FBDN1/5-93
5.2.2 Create new user/Change user properties FBDN1/5-94
5.2.3 Filter assignment for a user FBDN1/5-97

5.3 Manage user groups FBDN1/5-100
5.3.1 General FBDN1/5-100
5.3.2 Create new user group/Change user group properties FBDN1/5-100
5.3.3 Name of user group FBDN1/5-101
5.3.4 Comment FBDN1/5-101
5.3.5 User rights FBDN1/5-102
5.3.6 Display group FBDN1/5-105

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6 Dialog Function FBDN1/6-107

6.1 General information about the dialog function FBDN1/6-108

6.2 Dialog program FBDN1/6-109
6.2.1 Program structure FBDN1/6-109
6.2.2 Examples FBDN1/6-110

6.3 Dialog program responses FBDN1/6-111
6.3.1 Program structure FBDN1/6-111
6.3.2 Examples FBDN1/6-111

6.4 Configuration parameters FBDN1/6-112

7 Code Conversion Function FBDN1/7-115

7.1 Code conversion FBDN1/7-116

7.2 Examples FBDN1/7-117

7.3 Code conversion tables FBDN1/7-118

8 System Platform FBDN1/8-121

8.1 Hardware FBDN1/8-122
8.1.1 Requirements for DNC Cell FBDN1/8-122
8.1.2 Requirements for DNC Plant FBDN1/8-123

8.2 Software FBDN1/8-124
8.2.1 Requirements for DNC Cell FBDN1/8-124
8.2.2 Requirements for DNC Plant FBDN1/8-125

9 Software Structure FBDN1/9-127

9.1 Software structure FBDN1/9-128

9.2 Machine server FBDN1/9-129
9.2.1 SerIntSvr FBDN1/9-129
9.2.2 Customized serial machine servers FBDN1/9-129

9.3 Code conversion server FBDN1/9-129

9.4 External dialog interpreter FBDN1/9-130

10 Configuration FBDN1/10-131

10.1 General FBDN1/10-132

10.2 Separate DNC Admin and DNC FBDN1/10-132
10.2.1 General FBDN1/10-132
10.2.2 Differences FBDN1/10-133

10.3 Plant structure FBDN1/10-135

10.4 Machine interfaces FBDN1/10-136
10.4.1 Machine configuration files FBDN1/10-139
10.4.2 Standard machine configuration file for serial unsecured interface FBDN1/10-141

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10.4.3 Standard machine configuration file for interface type SINUMERIK 840D/840Di/810D FBDN1/10-145
10.4.4 Configuration dialog for serial unsecured interface FBDN1/10-147
10.4.5 Configuration file for interface type SINUMERIK 840D/840Di/810D FBDN1/10-172
10.4.6 Configuration dialog for file system interface type FBDN1/10-183
10.4.7 Dialog function FBDN1/10-184

10.5 Global settings FBDN1/10-188
10.5.1 Maximum permissible number of versions FBDN1/10-188
10.5.2 Versions strategy for uploads FBDN1/10-189
10.5.3 Store strategy after editing FBDN1/10-190
10.5.4 Machine-specific version management FBDN1/10-191

10.6 List Editor FBDN1/10-193
10.6.1 General FBDN1/10-193
10.6.2 Description of part 1 of the List Editor FBDN1/10-195
10.6.3 Description of part 2 of the List Editor FBDN1/10-196

10.7 Screen Editor FBDN1/10-198
10.7.1 General FBDN1/10-198
10.7.2 Description of part 1 of the Screen Editor FBDN1/10-200
10.7.3 Description of part 2 of the Screen Editor FBDN1/10-202
10.7.4 Saving the screen display in the database FBDN1/10-207

11 Error Management FBDN1/11-211

11.1 General FBDN1/11-212
11.1.1 Central log book FBDN1/11-212
11.1.2 Separate error/message file FBDN1/11-212

11.2 Functions of the central log book FBDN1/11-212
11.2.1 Display of messages FBDN1/11-213
11.2.2 Filtering log data FBDN1/11-214
11.2.3 Export errors/messages FBDN1/11-214
11.2.4 Delete errors/messages FBDN1/11-215

11.3 Separate message file FBDN1/11-216

12 Auto Archiving FBDN1/12-217

12.1 Functions performed by DNC Auto Archive FBDN1/12-218
12.1.1 General FBDN1/12-219
12.1.2 Auto Archive identifier FBDN1/12-219

12.2 Configuring Auto Archive FBDN1/12-220
12.2.1 General FBDN1/12-220
12.2.2 Configuration in DNC Admin FBDN1/12-221
12.2.3 Configuration in the machine configuration file FBDN1/12-224
12.2.4 Save control NC active data FBDN1/12-227
12.2.5 Auto Archive start parameters FBDN1/12-230
12.2.6 Starting Auto Archive automatically FBDN1/12-231

12.3 Comparison results FBDN1/12-232

12.4 Tracking the Auto Archive process FBDN1/12-232

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I Index FBDN1/I-233

I.1 Subject index FBDN1/I-233

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Tables

Table 3-1 **DNC** and **DNC Admin** menu FBDN1/31
Table 3-2 **DNC** and **DNC Admin** new popup menu FBDN1/31
Table 3-3 Filter operands FBDN1/39
Table 3-4 Wildcards FBDN1/39
Table 4-1Relevant database fields for file import with header data FBDN1/53
Table 4-2 Import file with header FBDN1/55
Table 4-3 Sample file of a comparison result FBDN1/72
Table 4-4 Database table DNCDATA FBDN1/78
Table 4-5 Database table DNCDATATYPE FBDN1/79
Table 4-6 Standard directory icons FBDN1/82
Table 6-1 Example of a download request with configuration parameters set to defaults FBDN1/110
Table 6-2 Example of a standard request for transfer of an NC data files list FBDN1/110
Table 6-3 Example of a response to a standard list request FBDN1/111
Table 6-4 Example of a response to a program request that cannot be fulfilled FBDN1/111
Table 6-5 Configuration parameters for the dialog function FBDN1/112
Table 7-1 Modified ASCII code conversion table FBDN1/117
Table 7-2 Filtered out "CR" character in ISO code FBDN1/117
Table 7-3 Code conversion table ASCII_OUT FBDN1/118
Table 7-4 Code conversion table ASCII_IN FBDN1/118
Table 7-5 Code conversion table EIA_OUT FBDN1/119
Table 7-6 Code conversion table EIA_IN FBDN1/119
Table 7-7 Code conversion table ISO_OUT FBDN1/120
Table 7-8 Code conversion table ISO_IN FBDN1/120
Table 8-1 Hardware requirements for **DNC Cell** FBDN1/122
Table 8-2 Hardware requirements for **DNC Plant** FBDN1/123
Table 8-3 Software requirements for **DNC Cell** FBDN1/124
Table 8-4 Software requirements for **DNC Plant** computer FBDN1/125
Table 8-5 Software requirements for **stations PCs and HMI computers** FBDN1/125
Table 10-1 Differences between **DNC** and **DNC Admin** FBDN1/133
Table 10-2 Control types for machine configuration file templates FBDN1/140
Table 10-3 Example of a machine configuration file for the serially unsecured interface FBDN1/141
Table 10-4 Example of a machine configuration file for interface type SINUMERIK 840D/840Di/810D FBDN1/145
Table 10-5 Parity of the serial interface FBDN1/152
Table 10-6 Flow control of the serial interface FBDN1/153
Table 10-7 Transmission modes of the serial interface FBDN1/153
Table 10-8 Comment during transmission FBDN1/155
Table 10-9 End-of-line character conversion during transmission FBDN1/159
Table 10-10 Interpretation of data stream: Interpretation mode: NCSplit parameter FBDN1/168
Table 10-11 Interpretation of data stream: Parameters for configuring NC data files for other types of control (NCSplit=2) FBDN1/168
Table 10-12 Example of data stream interpretation FBDN1/171
Table 10-13 Global settings for maximum permissible number of versions FBDN1/188
Table 10-14 Global settings for version strategy for uploads FBDN1/189
Table 10-15 Version strategy for uploads FBDN1/189
Table 10-16 Global settings for store strategy after editing FBDN1/190
Table 10-17 Field types FBDN1/203
Table 10-18 Screen definition table DNCFORMDESCRIPTION FBDN1/207

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Table 11-1 Log book display FBDN1/213
Table 12-1 Auto Archive identifier FBDN1/219

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Figures

Fig. 1-1 Sample configuration for **DNC Plant** FBDN1/15
Fig. 1-2 Sample configuration for a local **DNC** configuration (**DNC Cell**) FBDN1/17
Fig. 1-3 Result of an NC program comparison FBDN1/18
Fig. 2-1 Configuration option for the plant structure FBDN1/22
Fig. 3-1 **DNC** operator interface FBDN1/30
Fig. 3-2 Operator interface toolbar FBDN1/32
Fig. 3-3 User interface filter bar FBDN1/32
Fig. 3-4 Address bar if workpiece directory is open FBDN1/32
Fig. 3-5 Address bar if link directory is open FBDN1/32
Fig. 3-6 Operator interface big view FBDN1/34
Fig. 3-7 Example of an unfiltered view FBDN1/36
Fig. 3-8 Example: Filtered view (here "MPF") FBDN1/36
Fig. 3-9 Cross-area filters FBDN1/37
Fig. 3-10 Dialog filter criteria – new criterion FBDN1/38
Fig. 3-11 Filter selection dialog FBDN1/40
Fig. 3-12 Filter edit dialog FBDN1/41
Fig. 3-13 Filter criteria dialog – Example FBDN1/42
Fig. 3-14 Output data without filtering FBDN1/43
Fig. 3-15 Filtering of output data with filter: Program name = c% FBDN1/43
Fig. 3-16 Filtering of output data with filter: Program name = %d% FBDN1/44
Fig. 3-17 Filtering of output data with filter: Version >= 2 ..... FBDN1/44
Fig. 3-18 Filtering of output data with filter: Program type >= SPF FBDN1/44
Fig. 3-19 Filtering of output data with filter: Creation date = exact time FBDN1/45
Fig. 3-20 Filtering of output data with filter:
Release identifier = 1 AND creation date = particular day FBDN1/45
Fig. 4-1 NC data properties/tab: General FBDN1/49
Fig. 4-2 NC data properties/tab: Info FBDN1/50
Fig. 4-3 Machine properties/tab: Configuration FBDN1/51
Fig. 4-4 Dialog: Confirm file import FBDN1/54
Fig. 4-5 NC data uploaded from the CNC machine tool FBDN1/58
Fig. 4-6 NC data downloaded to the CNC machine tool FBDN1/58
Fig. 4-7 Display of download functions in **DNC** FBDN1/59
Fig. 4-8 Downloading NC data FBDN1/60
Fig. 4-9 Dialog for downloading to SINUMERIK 840 ..... FBDN1/61
Fig. 4-10 Uploading NC data FBDN1/62
Fig. 4-11 Cancel an active upload (receive data) FBDN1/63
Fig. 4-12 View of the SINUMERIK 810D/840DI/840D data management directory FBDN1/64
Fig. 4-13 Version dialog FBDN1/67
Fig. 4-14 NC data single comparison FBDN1/73
Fig. 4-15 Database structure of machine, NC and NC type data FBDN1/76
Fig. 4-16 Variant of list display on operator interface FBDN1/77
Fig. 4-17 Tree structure on operator interface FBDN1/82
Fig. 4-18 Consistency check at **DNC Admin** start FBDN1/85
Fig. 4-19 Consistency Check dialog: Missing files FBDN1/86
Fig. 4-20 Consistency Check dialog: Missing database entries for NC data FBDN1/87
Fig. 4-21 Consistency Check dialog: Missing database entries for directories FBDN1/88
Fig. 4-22 Consistency Check dialog: Missing workpieces in the database workpiece table FBDN1/89
Fig. 5-1 Overview of existing users FBDN1/93
Fig. 5-2 Screen for creating or editing users FBDN1/94
Fig. 5-3 Filter assignment FBDN1/97

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Fig. 5-4 Overview of existing user groups FBDN1/100
Fig. 5-5 Screen for managing user groups FBDN1/101
Fig. 6-1 Dialog function with additional terminal FBDN1/108
Fig. 9-1 Software structure FBDN1/128
Fig. 10-1 Plant structure in the file system FBDN1/135
Fig. 10-2 Machine properties in download mode: Serial unsecured FBDN1/137
Fig. 10-3 Machine properties in download mode: SINUMERIK 840D/840Di/810D FBDN1/138
Fig. 10-4 Config dialog/tab sheet: General FBDN1/147
Fig. 10-5 Config dialog/tab sheet: Machine server FBDN1/148
Fig. 10-6 Config dialog/tab sheet: Code conversion server FBDN1/150
Fig. 10-7 Config dialog/tab sheet: Interface FBDN1/151
Fig. 10-8 Config dialog/tab sheet: Send FBDN1/154
Fig. 10-9 Config dialog/Receive tab sheet FBDN1/160
Fig. 10-10 Config dialog/Dialog Function tab sheet FBDN1/163
Fig. 10-11 Config dialog/Interpretation of Data Stream tab sheet FBDN1/167
Fig. 10-12 Config dialog 840D/General tab sheet FBDN1/172
Fig. 10-13 Config dialog 840D/FTP tab sheet FBDN1/174
Fig. 10-14 Config dialog 840D/Upload Dialog tab sheet FBDN1/176
Fig. 10-15 Config dialog 840D/Compare Directories tab sheet FBDN1/177
Fig. 10-16 Config dialog 840D/Archive Server Job tab sheet FBDN1/179
Fig. 10-17 Config dialog 840D/Remote Login tab sheet FBDN1/181
Fig. 10-18 Config dialog, File System FBDN1/183
Fig. 10-19 Machine properties/tab: Configuration FBDN1/184
Fig. 10-20 List description for dialog function lists FBDN1/185
Fig. 10-21 Response list for a dialog function request FBDN1/186
Fig. 10-22 Communication error on machine server with active dialog function FBDN1/187
Fig. 10-23 Variant of list display on operator interface FBDN1/193
Fig. 10-24 List Editor FBDN1/194
Fig. 10-25 Right-hand section of List Editor (part 2) FBDN1/196
Fig. 10-26 Left-hand section of List Editor (part 2) FBDN1/197
Fig. 10-27 Screen Editor FBDN1/198
Fig. 10-28 Screen Editor - Preview FBDN1/199
Fig. 10-29 Screen Editor – Part 1 ..... FBDN1/200
Fig. 10-30 Screen Editor – Part 2 ..... FBDN1/202
Fig. 10-31 Screen Editor - Field names FBDN1/204
Fig. 10-32 Screen Editor - Coordinates FBDN1/205
Fig. 10-33 Screen Editor - Positioning a screen field FBDN1/205
Fig. 10-34 Screen Editor - Length FBDN1/206
Fig. 10-35 Classification numbers for fields in screen display FBDN1/208
Fig. 11-1 Log file FBDN1/213
Fig. 12-1 List display with Auto Archive identifier FBDN1/218
Fig. 12-2 Machine properties in configuration mode FBDN1/221

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1

1 Introduction

1.1 Product brief..... FBDN1/1-12
1.1.1 MCIS for machine tools FBDN1/1-13
1.1.2 NC program management DNC FBDN1/1-14

1.2 Application ranges and system versions FBDN1/1-15
1.2.1 DNC Plant..... FBDN1/1-15
1.2.2 DNC HMI..... FBDN1/1-16
1.2.3 DNC Cell..... FBDN1/1-17
1.2.4 DNC IFC SINUMERIK FBDN1/1-18
1.2.5 DNC Compare FBDN1/1-18
1.2.6 DNC IFC Serial FBDN1/1-19
1.2.7 DNC IFC Dialog (dialog function) FBDN1/1-19
1.2.8 DNC IFC File System FBDN1/1-19
1.2.9 DNC Machine..... FBDN1/1-19

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1.1 Product brief

DNC is a software module in the Siemens Motion Control Information System (MCIS) family.
MCIS comprises modular software solutions for integrating CNC and machine tools into automation networks. They are designed to integrate modern controls such as SINUMERIK 810D/840Di/840D, as well as older CNC and machine tools, which do not feature an open network link capability, into an automation network. MCIS is thus the key to increased productivity in your production plant.

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1.1.1 MCIS for machine tools

MCIS consists of several function modules, which, with the exception of RCS and RPC, access the shared **MCISDB** MCIS database. The MCIS database consists of shared components, such as user administration and machine nodes, and module-specific components, which are assigned to individual function modules.

1. Production data management
   - **MDA** (**M**achine **D**ata **A**cquisition)
   - **PDA** (**P**roduction **D**ata **A**cquisition)
   - **PMT** (**P**arts **M**onitoring & **T**racking)

   For improved transparency and efficiency of production processes.

2. NC program management
   DNC (**D**irect **N**umeric **C**ontrol)

   For reducing the cost of NC data organization by virtue of user-friendly management, archiving and supply of NC programs for CNCs and for rapid NC program supply to SINUMERIK 810D/840D/840Di controls via the Ethernet network.

3. Tool management
   TDI (**T**ool **D**ata **I**nformation)

   For reducing tool stock levels and machine downtimes.

4. Maintenance management
   TPM (**T**otal **P**roductive **M**aintenance)

   For assisting the machine operator with maintenance tasks on machinery and plants.

5. Service management
   RCS (**R**emote **C**ontrol **S**ystem)

   Remote diagnostics for reducing machine downtimes through rapid signaling of faults and very simple online diagnosis via modem, ISDN, Intranet, Internet, or ADSL.

6. Computer link
   RPC (**R**emote **P**rocedure **C**all)

   Computer link software for communication between SINUMERIK 840D/810D/840Di and an external master computer.

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1.1.2 NC program management DNC

General

DNC manages and archives NC data and transfers them to CNC machine tools. **DNC**, therefore, acts as the link between the production planning department and the factory and offers an extensive scope of functions for managing NC data and versions.

Operating system

DNC runs on standard PCs under Windows.

Database

NC data are managed in a database.

Control interface

The control system is connected to **DNC** via a machine server. A special machine server is needed for each type of interface.

- **DNC** provides a machine server (**DNC IFC serial**) for linking any type of control without a special protocol via a serial interface.
- **DNC IFC SINUMERIK** operates on SINUMERIK 810D/840Di/840D controls and integrates them into the network.
- The **file system** machine type can be used to transfer NC data from and to any shared network drives. Any network-capable control system can be linked to the DNC system under Windows. A **DNC IFC file system** license is required for this type of interface.
- It is also possible to create any kind of machine server to establish a link to controls with other types of interface, e.g., OLE/COM, or special serial protocols.

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1.2 Application ranges and system versions

DNC is suitable for use in all sectors utilizing CNC-based production equipment and is scalable in its configuration, i.e., from a local solution with **DNC Cell** up to a factory-wide system with **DNC Plant**.

1.2.1 DNC Plant

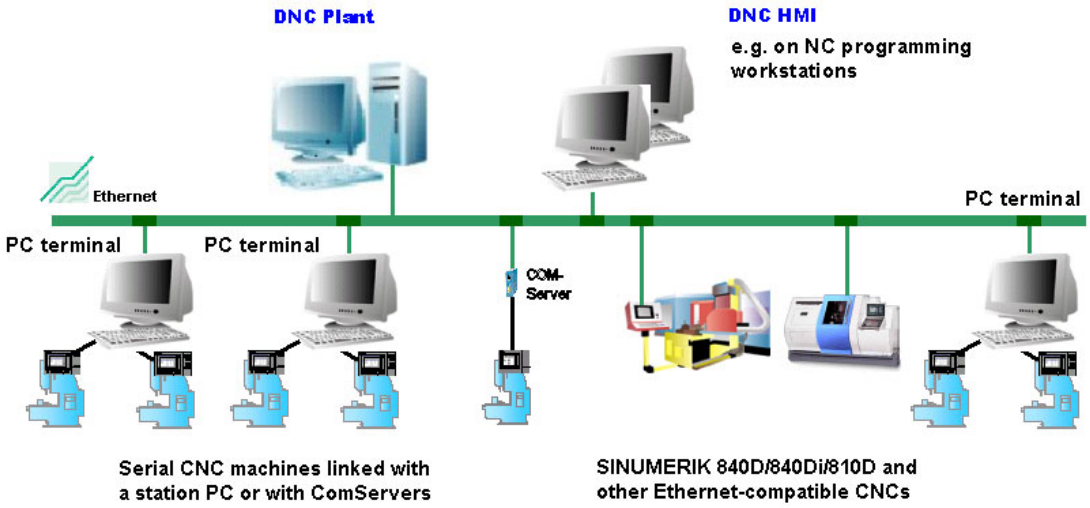

Fig. 1-1 Sample configuration for **DNC Plant**

DNC Plant is a high-powered central NC data archive, in which NC data can be administered easily on a server.
Several hundred CNC machines can be connected to **DNC Plant**, either directly or via station PCs. **DNC Plant** includes an operator interface.
DNC HMI can be used to add operator stations to DNC plant, e.g., for the chief operator's or NC programmer's office.

This is the server variant of **DNC**.

Station PCs

The machine servers and an operator interface for transferring NC data run on the station PCs.

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Networking

The following can be networked with **DNC Plant**:

- As many serial CNC machine tools as desired
  - Via station PCs (up to 16 on one station PC)
  - Via serial/Ethernet interface converters (COM servers) with **DNC IFC Serial**
- Programming systems
- Tool presetting stations
- Any number of SINUMERIK 810D/840Di/840D controls with **DNC IFC SINUMERIK** (transmission protocol: TCP/IP) via a direct interface
- PCs with **DNC HMI** as operator stations of **DNC Plant**
- Any Ethernet-capable CNC machine tools, which can be supplied with NC data via a Windows file system

Additional configuration options

MCIS DNC can be combined with and expanded by further MCIS modules.
In this context, the shared database is expanded by module-specific components. Existing shared components, such as user administration and machine nodes, are recognized during configuration.

1.2.2 DNC HMI

DNC HMI can be used to add operator stations to DNC Plant for NC program management. DNC HMI is installed and operated on Windows PCs, to which no serial machines are connected, e.g., in the production planning department or factory.

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1.2.3 DNC Cell

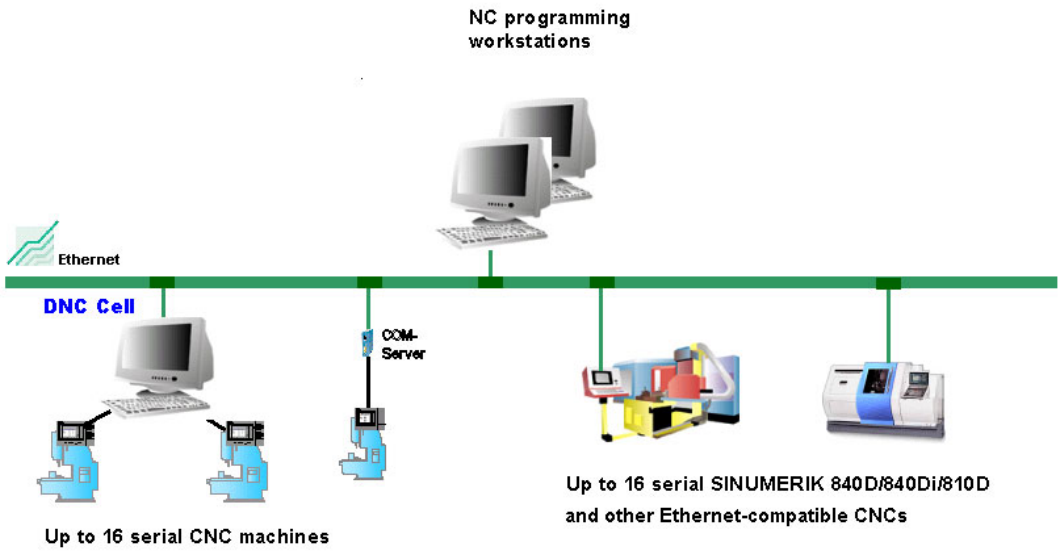

Fig. 1-2 Sample configuration for a local **DNC** configuration (**DNC Cell**)

DNC Cell is a stand-alone NC data archive, in which NC data can be administered easily.

Interfaces

- Up to 16 CNC machines/tool setting stations operating on different types of control can be connected via a serial interface.
- Up to 16 Ethernet-capable CNC machine tools can be directly connected via the network (line protocol: TCP/IP):
  - SINUMERIK 810D/840Di/840D controls using **DNC IFC SINUMERIK**
  - Any Ethernet-capable CNC machine tools, which can be supplied with NC data via a Windows file system (**DNC IFC file system**).

Networking

Programming systems

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1.2.4 DNC IFC SINUMERIK

DNC IFC SINUMERIK is used to connect Ethernet-capable CNC machines with SINUMERIK 810D/840D/840Di to **DNC Plant** or **DNC Cell**.
See also: Book 2 **DNC IFC SINUMERIK**

1.2.5 DNC Compare

DNC Compare is an option package. **DNC Compare** can expand **DNC Plant** and **DNC Cell** with the following functionality:

- **Match NC programs**
  Comparison of different NC program versions
  Differences between programs are highlighted in color.

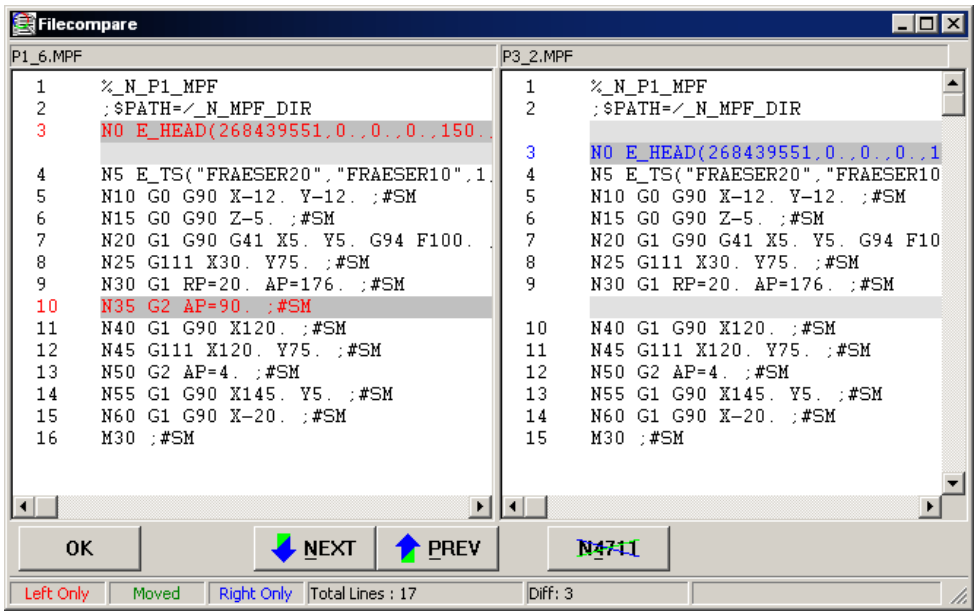

Fig. 1-3 Result of an NC program comparison

- **Match machines*:**
  Checks whether the NC programs in the SINUMERIK are the same as those in **DNC Plant/Cell**.

* This function is only available when connected to SINUMERIK 810D/840D/840Di controls with PCU50/70. **DNC IFC SINUMERIK** must also be installed on the SINUMERIK system.

Note

The **DNC Compare** option package must be enabled in **DNC Admin** under **Tools →Options**, by entering an 8-digit ID. The ID is supplied with the option package.

You will only need one copy of **DNC Compare** for each **DNC Plant/Cell** application.

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1.2.6 DNC IFC Serial

DNC IFC Serial is used to connect CNC machines to **DNC Cell** or **DNC Plant** or the station PCs via a serial interface.

Note

DNC IFC Serial is required for each serial CNC machine.

1.2.7 DNC IFC Dialog (dialog function)

DNC IFC Serial can be expanded using **DNC IFC Dialog**.
It enables the operator to download and upload machining programs directly to and from the CNC.
Dialog programs for requests (created in editor) and responses are exchanged between **DNC** and the machine server. These programs contain the data needed for transmission to and from the CNC.

Note

DNC IFC Dialog can be installed as an option for each serial CNC machine.

1.2.8 DNC IFC File System

DNC IFC File System can be used to connect any CNC machine tool to which NC data can be transferred via a Windows file system and Ethernet network.
Programs are transferred using the DNC or HMI computer or via a station PC.
A SINUMERIK with PCU20, for example, can also be integrated via the **DNC IFC File System**.

1.2.9 DNC Machine

DNC Machine is an extremely simple Ethernet networking solution for SINUMERIK 810D/840D/840Di controls.
DNC Machine provides an operator interface on the SINUMERIK, allowing NC programs to be exchanged between the file system and SINUMERIK without the need for any other software components.

Note

DNC Machine can be used independently of **MCIS DNC Plant/Cell**.

■

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Notes

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2

2 Plant Structure

2.1 Plant topology FBDN1/2-22

2.2 DNC functions on hardware components FBDN1/2-25
2.2.1 DNC Cell computer FBDN1/2-25
2.2.2 DNC Plant computer FBDN1/2-25
2.2.3 DNC HMI computer FBDN1/2-25
2.2.4 Station PC FBDN1/2-26
2.2.5 NC programming system FBDN1/2-26
2.2.6 Control FBDN1/2-26
2.2.7 Tool setting station FBDN1/2-27

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2.1 Plant topology

The plant topology mirrors the physical configuration of the machinery with the NC data storage system and its hierarchical structures in **MCIS DNC**. To create a structured image of the production plant, **DNC** uses the following hierarchical levels:

- Groups
- Machine

DNC provides the "Workpiece" archive, in which all the NC data relating to a workpiece can be bundled.

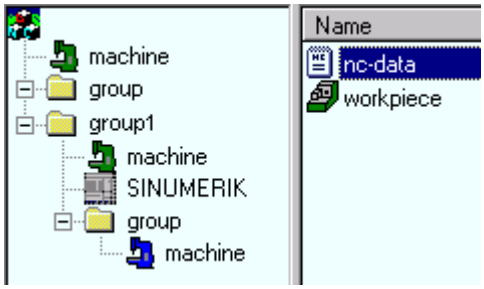

Fig. 2-1 Configuration option for the plant structure

Group

NC data management provides the option of creating coarse and fine hierarchical structures with the aid of the Group hierarchical levels. Several machines of the same type can be combined within one group, for example. Groups can be further divided into subgroups. It is also possible, however, to manage individual NC data and workpieces directly within each group.
Machines can also be set up without a higher-level group.

Machine

Machines are the lowest organizational unit. Every logical machine represents a physical CNC machine and serves as a collection point for the NC data and workpieces, which belong exclusively to this particular machine.

Workpiece

A Workpiece organization unit has been made available to allow interrelated NC data to be managed together. All NC data for a particular machining operation on one CNC machine, for example, can be collected and managed in a Workpiece. There is also the option of bundling the NC data for a workpiece prior to transfer them to the CNC machine.
As the SINUMERIK 810D/840DI/840D is capable of managing workpieces, it is possible to store part-oriented NC data from **DNC** in the same format on the control system.

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NC data

In principle, **DNC** is capable of managing all types of NC data. The following data types are predefined in **DNC**:

• MPF (MainProgramFile)	NC main program
• SPF (SubProgramFile)	NC subprogram
• TOA (ToolOffsetActive)	Tool offsets
• ZOA (ZeroOffsetActive)	Zero offset
• BMP (BitMaP)	Graphics file for clamping drawings, etc.
• WPL (WorkPLan)	ASCII file for tool diagrams
• RPA (R-ParamaterActive)	Memory area in the NCK for R parameters
• JOB (JOBs)	Job list
• ARC (ARChive)	Archives
• INI (INItialization program)	Initialization program
• COM (COMment)	Comments
• AWB	Display description
• LST (displayLiST)	Display list
• TOP (TOolPlan)	Tool plan
• CEC	Sag/angularity
• EEC	Measuring system error compensation
• QEC (QuadrantErrorCompensation)	Quadrant error compensation
• PDF (PortableDocumentFormat)	Text and graphics in PDF format
• JPG (Joint Photographic Experts Group)	Graphics file
• TIF (Tagged Image File)	Graphics file
• GIF (Graphics Interchange Format)	Graphics file

They are predefined in the **MCIS** database. The editor assigned in the Microsoft Explorer is used for each NC data type.
In addition to conventional NC data (NC main programs and subprograms, tool offsets and zero offsets), DNC NT is capable of manipulating special NC data (e.g., graphics files and tool lists). These are available on SINUMERIK 810D/840Di/840D.

Note

New NC data types must be registered with the system by means of an entry in database table DNCDATATYPE.
If you need a special editor for the new data types, you must assign it to them via the Microsoft Explorer or the MCIS DNC registry entries. See also: Microsoft Windows Help (Start→Help) under index heading: “File types”.

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Link

A link provides a view of any selected directory in a file system. All files of all data types, or of one particular data type, are displayed in this directory. A link thus provides a direct view of NC data in other networked systems, e.g., NC programming systems. **DNC** does not keep administrative data about these files. Only the file system information can be displayed.
Links can be integrated into any organization level of the hierarchical NC data structure.

Note

Links only provide one view of the objects located directly below. Subdirectories cannot be accessed.

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2.2 DNC functions on hardware components

2.2.1 DNC Cell computer

In the **local** version of **DNC Cell**, the DNC Cell computer performs the following tasks:

- NC data management in the MSDE database or SQL server
- User data management in the file system
- Data maintenance and management
- Configuration
- Importing
- Export
- Data transmission to and from the CNC machines
- User administration
- Management of data filters
- Management of log book filters
- Comparison of NC programs
- Automatic archiving of NC data from SINUMERIK 840D/840Di/810D (optional)

2.2.2 DNC Plant computer

In the **DNC Plant** version, the **DNC Plant** computer (server) performs the following tasks:

- NC data management in the MSDE database or SQL server (optional: Oracle database)
- User data management in the file system
- Central data maintenance and management
- Central import functions
- Central configuration
- User administration
- Export
- Importing
- Management of data filters
- Management of log book filters
- Comparison of NC programs
- Automatic archiving of NC data from SINUMERIK 840D/840Di/810D (optional)

2.2.3 DNC HMI computer

Additional operator interfaces can be added to the **DNC Plant** version using the **DNC HMI** computer.

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2.2.4 Station PC

In the **DNC Plant** version, the following tasks are performed on the station PCs:

- Configuration of connected machine interfaces
- Data maintenance and management for connected machines
- Data transmission to and from the CNC machines
- Comparison of NC programs

2.2.5 NC programming system

NC programming systems can be integrated into the DNC group in order to transfer NC data. NC data can be transferred from NC programming systems integrated into the network to the management structure of the **DNC** using an import function. For this reason, no MCIS software is required on the programming system computer. However, there is the option to install DNC HMI software on an NC programming system in order to operate the DNC system. If the DNC HMI workstations are configured appropriately, controls can be accessed directly.

2.2.6 Control

SINUMERIK 840D/840Di/810D

SINUMERIK 810D/840Di/840D controls feature both the active memory containing the NC data for processing on the machine tools and a passive memory on the PCU50 or MMC. The passive memory can store, for example, NC data in the form of NC programs, tool data or zero offset data, thus making NC data available before production commences. The network link to **DNC** is provided via **DNC IFC SINUMERIK**. NC data can be uploaded and downloaded to/from the control on the SINUMERIK operator panel.

Controls with serial interface

Controls with serial interface can be connected to **DNC Cell/Plant** or station PCs either directly or via interface converters (COM server). The serial interface (machine server) must be configured for each CNC machine tool. NC data are transferred to the control via the interface of the relevant station.

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2.2.7 Tool setting station

Tool setting stations can be linked to **DNC** in the following ways:

- Via a serial interface (the tool setting station is configured as a machine)
  The tool offset data are uploaded from the tool setting station to the **DNC**. After uploading, the tool offset data files (*.TOA) are stored under the tool setting station in **DNC**. To download tool offset data to a CNC machine tool, the user must move the relevant file (Cut/Paste operation) to the appropriate machine within the **DNC** system. The data can then be downloaded to the CNC machine tool.
- Via a **network interface** (the tool setting station is based on a PC with network interface)
  A link to a directory on the tool setting device is configured in **DNC**. The tool offset data files stored in this directory can then be copied (Copy/Paste) to the relevant machine in the **DNC** system for subsequent downloading to the CNC machine tool.
- Tool offset data transferred via the **import function**
  The tool setting station must insert a header into the tool offset data files indicating the machine to which the offset data refers. When importing via **DNC**, the files are assigned to the appropriate machines in **DNC** (see also: Import function). They can then be downloaded to a CNC machine tool.

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Notes

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3

3 Operator Interface

3.1 Layout of DNC and DNC Admin Explorer FBDN1/3-30
3.1.1 Explorer structure FBDN1/3-30
3.1.2 Display formats FBDN1/3-34
3.1.3 Operation FBDN1/3-35
3.1.4 Languages FBDN1/3-35

3.2 View filter FBDN1/3-36
3.2.1 Create or edit a filter FBDN1/3-38
3.2.2 View filter examples FBDN1/3-42

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3.1 Layout of DNC and DNC Admin Explorer

The operator interface of the **DNC** system is Windows-based in terms of both function and handling principles. Inputs in dialog boxes are made via the keyboard or mouse. In addition to the standard menus, the interface also features a toolbar for all important functions and a status bar for messages.
Operators must log onto the system. Various function rights are available to operators, depending on their user rights.

There are two different operator interfaces:
- Operator interface for NC data management (**DNC** Explorer)
- Administration operator interface (**DNC Admin** Explorer)

3.1.1 Explorer structure

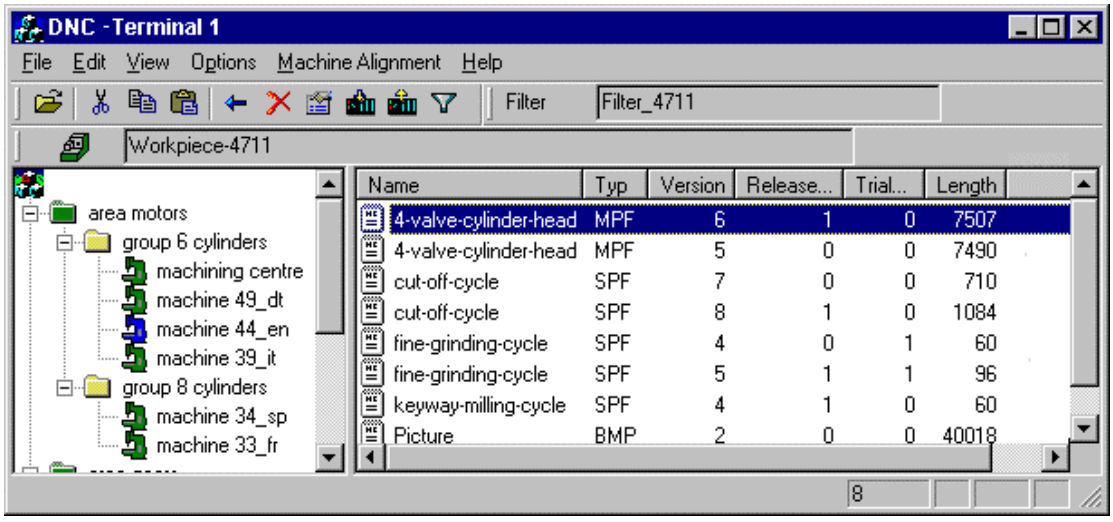

Fig. 3-1 **DNC** operator interface

The interfaces of **DNC Admin** and **DNC** are virtually identical. However, each program has a **different range** of supplementary **functionalities**. See also: Chapter 10 Configuration.

The screen is divided into two windows.
- Similar to the Windows Explorer, the left-hand screen window shows a tree hierarchy of all **DNC** administration units in the plant configuration, starting with the base level (root) and including groups (subgroups), links and finally, on the lowest level, the individual machine. Selected administration units are highlighted in color.
- The right-hand window displays a list of all subordinate elements (NC data, etc.) of the unit selected in the left-hand window. Apart from the file name, the size, type, creation date, etc., of the units are displayed on the right. With the exception of links, the list display is generated as a function of the database table DNCLISTDESCRIPTION.

The address line, filter line, tool and menu bars are displayed at the top of the Explorer screen and the status bar appears at the bottom.

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Menu bar

Table 3-1 **DNC** and **DNC Admin** menu

File	**Edit**	**View**	**Options**	**Machine Alignment*** **	**Help**
New ▸	Cut	Configuration *	Settings	Compare ***	Help Topics
Open	Copy	Show** NC Data	Log Book	Display Result ***	About
Import	Paste	Filter Editor	User Management *	NC Data Single Comparison ***	
Export	Delete	Filter ON/OFF	Consistency Check *	Archive	
Download **	Properties	Toolbar	List Editor *		
Upload **	Reset Release Identifier	Status Bar	Screen Form Editor *		
Compare	Version Area	Split	Options... *		
Log Off		Refresh List			
Exit					

* Only available in **DNC Admin** (New→... in configuration mode only)

** Only available in **DNC**

*** Only available in **DNC** and under “DNC Compare” machines

Table 3-2 **DNC** and **DNC Admin** new popup menu

File	
New ▸	NC data
	Workpiece
	Group *
	Machine *
	Link *

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Toolbar

Fig. 3-2 Operator interface toolbar

The toolbar contains icons for the following functions:

- Open
- Cut
- Copy
- Paste
- Back (for workpieces)
- Delete
- Properties
- Download
- Upload
- Filter (active/inactive)

Filter bar

Fig. 3-3 User interface filter bar

The filter bar indicates the filter currently selected. Other predefined filters can also be selected here. Whether the filter is currently active or inactive is indicated by the filter icon in the toolbar.

Address bar

The address bar contains the following information:

- Name of the workpiece if workpiece directory is open
- Path of link if link directory is open

Fig. 3-4 Address bar if workpiece directory is open

Fig. 3-5 Address bar if link directory is open

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Status bar

The status bar displays explanatory information about menu items and icons, as well as message and error texts when appropriate.
It also displays the number of entries on the list side of the Explorer screen.

Note

Important error messages are displayed in a separate message window. These messages must be acknowledged by the operator.

The following messages are displayed in the status bar:

- Results of processes. The appearance of these messages is sporadic.
- All messages generated by actions taken when the dialog function is active, i.e., when it cannot be assured that an operator at the computer can acknowledge the messages.
- Messages, which do not require the operator to react immediately.

The following messages can be displayed in a separate message window:

- Messages, which are generated immediately in response to user actions, and which require the user to react in some way.
- Serious system errors, which will prevent the system from continuing to operate normally.

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3.1.2 Display formats

DNC and **DNC Admin** offer two different display formats. The standard view is intended for selection on PCs in areas outside the factory. The big view is intended for use in the factory area.

Normal view

The operator interface is displayed in the standard Windows size.

Big view

In the big view, symbols and icons are twice as large as those in the standard view and display text is also enlarged.
The primary purpose of this enlarged display format is to make the interface easier to read at a greater distance in the workshop area.

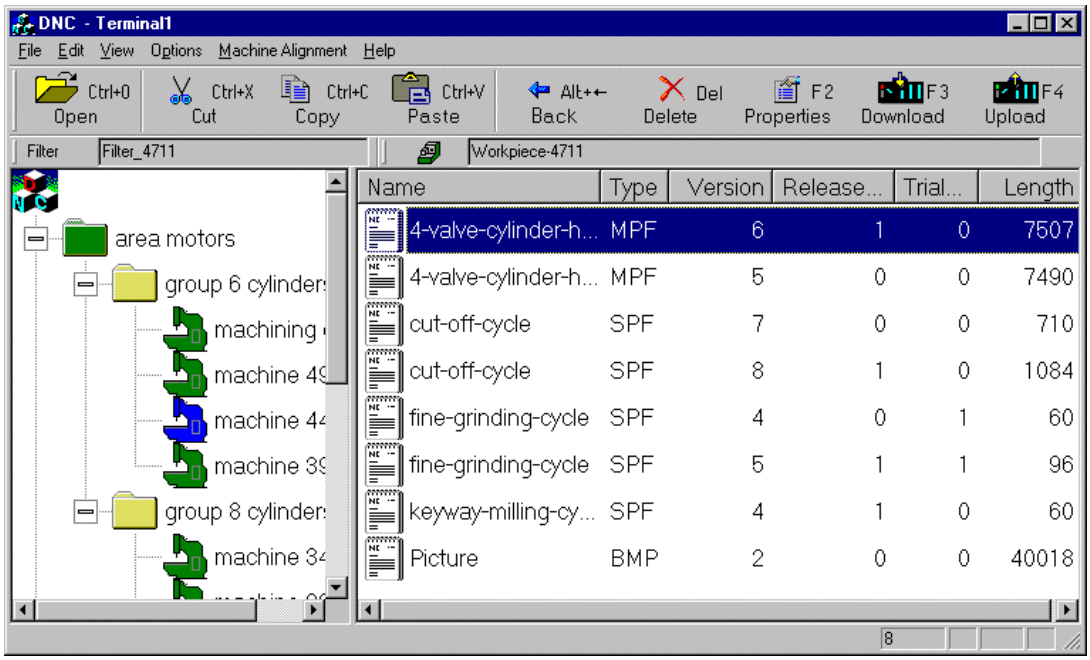

Fig. 3-6 Operator interface big view

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3.1.3 Operation

The **DNC** and **DNC Admin** explorers are operated with the usual Windows tools, i.e., mouse and keyboard.
The main functions can be selected via function keys:

- Properties F2
- Download F3
- Upload F4
- Update List F5
- Change Window F6
- Use Filter F7

3.1.4 Languages

The operator interfaces of **DNC** and **DNC Admin** support a variety of languages. They operate in the currently selected language.
You can switch between the following languages by selecting **Tools ➔ Settings** while the system is running:

- GR → German
- FR → French
- IT → Italian
- SP → Spanish
- UK → English
- CH → Chinese
- RU → Russian

Note

In the Chinese and Russian DNC systems, the online help is in English.

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3.2 View filter

General

Select **View→Filter On/Off** to apply a filter to the view of files in the right-hand window of the operator interface. When the filter is active, **DNC** displays only a selection of NC data, which are relevant to you.

DNC can filter your NC data on the basis of the full management database. The only exceptions are the comment, workpieces and workpiece management data. Texts within NC data comments cannot be used for filtering purposes.

The filter icon in the toolbar indicates whether or not the filter function is active.

Filter activated

Filter deactivated

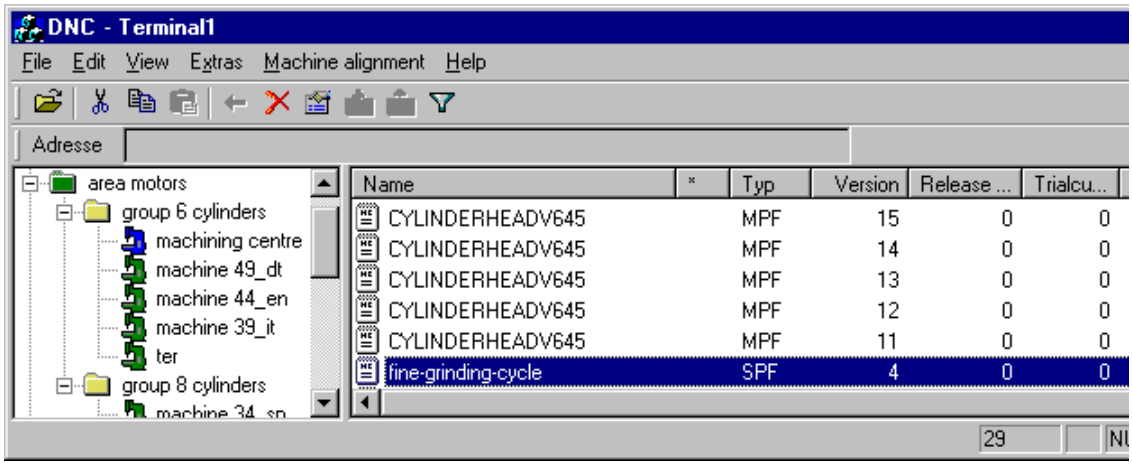

Fig. 3-7 Example of an unfiltered view

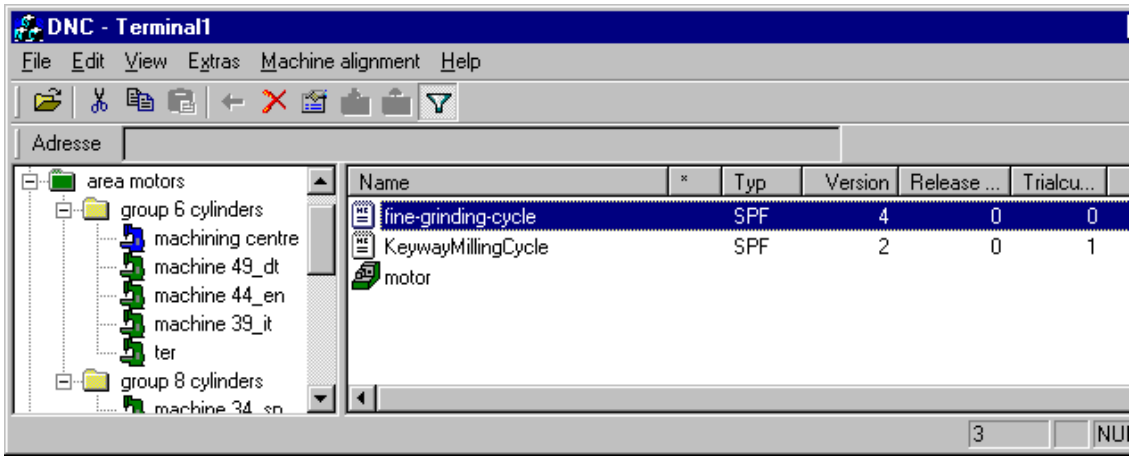

Fig. 3-8 Example: Filtered view (here "SPF")

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Cross-area filters

When the cross-area filter is active, certain files from the overall tree structure can be found in the left-hand window.

All NC data stored in **DNC,** which meet the relevant filter conditions, are displayed when the cross-area filter is active.

Create a filter by clicking on the base (root) of the tree structure in the left-hand window and then activating your filter.
Files in links are not displayed!!

Note

To prevent excessive delays in large plant, the NC data global display has been assigned a maximum limit (1000 NC data). For this reason, you should configure a suitable filter so that you view only the NC data relevant to your activity.

Workpiece management data is meaningful only in connection with the cross-area filter. When the filter is used "normally", no NC data are displayed if the filter criterion is "**Workpiece**".

The list display of the cross-area filter is defined under the “**GLOBAL**" display group. If this display group does not exist, the normal list display is used (for more detailed information, see: List editor).

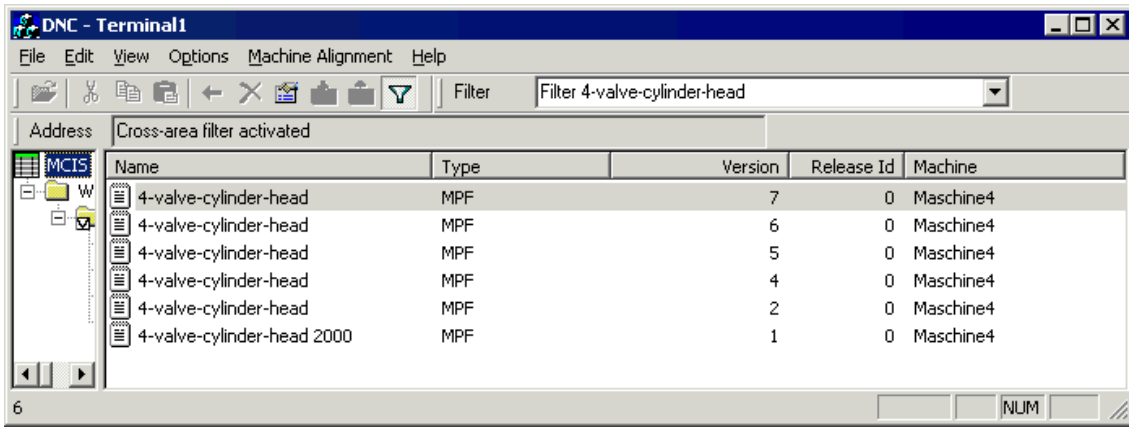

Fig. 3-9 Cross-area filters

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3.2.1 Create or edit a filter

Add or edit filter criteria

The filter criteria dialog (see below) appears when you select the **View→Filter Editor** menu option.

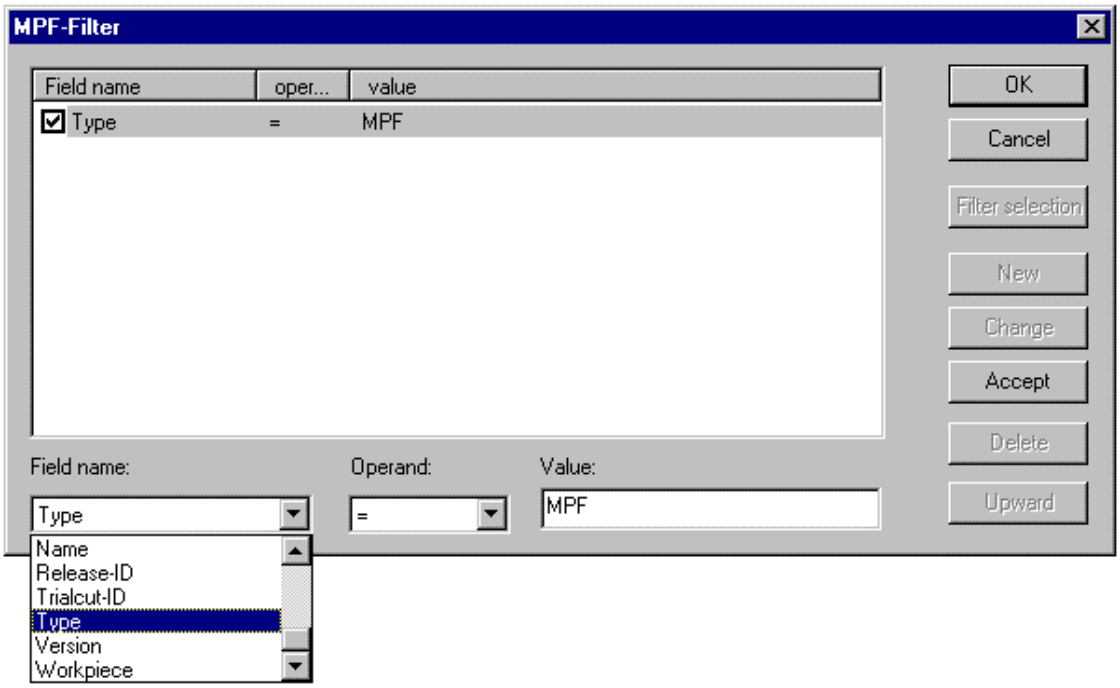

Fig. 3-10 Dialog filter criteria – new criterion

Note

If a filter has not yet been defined, the filter edit dialog appears immediately to allow you to create a new filter (see next-but-one chapter below).

Select **Edit** and **New** to activate the lower 3 fields, in which you can enter and change the filter criterion.

You can select the active filter, whose filter criteria you wish to edit, using the **Select Filter** button.

If you have parameterized several criteria for the filter, you can sort them by selecting the **Up** button. This serves only to improve your overview and does not affect their function. Since all criteria are ANDed, they must all be met in order for the filter to work.

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In the **FieldName** box, select one item of management data for the relevant NC data.

You can parameterize an **Operand** to determine how your NC data with the selected field name will be filtered. The following options are available:

Table 3-3 Filter operands

Operand	Description
=	Equal to Value
<>	Not equal to Value
<	Less than Value
>	Greater than Value
<=	Less than or equal to Value
>=	More than or equal to Value

Caution

Before you change a filter, make sure that you have selected the right filter in the filter selection dialog by checking the dialog title of the filter criteria dialog box (see above).

You also have the option of working with wildcards in the **Value** field. The following wildcards are supported:

Table 3-4 Wildcards

DOS wild-cards	SQL wild-cards	Meaning	Examples	
*	%	String of optional characters	**c***	**c**ylinder_head, **c**oil_plunger
			%**A**	TO**A**, ZO**A**, RP**A**
?	_	One optional character	?**PF**	M**PF**, S**PF**
			_O_	T**O**A, Z**O**A, J**O**B

Note

DOS wildcards have the same meaning as SQL wildcards.

Wildcards are transferred as a "like" scan to the database. This can mean that one filter can react differently to different databases (MSCE, ORACLE, etc.), depending on the database setting. This may include, for example, a deviation between lower and upper case letters. A filter may also react in different ways to wildcards or date fields.

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When you have entered your criterion, select **Accept**.
The tick in the checkbox in front of the filter criterion indicates that the criterion is activated. If the checkbox for a criterion is empty, the criterion will not have any influence on the filter.

Important

All individual filter criteria are **ANDed**, i.e., criterion 1 **AND** criterion 2 **AND** criterion x must be met in the NC data, if these data are to be displayed. A plausibility check is not performed!!

Select filter

Selecting **View→Filter Editor...→Select Filter** to open the filter selection dialog (see below).

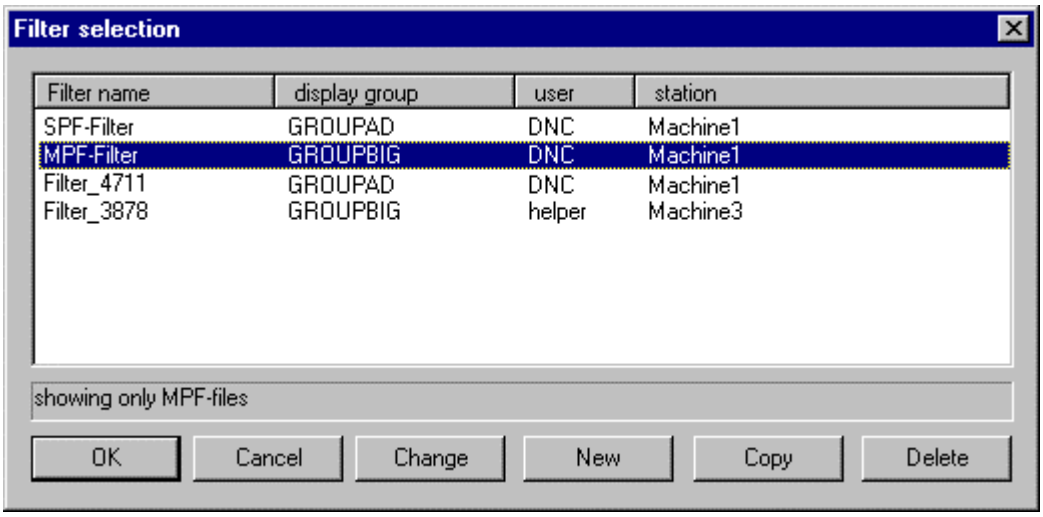

Fig. 3-11 Filter selection dialog

Note

If no filter is yet defined, the filter edit dialog appears immediately to allow you to create a new filter (see next chapter).

The filter criteria dialog with the selected filter appears when you click **OK**. **This selected filter is then active.** You can identify the currently active filter from the title of the filter criteria dialog box.
Select **New**, **Edit** and **Copy** to call the filter edit dialog.
The filter criteria of the copied filter are transferred when you select **Copy**.

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Create a new filter - General filter data

This dialog (see below) appears when you select
View→ Filter Editor...→Select Filter→New or
View→ Filter Editor...→Select Filter→Copy or
View→ Filter Editor...→Select Filter→Edit.

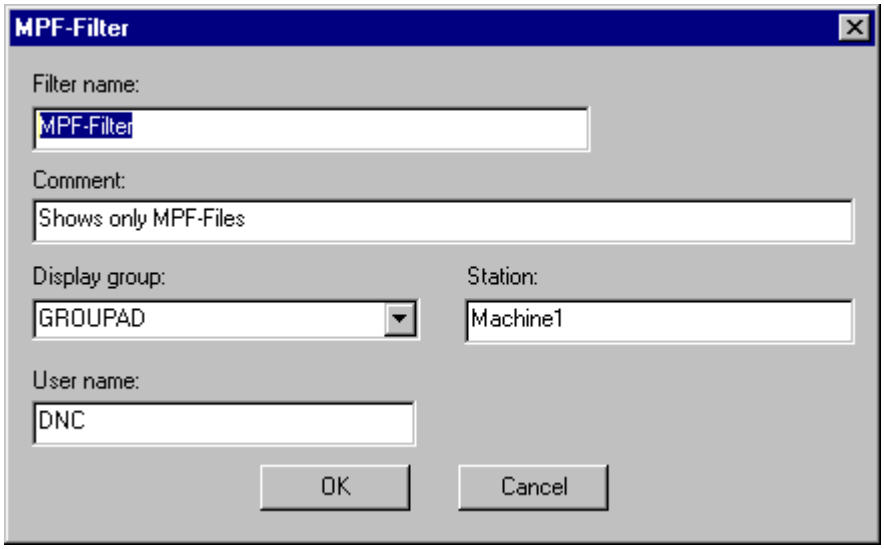

Fig. 3-12 Filter edit dialog

Note

You must specify the filter name. The comment field is optional. The other fields (if used) restrict those who can use the filter.

Confirming the filter with **OK** will take you back to the filter selection dialog. Here you must select and confirm the new filter, in order to add its filter criteria.

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3.2.2 View filter examples

Filter criteria

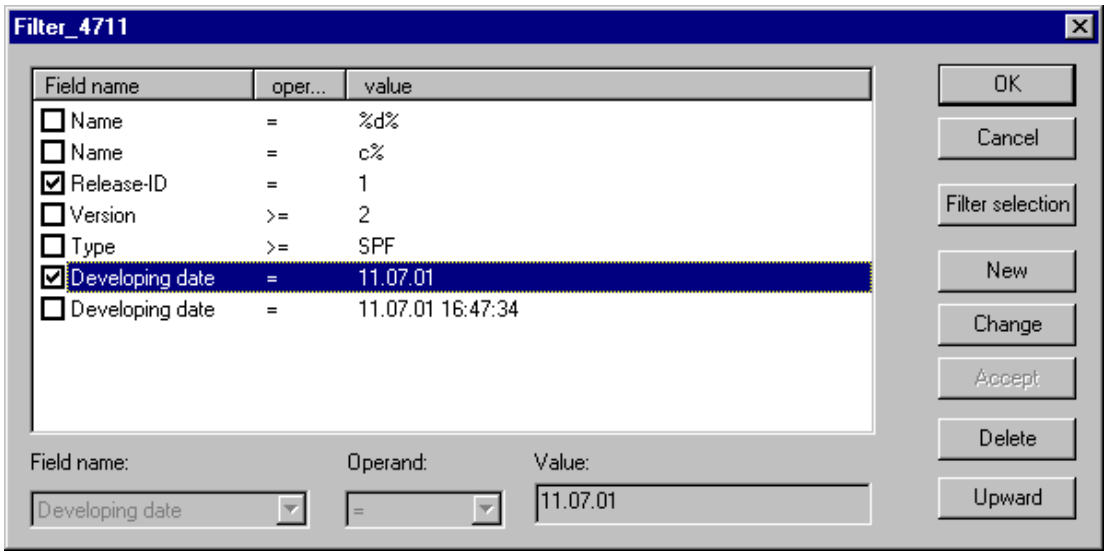

Fig. 3-13 Filter criteria dialog – Example

This filter contains a large number of filter criteria, not all of which are active. A tick in the checkbox in front of the filter criteria indicates the currently active criteria.

All the following **examples refer to the filter above** and are activated and deactivated in succession. The example heading indicates the criteria that have been activated. All other criteria are deactivated for that particular example.

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Output data without filtering

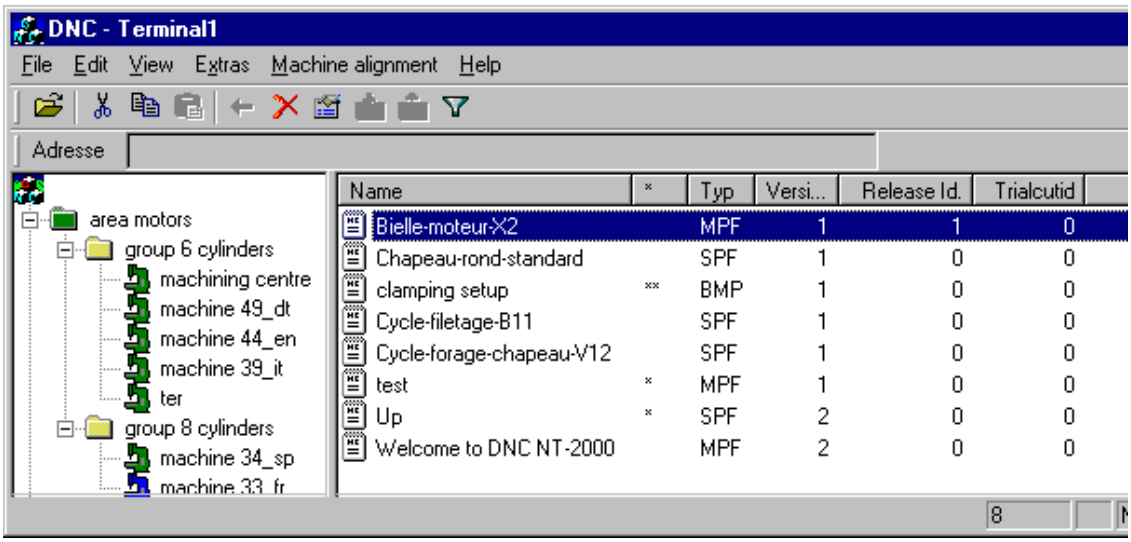

Fig. 3-14 Output data without filtering

Example 1: Program name = c%

Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
Chapeau-rond-standard		SPF	1	0	0	710
clamping setup	**	BMP	1	0	0	40018
Cycle-filetage-B11		SPF	1	0	0	61
Cycle-forage-chapeau-V12		SPF	1	0	0	60

Fig. 3-15 Filtering of output data with filter: Program name = c%

DNC now displays all NC data with program names beginning with "c". The rest of the program name is irrelevant. This is represented by wildcard "%".

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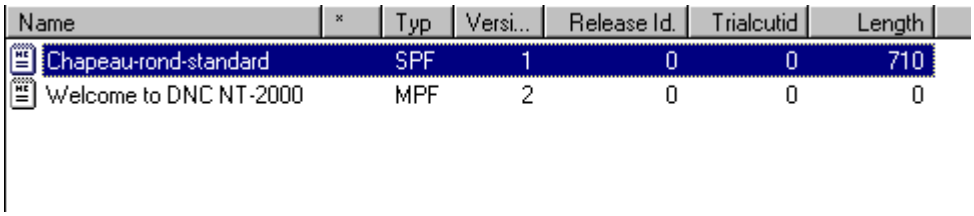
Example 2: Program name = %d%

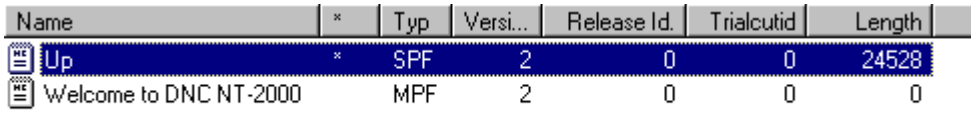


Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
Chapeau-rond-standard		SPF	1	0	0	710
Welcome to DNC NT-2000		MPF	2	0	0	0

Fig. 3-16 Filtering of output data with filter: Program name = %d%

The system now displays all NC data with a "**d**" in the program name. The display is not case-sensitive, which is why "Welcome to DNC" is also included. However, this is a database setting, which may not be the same on your database.

Example 3: Version >= 2

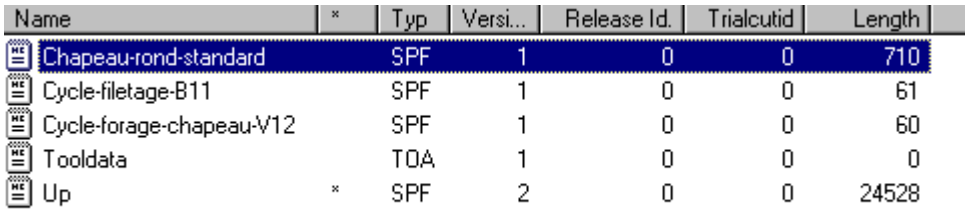


Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
Up	*	SPF	2	0	0	24528
Welcome to DNC NT-2000		MPF	2	0	0	0

Fig. 3-17 Filtering of output data with filter: Version >= 2

All NC data, which are version 2 or higher, are now displayed.

Example 4: Program type >= SPF



Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
Chapeau-rond-standard		SPF	1	0	0	710
Cycle-filetage-B11		SPF	1	0	0	61
Cycle-forage-chapeau-V12		SPF	1	0	0	60
Tooldata		TOA	1	0	0	0
Up	*	SPF	2	0	0	24528

Fig. 3-18 Filtering of output data with filter: Program type >= SPF

The system now displays all NC data, which, as a **program type**, would appear after "SPF" in a dictionary ordered alphabetically. For this reason, the display also includes the NC program of type "TOA". As the criterion was configured with the operand **greater than**, **equal to**, both the SPF and the TOA programs are included in the list.

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Example 5: Creation date = 11.07.01 16:47:34

Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
KeywayMillingCycle		MPF	4	0	1	60
KeywayMillingCycle		MPF	3	0	1	60
KeywayMillingCycle		MPF	2	0	1	60
KeywayMillingCycle		MPF	1	1	1	60
KeywayMillingCycle		SPF	2	0	1	60
KeywayMillingCycle2		MPF	6	0	1	60

Fig. 3-19 Filtering of output data with filter: Creation date = exact time

You can also filter according to management data that are not visible in the right-hand area of the window, such as the **creation date**.

Note

The date format is dependent on the database setting. The date must therefore be entered as configured in the database, as no date conversion takes place.

A date/time input with seconds was chosen explicitly in this case. It is then possible to locate copies and other versions of a program provided that they were all created on the same date.

Example 6: Release identifier = 1 AND creation date = 11.07.01

Name	*	Typ	Versi...	Release Id.	Trialcutid	Length
KeywayMillingCycle		MPF	1	1	1	60

Fig. 3-20 Filtering of output data with filter: Release identifier = 1 AND creation date = particular day

This filter now displays the NC data, which meet **both criteria**. The **release identifier AND** the **creation date** must match the filter.

The number of 'hits' can be significantly reduced by adding other criteria, which the data must also meet.

■

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Notes

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4

4 NC Data Management

4.1 Maintenance functions FBDN1/4-48
4.1.1 Create/Edit management data FBDN1/4-48
4.1.2 Import NC data FBDN1/4-53
4.1.3 Edit NC data FBDN1/4-57

4.2 Download functions FBDN1/4-58
4.2.1 Download NC data FBDN1/4-60
4.2.2 Download NC data to SINUMERIK 810D/840DI/840D with DNC IFC SINUMERIK FBDN1/4-61
4.2.3 Upload NC data FBDN1/4-62
4.2.4 Upload NC data from SINUMERIK 810D/840DI/840D FBDN1/4-64

4.3 Version management and release/trial cut identifiers FBDN1/4-66
4.3.1 Version management FBDN1/4-66
4.3.2 Release/Trial cut identifier FBDN1/4-69

4.4 DNC Compare FBDN1/4-71
4.4.1 Match machines for SINUMERIK 840D/840DI/810D FBDN1/4-71
4.4.2 NC data single comparison FBDN1/4-73

4.5 Archiving (manual) FBDN1/4-74
4.5.1 General FBDN1/4-74
4.5.2 Comparison results FBDN1/4-74

4.6 Data organization FBDN1/4-75
4.6.1 Database FBDN1/4-75
4.6.2 File system FBDN1/4-82

4.7 Consistency check FBDN1/4-84
4.7.1 General FBDN1/4-84
4.7.2 Consistency check on DNC Admin startup FBDN1/4-85
4.7.3 Consistency Check dialog FBDN1/4-85

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4.1 Maintenance functions

4.1.1 Create/Edit management data

Create/Edit NC management data

NC data properties should be set up and maintained by authorized users such as administrators or skilled operators. The right to edit management data must be enabled for these users (see also: Chapter 5 - User administration).

According to how they are parameterized, NC management data are displayed on up to four tab sheets:

- General
- About
- Extensions
- Comment (integral property)

In addition to the standard screens, the following modification and extension options are provided:

- Change the screen layout of the standard properties display box via the List Editor.
- Change the field types for output and edit fields in properties screen via the Screen Editor. The following types can be selected:
  - Output fields
  - Editing fields
  - Combo boxes
  - Checkboxes
  - Output checkboxes
  - Static output fields

- Redefinition of data fields for describing NC data

Note

It is possible to define different field types for the screens for creating new NC management data and modifying NC management data.
Field types are described in the DNCFORMDESCRIPTION table on the basis of database fields FIELDTYPE and FIELDTYPE_NEW.

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With the exception of fields, which have been parameterized as read-only fields, features included in the Properties dialog can be altered.

Note

Generally speaking, parameters are set to define the fields to be displayed in the Properties dialog. Therefore, fields not parameterized for the Properties dialog cannot be altered.

Screenshots of some the screens available on the standard interface appear below:

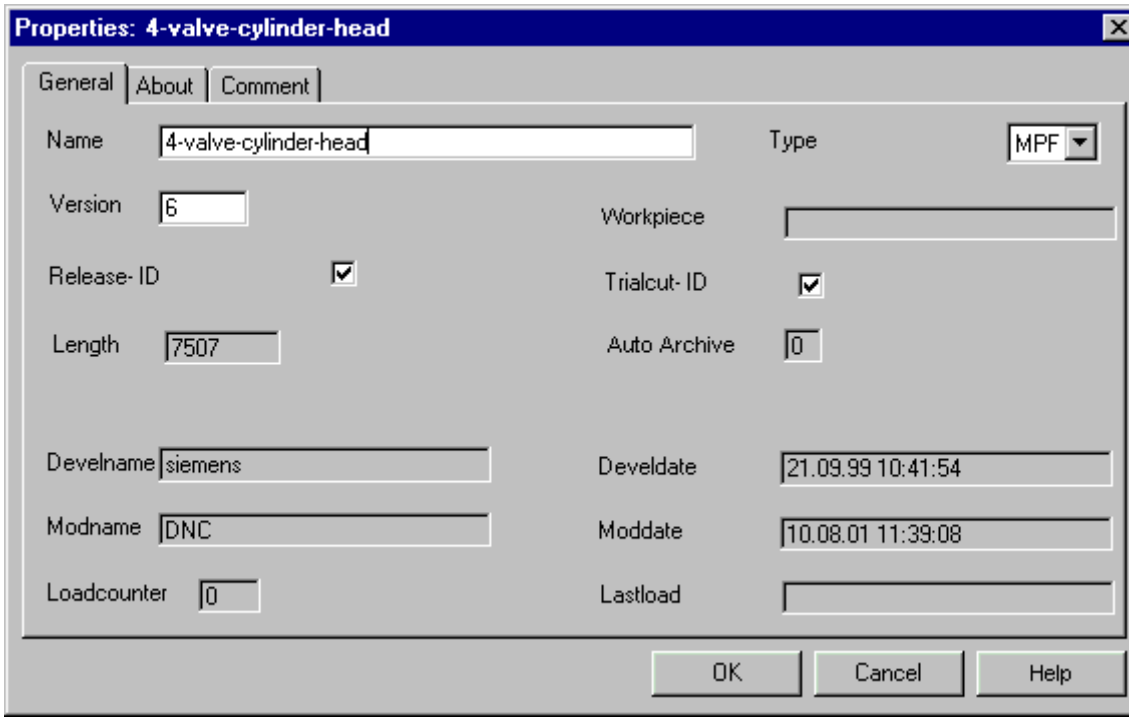

Fig. 4-1 NC data properties/tab: General

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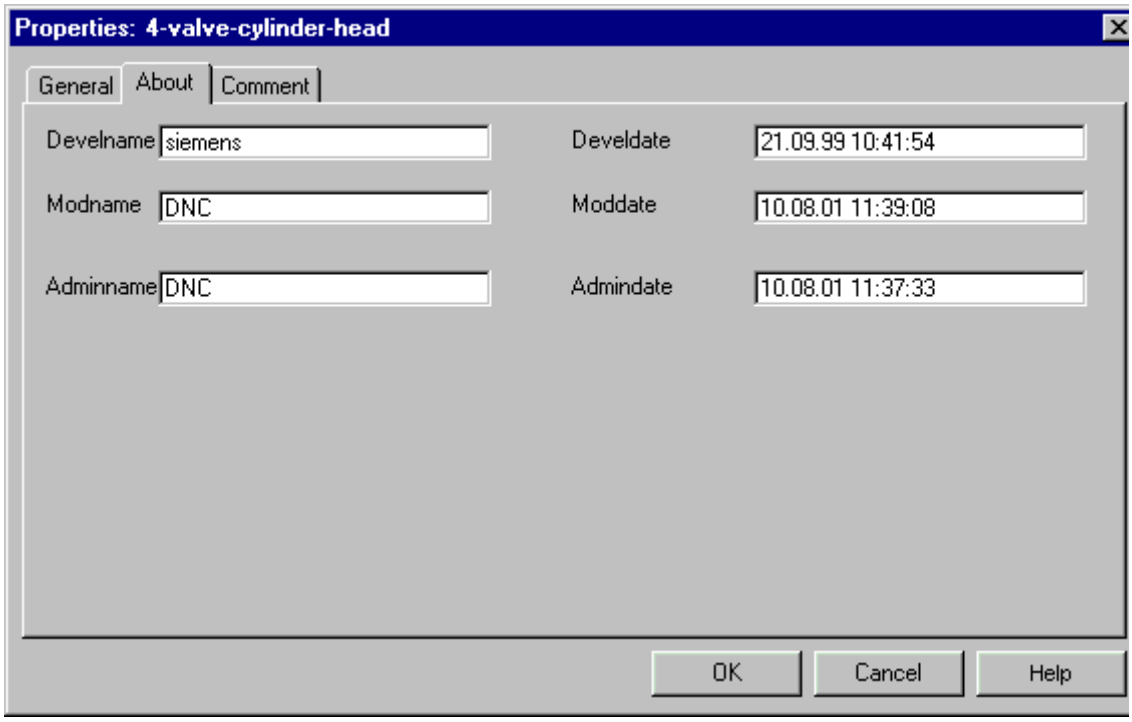

Fig. 4-2 NC data properties/tab: Info

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Edit machine configuration data

You can only change the machine properties in configuration mode in the **DNC Admin** program. View → Configuration can only be selected by authorized users (administrators). Configuration rights must be enabled for these users (see also: Chapter 5 - User administration).

Machine properties are displayed on two tabs:

- Transfer
- Configuration

As regards configuration of the machine properties, only the **Configuration** tab sheet is relevant. This is divided into two sections:
In the first section the user can link physical CNC machines to logical machines in the plant configuration via so-called machine configuration files.
You can edit the machine configuration file in interactive screens by clicking on the **Config Dialog** button.
If you wish, you can also edit the machine configuration file directly and open it via the **Edit** button to make changes.
The other section of the tab allows dialog function defaults to be set (see also: Chapter 10.4 – Machine interfaces).

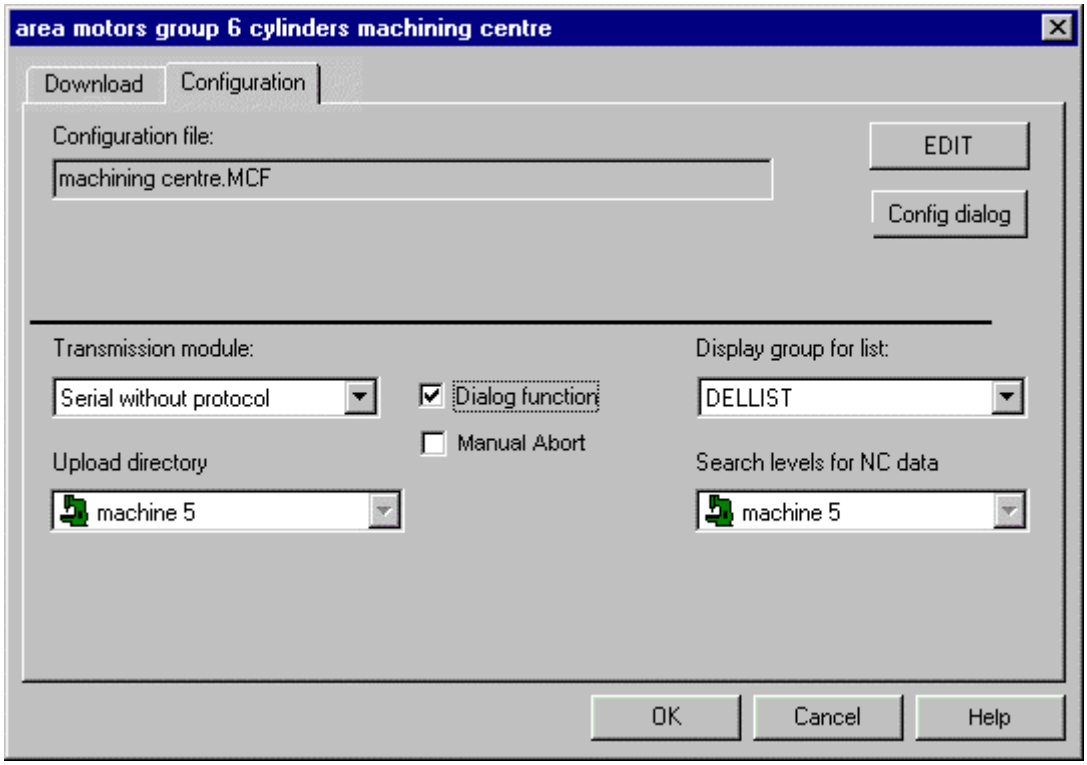

Fig. 4-3 Machine properties/tab: Configuration

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Edit link management data

Authorized users (default: Administrators) are able to define links in configuration mode. Configuration rights must be enabled for these users (see also: Chapter 5 - User administration).

The Edit button can be used to select a drive or path for a link, giving the **DNC** system access to these files.

Note

Files that are visualized by means of a link have no database reference.

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4.1.2 Import NC data

General

DNC supports the import of NC data (files of all configured NC data types) from networked or higher-level systems (e.g., from NC programming systems).

Table 4-1Relevant database fields for file import with header data

Database field	Meaning	Characters
NCDATANAME	NC data name	40 characters, illegal characters: &\"`´*+,/:;<=>?[]|!,(){}%$ß§µ³
DNCDATATYPE	NC data type	3 characters, only types defined in table DNCDATATYPE
VERSION	Version number	Long integer
NODENAME*	Machine, group or path (e.g., Group1/Machine2)	40 characters
WORKPIECE	Workpiece name	40 characters
RELEASEID	Release identifier	Value range 0 to 1 (1 = released)
TRIALCUTID	Trial cut identifier	Value range 0 to 1 (1 = trial cut identifier)
DEVELNAME	Developer	32 characters
DEVELDATE	Date of development	Date
MODNAME	Modifier	32 characters
MODDATE	Date of modification	Date
ADMINNAME	Administration data modifier	32 characters
ADMINDATE	Date of administration modification	Date
LOCKNAME	Lock identifier	32 characters
LOADID	Load identifier	Long integer
LOADORDER	Load order	Long integer

* *NODENAME* is not a database field in the DNCDATA table, but an auxiliary function for determining the *NODEID* from the node name. *NODEID* is an internal database field in the NODETABLE and DNCDATA tables, and is used to assign NC data to their nodes.

Note

If the administration data table is extended for a specific project, these new database fields can also be used in the header!
Undefined fields or fields without assignment will be assigned the value 0 or an empty string.

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Warning

The following database fields must not be defined in the header:

NODEID is a system-internal variable, which is assigned automatically.

LENGTH is the length of the NC program and is set automatically during import.

LOADCOUNTER is the transmission counter and is incremented by the system for each transmission.

LASTLOAD is the date of the last transmission and is set by the system for each transmission.

LOCKNAME is not currently used by the system.

Manual import

After calling up the **File→Import** function, the user is presented with a file window in which the file to import can be selected and then a selection menu indicating how to proceed with the import file once it has been imported.

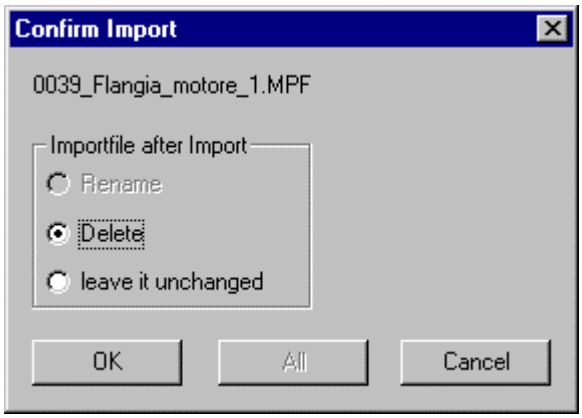

Fig. 4-4 Dialog: Confirm file import

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- Import without header data
  NC data without headers can be imported by authorized users (default: Administrators or Workers). The NC management data must be entered in interactive mode. For this purpose, these users must be authorized to import NC data and edit NC management data (see Chapter 5 - User administration).

- Import with header data
  A file import with header data is carried out using two files. The header data is contained in a header file (Unicode). The user data is contained in a separate file. The type of file import enables the acceptance of NC data without the user making any additional entries. All users are authorized to make this type of import.
  If management data is incomplete, authorized users can rework this management data in interactive mode. The import request will be rejected if made by an unauthorized user, for whom the right to edit NC management data is not enabled (see also: Chapter 5 - User administration).

  Management data can be allocated in the import file using field names (e.g., NCDATANAME). In this way, the import file can contain certain or all management data record fields. The import file is divided into the following areas via start and end identifiers:
  - Header data/management data (HEADER-START, HEADER-END)
  - Comment (COMMENT-START, COMMENT-END).
    Keywords are database field names of the administration data table DNCDATA.

  One import file can contain several import blocks. Each block must consist of header data and NC data and can also contain a comment.
  In that way, all NC data required for machining can be grouped together in one import file.

Table 4-2 Import file with header

Import file with separate NC data file

```
HEADER-START
NODENAME=Group1/Machine2
NCDATANAME=Butterfly
DNCDATATYPE=BMP
VERSION=1
TRIALCUTID=0
RELEASEID=1
DEVELNAME=Schmid
HEADER-END

NC-FILE=Bfly1.bmp

COMMENT-START
This is a butterfly
COMMENT-END
```

- Import via links
  Copying data from a link and subsequently pasting it into **DNC** is equivalent to the import function. The action is subject to the same supplementary conditions as importing with or without header data.

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Automatic import

File imports can also be performed automatically with header data. The format of the header data is that of manual imports with header data.

Note

The header does not have to define all database fields for automatic transfer.

At least the following database fields must be specified:

- NCDATANAME
- DNCDATATYPE
- VERSION*
- NODENAME
- WORKPIECE (only if the NC data belongs to a workpiece)

* If an existing version is assigned, this is overwritten.
If no version is specified, the next free version number is assigned. If the maximum number of versions is exceeded, the version with the oldest modification date and not released is deleted.

If the NC data imported automatically belongs to Machine2 from Group1, for example, the following definition must be made:

```
...
NODENAME=Group1/Machine2
```

When the NC data belong to a workpiece cylinder head that is assigned to Machine5 of Group1, you must define the following:

```
...
NODENAME=Group1/Machine5
NCDATANAME=Butterfly
WORKPIECE=Cylinder head
```

When **DNC** is set up, the import directory for NC data files is defined in a dialog. The file types for the automatic import are defined as follows:

- File type of the import file: .imp
- File type after successful automatic import:.iok
- File type after failed automatic import:.ier

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4.1.3 Edit NC data

General

NC data can be edited by authorized users.

Unauthorized users such as auxiliary staff can view but not edit and save NC data to the database or create a new data version. To ensure that the data are protected in this way, a copy of the data file is opened in a temporary folder.

The right to edit NC data must be enabled for the relevant users (see also: Chapter 5 - User administration).

Note

DNC uses the Microsoft Explorer Editor for all file types.
New file types must be assigned to an editor via the Microsoft Explorer.

Edit/save file

All NC data displayed in the currently selected directory can be opened for editing. When a file is saved, a new file version is generated in the directory of the original file, or the old version is overwritten, depending on the settings in database table DNCGLOBALSETTINGS.

Note

In order to ensure that data are processed suitably for the **DNC** system, files should only be edited using the **Save** and **Exit** menu commands in the editor of your choice. Although all the other functions can be used, they will have no effect on the **MCIS** database.
This applies, in particular, to the **Save As** menu command, as it creates a file with the specified name in the specified directory, but does not set up a corresponding link to the database. In this case, the old file version remains unchanged in the database.

“Delete version” dialog

If the parameterized maximum number of versions is exceeded, the “Delete Version" dialog will appear to allow deletion of an old version.

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4.2 Download functions

General

For uploading and downloading, the interface is opened only while transfer is in progress and then closed again. The same serial interface can, therefore, be used for different machines (e.g., with a **DNC** on a mobile station).

The right to download or upload NC data must be enabled for the relevant users (see also: Chapter 5 - User administration).

Note

The interface is always open when a dialog function is configured. It can, therefore, only be used for one CNC machine tool.

Transmission symbols

Uploads and downloads are identified by means of the yellow arrow symbols in the operator interface on the machine.

Fig. 4-5 NC data uploaded from the CNC machine tool

Fig. 4-6 NC data downloaded to the CNC machine tool

Note

If you start a download operation, there may be a delay before the data begin to flow (yellow arrow appears).
This will depend on whether end-of-line characters need to be converted, the insertion of spacers or code conversions and on the file size and computer capacity.

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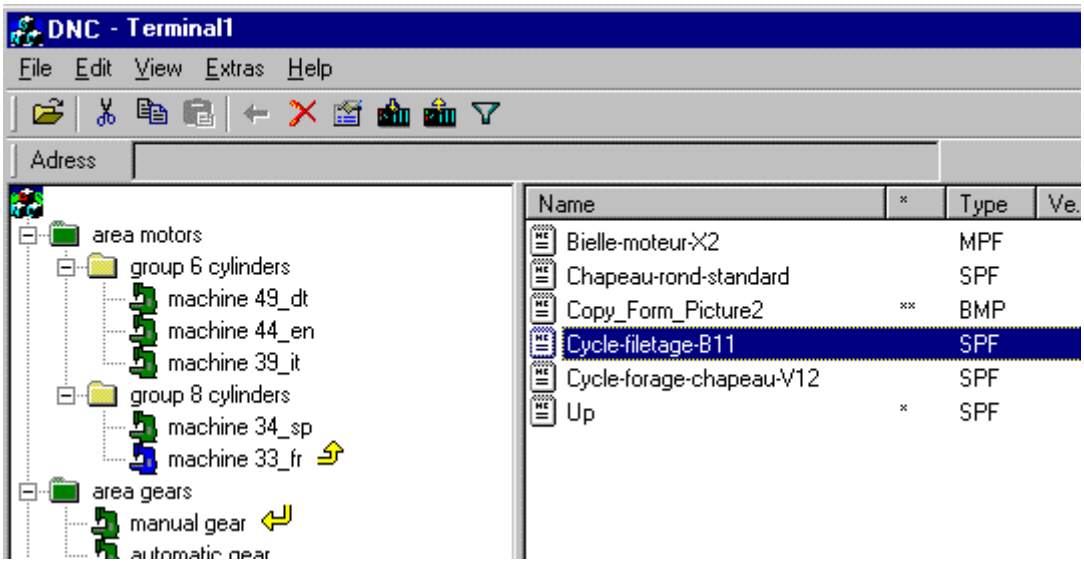

Fig. 4-7 Display of download functions in **DNC**

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4.2.1 Download NC data

Download requests

Download requests for serial machines can be viewed in the Properties screen for the machine. The file currently being downloaded is displayed in the **NC data** field. The files still to be downloaded are listed in the **Download requests** field.

Download states

The possible download states are listed below:

- Error (e.g., when a COM port is already in use by another machine)
- Inactive (initial setting)
- Send delay (with a send delay > 0 in the [SEND] section of the machine configuration file)
- Active (download in progress)
- Prepare to send (NC data is interpreted, download then commences, e.g., code conversion). Prepare to send is visualized in the same way as send delay.

Length

The **Length** field displays the number of bytes already downloaded.

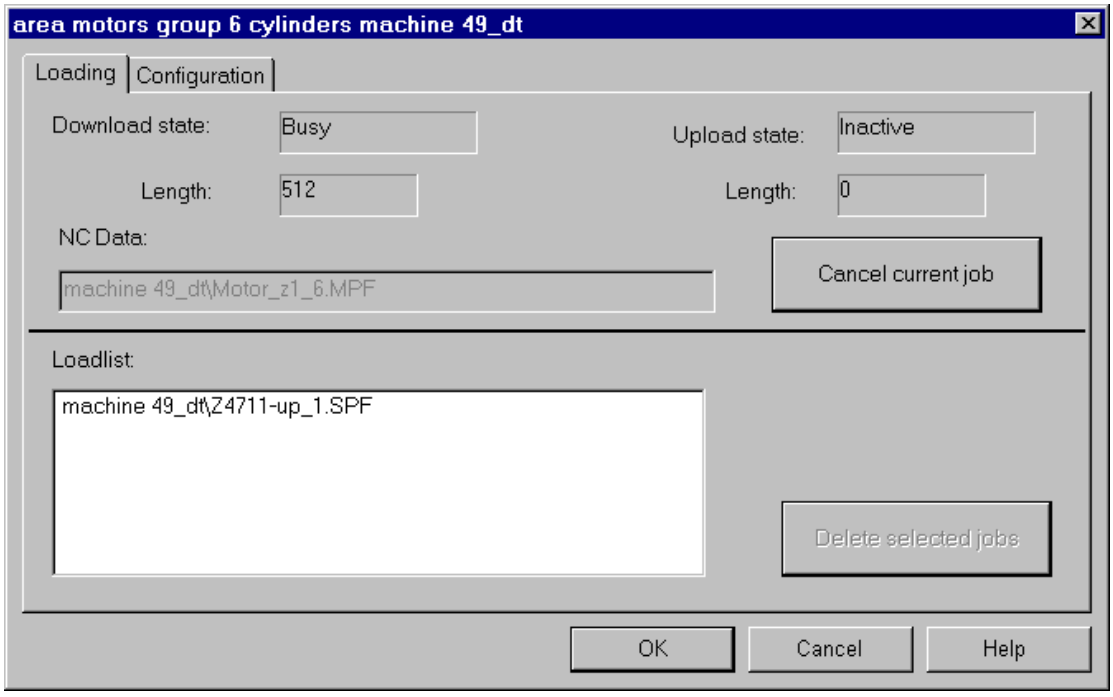

Fig. 4-8 Downloading NC data

Cancel current job

Click to cancel an active download operation.

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4.2.2 Download NC data to SINUMERIK 810D/840DI/840D with DNC IFC SINUMERIK

General

If you intend to download data to a SINUMERIK 810/840DI/840D, a dialog box will first appear in which you can select the download target in the control.

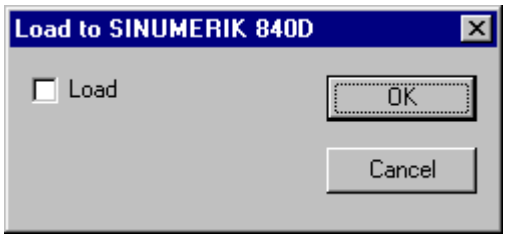

Fig. 4-9 Dialog for downloading to SINUMERIK 840

NC data are downloaded to the SINUMERIK 810D/840DI/840D data management system.
Check the *Load* box to transfer the data to the SINUMERIK NCK.

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4.2.3 Upload NC data

Upload request

An upload request for serial machines can be viewed in the Properties screen for the machine. The file currently being uploaded is displayed in the **NC data** field.

Download states

The possible download states are listed below:

- Error (e.g., when the COM port is already in use by another machine)
- Inactive (initial setting)
- Ready (**DNC** is ready for the upload; this status remains active until the actual upload (from the machine) is started.)
- Active (upload)

Length

The **Length** field displays the number of bytes already uploaded.

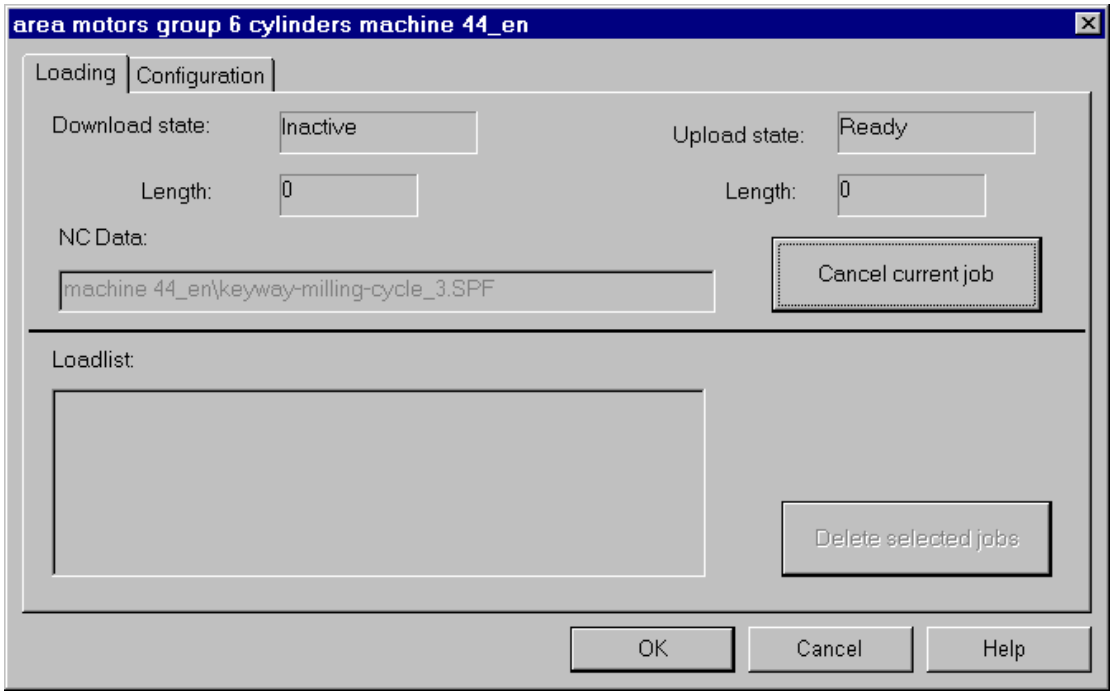

Fig. 4-10 Uploading NC data

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Cancel current job

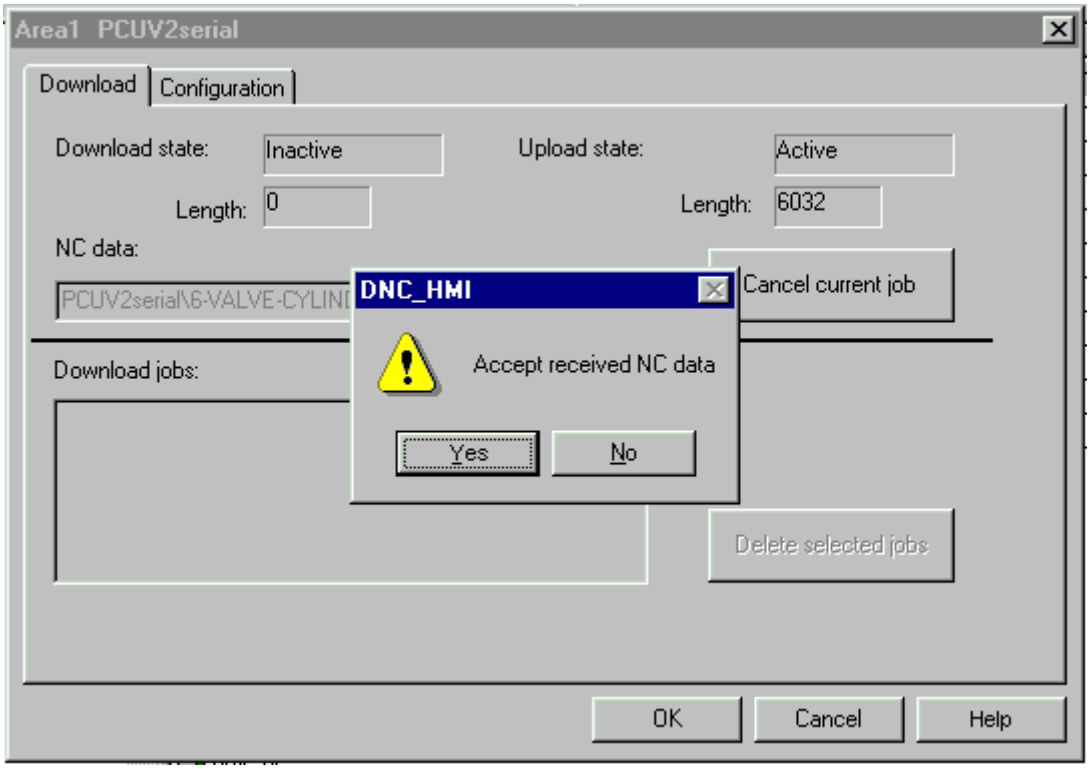

Fig. 4-11 Cancel an active upload (receive data)

When you click on **Cancel current job**, two functions are available if you checked the **Manual abort** box in the Configuration dialog:

- **Do not accept received NC data**:
  The data are discarded.
- **Accept received NC data**:
  The data are accepted.
  Background:
  On some controls, it is necessary to delay the end of reception (end of upload x seconds following receipt of last character).
  To shorten the upload time, it is possible to abort the transmission following receipt of the last character. The uploaded NC data are accepted.

Note

The dialog is displayed only if you checked the **Manual abort** box in the Configuration dialog. By default, this box is not checked, which means that received data are discarded when an upload is aborted.

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4.2.4 Upload NC data from SINUMERIK 810D/840DI/840D

General

If the SINUMERIK 840D machine type is selected and the upload is started, a dialog will appear displaying the SINUMERIK 810D/840DI/840D data management directory.

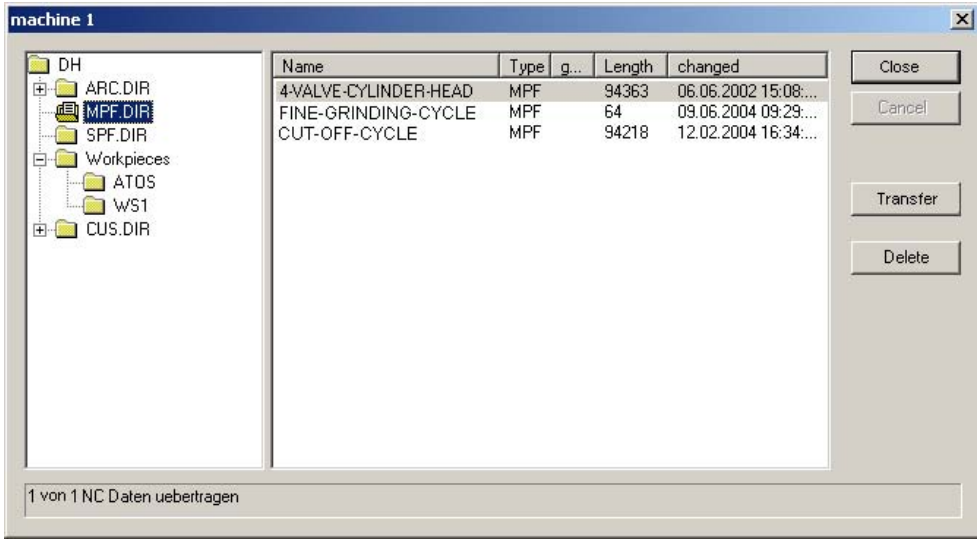

Fig. 4-12 View of the SINUMERIK 810D/840DI/840D data management directory

The content of the SINUMERIK 840 data management system is displayed in a hierarchical tree and list view. The directories are displayed on the left-hand side of the screen. The list on the right-hand side shows the content of the directory that is selected.

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Upload

Selecting one or more NC data files in the right-hand window and clicking the **Download** key triggers the upload to DNC.
All of a directory's NC data can be downloaded again by selecting the appropriate directory from the tree.

Note

It is not possible to download all NC data files and all subdirectories simultaneously by selecting a directory.

Deletion

Selecting an NC data file and then clicking the **Delete** button will delete the file from the machine.
Multiple selections can be deleted simultaneously.

Configure view of SINUMERIK 810D/840DI/840D

The directories visible to the user on the control can be configured in the SINUMERIK 840D machine configuration dialog.
See also: Chapter 10 Configuration dialog.

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4.3 Version management and release/trial cut identifiers

4.3.1 Version management

General

DNC enables the user to parameterize the maximum permissible number of NC data versions to be stored.
Machine-specific version management uses version ranges to define the hierarchy level at which NC data with the same name (same name, same type and same version) are permissible.
Up to n NC data with the same name and type may occur in one version range, provided they have different version numbers.
The default setting is n=5. This value can be changed on a project-specific basis.

Note

There must be no more than one released version within a version range.

Machine-specific version management

Machine-specific version management defines where NC data of the same name may occur:

- Group box: NC data with the same name must be unique within a group.
- Machine: NC data with the same name may occur on different machines. However, names must be unique on each individual machine.

Note

Release and version searches are performed only in the selected version range in each case.

See also: Chapter 10.5.4

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“Delete Version” dialog

If the number of versions exceeds the maximum permissible parameterized number, then the Version dialog box, in which all stored versions and their main properties are displayed, will appear. One of the listed versions must be deleted.

- The version displayed against a gray background has been released and cannot, therefore, be deleted.
- Versions in the copy list (menu item: Copy or Cut) are marked.

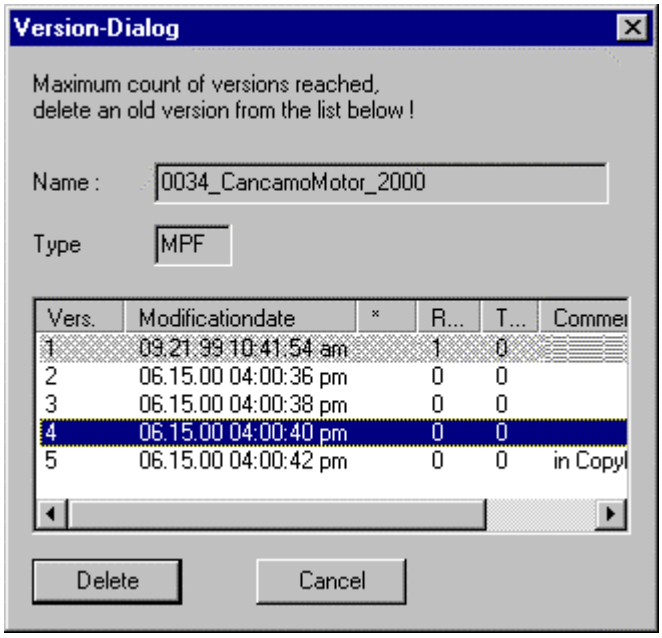

Fig. 4-13 Version dialog

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Edit NC data

Modified NC data can be stored as follows depending on the configuration:

- Unchanged version and unchanged identifiers
- If the next free version is assigned, it obtains the edited version's identifier.

Manual import of NC data

One of the following applies depending on whether the NC data files are imported with or without header data:

- Without header:
  If NC data of the same name, type and version already exist, the next higher version is assigned to the import data.
- With header:
  - If an existing version is specified in the header for NC data of the same name and type, the importer must acknowledge import of the data before they can be transferred.
  - If the header for NC data of the same name and type does not specify a version number, then the next higher number is assigned to the imported data.

Upload NC data from the machine

When NC data are uploaded, a version is assigned depending on the configured version strategy.
One of 6 strategies can be selected (see also: Configuration – Version strategy during upload).

Paste NC data

If NC data are integrated by means of a Cut/Paste or Copy/Paste operation, the next free version is assigned to them if NC data of the same name, type and version already exist.

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4.3.2 Release/Trial cut identifier

General

For version management, **DNC** uses two identifiers:
- Release identifier: NC data have been released (approved) for production.
- Trial cut identifier: NC data must still be tested before they can be released.

Edit/store NC data

The parameter settings in database table DNCGLOBALSETTINGS determine how edited NC data are stored. There are two possible store options:
- Store with the same version
- Store with the next-higher version (default).

The release and trial cut identifiers are adjusted according to the selected store option:
- If the data are stored with the same version, the existing identifier remains unchanged.
- If the next free version is assigned, it obtains the edited version's identifier.

Import NC data

One of the following applies depending on whether the NC data files are imported with or without header data:
- Without header:
  The imported NC data are not released.
- With header:
  - If the header contains an identifier, then this is valid.
  - If there is no identifier set in the header, then the imported NC data are not released.

Upload NC data from the machine

When NC data are uploaded, the release identifier is assigned depending on the configured version/identifier strategy in the DNCGLOBALSETTINGS database table.
One of 6 strategies can be selected (see also: Chapter 10.3.2); the default is strategy 1.

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Paste NC data

When you paste NC data, the **release identifier** is reset and the **modification date** is updated. The **version** may also be increased (see below) to the next-higher free version. All other NC data properties remain unchanged.

NC data from **Cut/Paste** or **Copy/Paste** operations retain their version within the relevant node environment only if they are pasted to another group, which does not contain any NC data file of the same name, type and version. When they are copied/pasted to the same group, the version is increased to the next-higher free version number.
See also: Machine-specific version management.

Note

If the parameterized maximum number of versions is exceeded, the "Delete Version" dialog is displayed to allow you to delete an old version.

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4.4 DNC Compare

DNC Compare provides two functions:

- Match NC programs
- Match machines for SINUMERIK 840D/840Di/810D

4.4.1 Match machines for SINUMERIK 840D/840DI/810D

General

The "match machines" function can be used only if the DNC Compare option is installed. A separate copy must be purchased for each installation.

The purpose of the "match machines" function for SINUMERIK 840D/840DI/810D is to check whether the NC programs on the machine match the corresponding programs stored in **DNC**.

This function can be used only for **SINUMERIK 840D/840Di** or **810D** with the PCU50/70 operator interface.

Note

The “match machines” function requires additional configuration settings. For more detailed information, please refer to **Chapter 10 - Configuration**.

Perform a machine match

You can match single machines or machine groups.

To do so, select a machine with the **SINUMERIK 840D/840DI/810D transmission module** and select **Machine Alignment→Compare**.

If you select a group, the match machine process is performed for every machine with the SINUMERIK 840D/840DI/810D transmission module.

The comparison result for each machine is saved to a file and remains there until the machine is next matched. The file name matches the name of the machine configuration file with the extension TXT. All these files are stored in directory ... **DNC\CmpResult**.

Note

The date and length of the file are compared, but not the content.

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Display the comparison result

Select the relevant machine, which has already been matched. Select **Machine Alignment →Display Result** to display the result file for the machine.

Table 4-3 Sample file of a comparison result

```
                                    13.11.2000 11:13:46

           MACHINE44

           NC data in machine only
             MPF.DIR
               CYLINDERHEAD4713.MPF
               DRIVINGGEAR4713.MPF
               mpf.dir\DPWP.INI
             SPF.DIR
           CUT-OFF-CYCLE.SPF
           FINE-GRINDING-CYCLE.SPF
             WKS.DIR\ GEARBOX4713.WPD
                WKS.DIR\ GEARBOX4713.WPD\ GEARBOX4713.MPF
                WKS.DIR\ GEARBOX4713.WPD\ GEARBOX4713.SPF

           NC data in DNC system only
           4-VALVE-CYLINDER-HEAD_2.MPF
           CUS_1.ARC
              GEARBOX0815\ GEARBOX0815_1.MPF

           Divergent NC data
           6-VALVE-CYLINDER-HEAD_3.MPF
           GEARBOX4712_1.SPF
              GEARBOX0815\ GEARBOX0815_3.SPF
```

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4.4.2 NC data single comparison

The NC data single comparison function can be used to compare two NC data files (e.g., a modified/optimized NC program with the original NC program). Changes are highlighted in color and the number of changes is displayed. NC program block numbers can be suppressed.

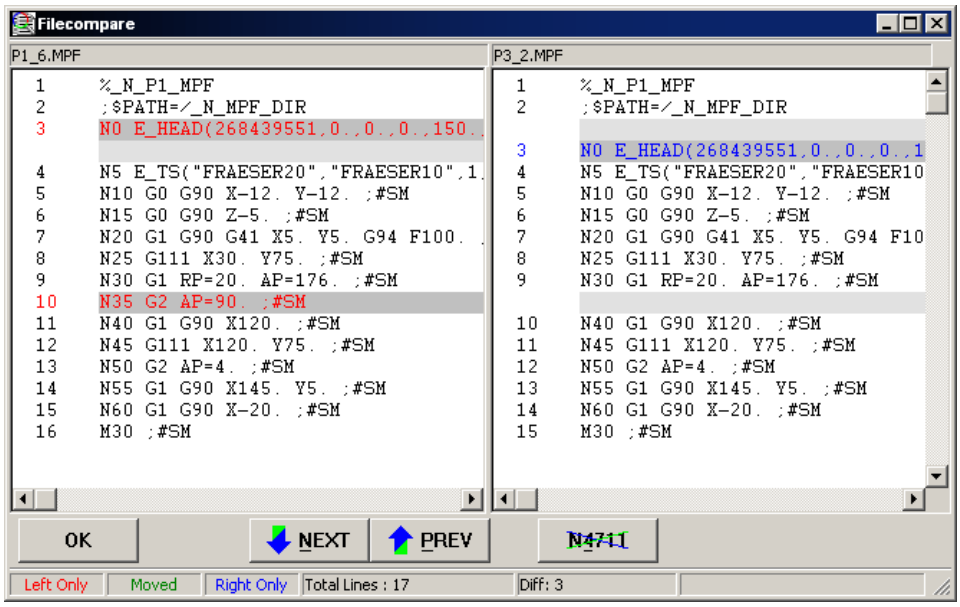

Fig. 4-14 NC data single comparison

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4.5 Archiving (manual)

4.5.1 General

You can archive single machines or machine groups. Manual archiving uses the same configuration data as automatic archiving (see also: Chapter 12 → Auto Archive).

To do so, select a machine with the **SINUMERIK 840D/840DI/810D transmission module** and select menu options **Machine Alignment→Archive**.
If you select a group, archiving is performed for every machine with SINUMERIK 840D/840DI/810D.

Each time it is started, archiving creates or replaces a comparison result in a file. This file is found in the directory …**DNC\CmpResult**. Its name comprises the name of the machine followed by "_AArch.txt".

Note

In order to execute the **Archive** function, **DNC IFC SINUMERIK** must be installed on the machine with SINUMERIK 840D/840DI/810D.

4.5.2 Comparison results

The result files are in English and the following results are listed:

- Group and machine name (listed in order)
- Date (at beginning and end)
- An "NC Data in machine only" area, under which files are listed that have been found on the machine only.
- A "different NC data" area, under which machine files are listed, which deviate from the corresponding files in the DNC system.
- The "NC Data in DNC system only" area, under which files are listed that have been found in the DNC system only, but are not on the machine.

Note

This section is generated only when start parameter "SHOW_FILESONDNC" is set. The Auto Archive identifier is set to 2 for NC data included in this section and located in the upload directory.

On completion, the end result indicating whether any archive errors have occurred and the number of archived files is also displayed.

Note

If no errors have occurred and this machine is configured for archiving, all differences are reduced.

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4.6 Data organization

4.6.1 Database

General

DNC organizes its data in the following manner:

- The management data are organized in the database.
- The database of the local **DNC Cell** is MSDE or SQL server
- The database of the **DNC Plant** server version is MSDE or SQL server. Another option is to use an Oracle database.
- The actual NC data files are managed in the file system.

Database structure

The **DNC** database is administered in the following tables:

- NODETABLE (plant configuration together with DNCNODEINFO)
- DNCNODEINFO (plant configuration together with NODETABLE)
- DNCDATA (management of NC data)
- DNCDATATYPE (file type management)
- DNCWORKPIECE (management of workpieces)
- DNCGLOBALSETTINGS (global settings such as version strategy, etc.)
- DNCLISTDESCRIPTION (description of list display)
- DNCFORMDESCRIPTION (description of screen display)
- DNCTABLECOLUMNNAME (language-specific translations in DNCDATA columns)
- DNCFILTERHEADER (management of individual filters)
- DNCFILTERCOLUMN (management of individual filter criteria)
- DNCFILTERASSIGN (management of filter assignments)
- DNCLOG (log book)
- USERGROUPBASETABLE (management of users in MCIS)
- USERGROUPPERMISSIONTABLE "
- USERBASETABLE "
- USERPROFILETABLE "
- PRODUCTTABLE (management of installed MCIS products)

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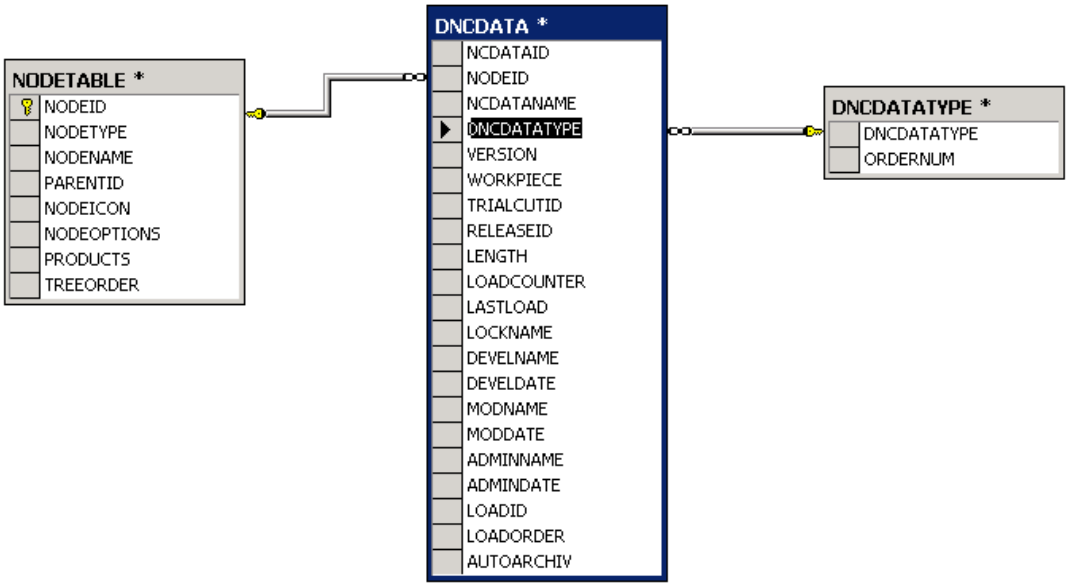

Fig. 4-15 Database structure of machine, NC and NC type data

Global settings

System-wide setting data are managed in database table **DNCGLOBALSETTINGS**:

- Maximum permissible number of versions
- Version strategy for uploads
- Version allocation after editing (old/new version)
- Machine-specific version management
- Maximum number of NC data blocks, which can be displayed.
- Invalid characters for NC data identification

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List description

Database table **DNCLISTDESCRIPTION** determines the layout of the list display as a function of the display group.
The fields contained in the NC data management table can be defined for each display group for the list display in the right-hand screen window on the **DNC** interface in accordance with the following criteria:

- Order of fields
- Display column width

Note

DNC provides the **List Editor** (see also: Configuration), in which the list display can be created and edited.

Only configured fields are displayed.

Name	*	Type	Version	Release Id.	Trialcutid	Length
0039_Flangia_motore	*	MPF	2	1	0	710
fine-grinding-cycle		SPF	3	0	0	60
keyway-milling-cycle		SPF	3	0	0	60
motor						

Fig. 4-16 Variant of list display on operator interface

Screen description

Database table **DNCFORMDESCRIPTION** stores the layout information for screen (form) displays of the NC data properties dialog as a function of the display group.
The fields contained in the NC data management table can be defined according to display group for the screen display of the NC data properties. These include:

- Assignment of database fields to particular tabs in screens
- Positioning of field contents on screen
- Definition of output field type

Note

DNC provides the **Screen Form Editor** (see: Configuration), in which the Properties screen definition can be created and edited.

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Plant configuration

Database tables **NODETABLE** and **DNCNODEINFO** determine how the plant configuration is displayed.
DNCNODEINFO contains additional configuration data for the various nodes.

NC management data

Database table **DNCDATA** describes the NC management data. It includes branches to the **NODETABLE** and **DNCNODEINFO** tables in relation to the plant configuration, as well as branches to **DNCDATATYPE**, with reference to the data type.
The following database fields are configured by default:

Table 4-4 Database table DNCDATA

Database field	Description	Field length and type
NCDATAID	*Internal database field*	Long integer
NCDATANAME	NC data name	40-character string
DNCDATATYPE	NC data type	3-character string
VERSION	Version number of the NC data	Long integer
NODEID*	*Internal database field*	Long integer
WORKPIECE**	Workpiece	40-character string
TRIALCUTID	Trial cut identifier value range 0/1	Long integer
RELEASEID	Release identifier value range 0/1	Long integer
LENGTH	Length of the NC data	Long integer
LOADCOUNTER	Number of accesses	Long integer
LASTLOAD	Date/time of the last transfer operation	Date/time
LOCKNAME	Locked by the user...	32-character string
DEVELNAME	NC data developer	32-character string
DEVELDATE	Date of development	Date/time
MODNAME	NC data modifier	32-character string
MODDATE	Date of modification of the NC data	Date/time
ADMINNAME	Administration data modifier	32-character string
ADMINDATE	Administration data modification date	Date/time
LOADID	Load identifier value range 0/1	Long integer
LOADORDER	Load order for workpieces	Long integer
AUTOARCHIV	Identifier indicating whether data have been uploaded via the auto archive function	Long integer

* Foreign key for NODETABLE database table. The name of the node is determined via this key.

** As *, if the NC data belong to a workpiece.

Note

Variable fields for specific projects can be added to the table.

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NC data type conversion

Database table **DNCDATATYPE** contains all the file types permitted by the configuration.

Table 4-5 Database table DNCDATATYPE

DNCDATATYPE	***ORDERNUM***	**Description**	
MPF	1	MainProgramFile	NC main program
SPF	2	SubProgramFile	NC subprogram
TOA	3	ToolOffsetActiv	Tool offsets
ZOA	4	ZeroOffsetActiv	Zero offset
RPA	5	R-ParameterActive	Memory area for R parameters in the NCK
WPL	6	WorkPLan	ASCII file for tool diagrams
JOB	7	Job	Order lists
BMP	8	BitMaP	Graphics file for clamping drawings, etc.
ARC	9	ARChive	Archives
INI	10	INItialization	Initialization program
COM	11	COMment	Comments
AWB	12		Display description
LST	13	Display LiST	Display list
TOP	14	TOolPlan	Tool plan
CEC	15		Sag/angularity
EEC	16		Measuring system error compensation
QEC	17	QuadrantErrorCompensation	Quadrant error compensation

Note

Other NC data types can be added to the table if necessary.
The WPD data type must not be used!

Management of workpieces

Database table **DNCWORKPIECE** manages workpieces. It defines the location of each individual workpiece in the plant topology.

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User management

User management is shared by all MCIS programs.
Users and user groups are defined and users are assigned to user groups for this purpose.

The following settings are DNC-specific:

- Display group
  The list and screen layout of the display group selected by the user are displayed on the operator interface. The display group must be assigned to a user group.
- Starting level
  The starting level defines the tree structure view and is user-specific.
- Station assignment
  Station assignment is only evaluated for the server variant.
- Display size of operator interface

Management of filters

Database table **DNCFILTERHEADER** is used to manage individual filters.

It is structured as follows:

- FILTERNAME contains the unique filter name.
- FILTERCOMMENT defines the comment.
- TABLENAME defines the table, to which the filter belongs (DNCDATA or DNCLOG).
- USERNAME defines the name of the user, for whom the filter was configured, or who created the filter.
- USERGROUPID defines the user group, for which this filter was configured.
- DISPLAYGROUP defines the display group, for which the filter was configured.
- STATION defines the station, for which the filter was configured.
- APPLICATION defines the application, for which this filter was configured.

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Management of filter criteria

Database table **DNCFILTERCOLUMN** is used to manage individual filter criteria. This table contains a data record for each filter criterion. There are thus x data records in **DNCFILTERCOLUMN** for each data record in **DNCFILTERHEADER**.

It is structured as follows:

- FILTERHEADER_ID is the assignment of a criterion to a filter in table DNCFILTERHEADER.
- ROWNUMBER defines the order of criteria as they are viewed in the filter criteria dialog.
- COLUMNNAME defines the filtering column name.
- TYPE defines the data type of the column name. Possible types are, for example, date, integer, flag, character, etc.
- OPERATOR defines the operator (equal to, not equal to, greater than or equal to, etc.).
- CONDITIONVALUE defines the filtering value.
- FLAGS specifies whether this criterion is activated or not (tick in checkbox in filter criteria dialog).

Management of filter assignments

Database table **DNCFILTERASSIGN** is used to manage filter assignments.

It is structured as follows:

- FILTERASSIGN_ID is a system-internal variable, which is assigned automatically.
- FILTERHEADER_ID is the assignment of a criterion to a filter in table DNCFILTERHEADER.
- NODEID is used to assign a filter to a machine for **DNC IFC SINUMERIK**.
- STATION defines the station, for which the filter was configured.
- TABLENAME defines the table, to which the filter belongs (DNCDATA or DNCLOG).
- USERNAME defines the user, for which this filter was configured.
- APPLICATION defines the application, for which this filter was configured.
- SUPPLEMENT1
- SUPPLEMENT2

Language-specific translations of column names of database tables

Database table **DNCTABLECOLUMNNAME** contains the language-specific translations of the columns in table **DNCDATA**. This table is used for the Filter, List Editor and Screen Editor functions.
The table is structured as follows:

- Assignment between the data block and a table
- Assignment between a data block and a column name in the table
- Language code (GR, UK, FR, SP, etc.), which assigns the data record to a language
- Translation of column name to the relevant language

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4.6.2 File system

The file system is a mirror image of the plant configuration:
The **DNC** configuration elements Group, Machine, Link, and Workpiece are stored as directories in the file system and the NC data as files. The directory structure of the file system is analogous to the tree structure in the left-hand window of the operator interface.

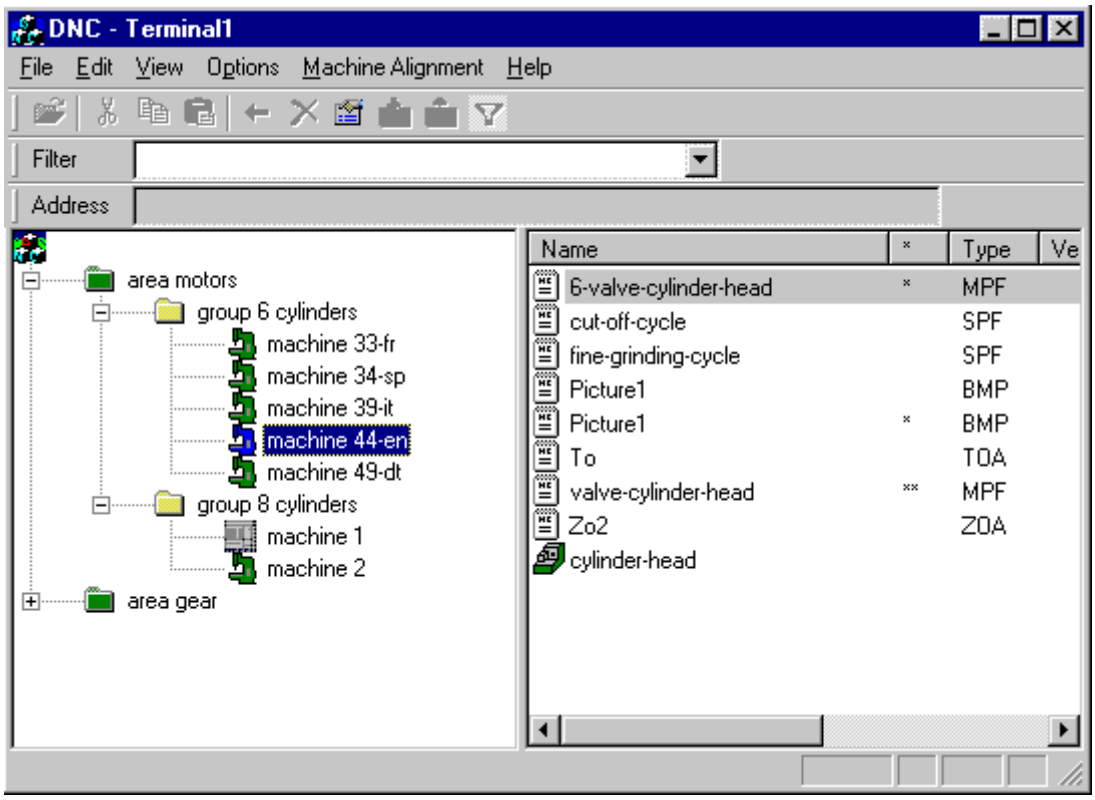

Fig. 4-17 Tree structure on operator interface

Table 4-6 Standard directory icons

Group	Workpiece
Machine (serial unsecured transmission)	NC file
Machine with transmission module "SINUMERIK 810D/840DI/840D"	NC file with comment (analogous to: SPF, etc.)
Network file systems	
Link	

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Group/Machine/Workpiece

These organization units of the plant structure are represented by **directories** in the file system. Groups can contain subdirectories in the form of groups, machines and workpieces. Workpieces can be stored under machines as subdirectories. All folders can contain NC data files.

This directory structure can be found in the **NC data master directory**. The NC data master directory is stored in the Data subdirectory (in the **data directory**), which you specified when you installed the system.
Example: C:\Siemens\MCIS\DNC\Data

NC data

The actual NC programs, subprograms, tool setting data, graphics data, etc., are files in the file system; the associated management data are stored in the database. NC data can be stored in all directories of the **DNC** system (group, machine and workpiece).

The file name of an NC management data record comprises the NC data name, the version number and the NC data type.
Example: Data name_13.MPF

Link

Links provide visual access to the files in the linked directory. Users with the appropriate access rights can use these files as if they were stored in the DNC NT-2000 file system.

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4.7 Consistency check

4.7.1 General

The purpose of the consistency check is to find and eliminate any inconsistencies between the existing NC management data sets in the database and the NC data files in the **DNC** file structure.

A quick consistency check is performed every time you start **DNC Admin**. An inconsistencies message window will appear if any inconsistencies are detected.

Inconsistencies can occur, for example, if you load an older backup of the database so that the database contains either too many or too few entries.

Inconsistencies should not occur in "normal operation". Normal operation means that the database is not exchanged and that the **DNC** file structure is modified only by **DNC**. However, should inconsistencies be detected regularly, please call our helpline.

Note

With the **DNC Plant** variant, we recommend that you perform the consistency check/debugging routine on the server as the check routine covers all existing NC management data of all groups and machines.

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4.7.2 Consistency check on DNC Admin startup

The consistency check performed on DNC Admin startup counts all the files in the **DNC** file structure. This number of files (see Fig. 101 NC data files) is compared with the number of NC database entries (see Fig. 96 NC management data records). The message box below appears only if these two values are different.

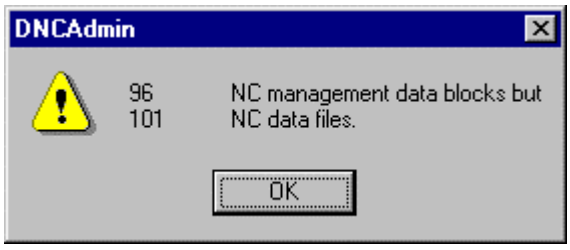

Fig. 4-18 Consistency check at **DNC Admin** start

Note

Since only the number of files is checked, inconsistencies can still exist even if the message box does not appear. If you wish to ensure that all inconsistencies have been eliminated, you must open the consistency check dialog (see below).

4.7.3 Consistency Check dialog

The Consistency Check dialog displays a list of all inconsistencies detected and indicates means of eliminating them.

Note

The Consistency Check dialog display is not rebuilt until you open the dialog. This means that any changes (debugging) not performed in this dialog will not be visible until you close and the reopen the dialog. Switching between the dialog options described below does not cause the consistency to be checked again, as this would cause long delays if you were working on a large installation.

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Missing files

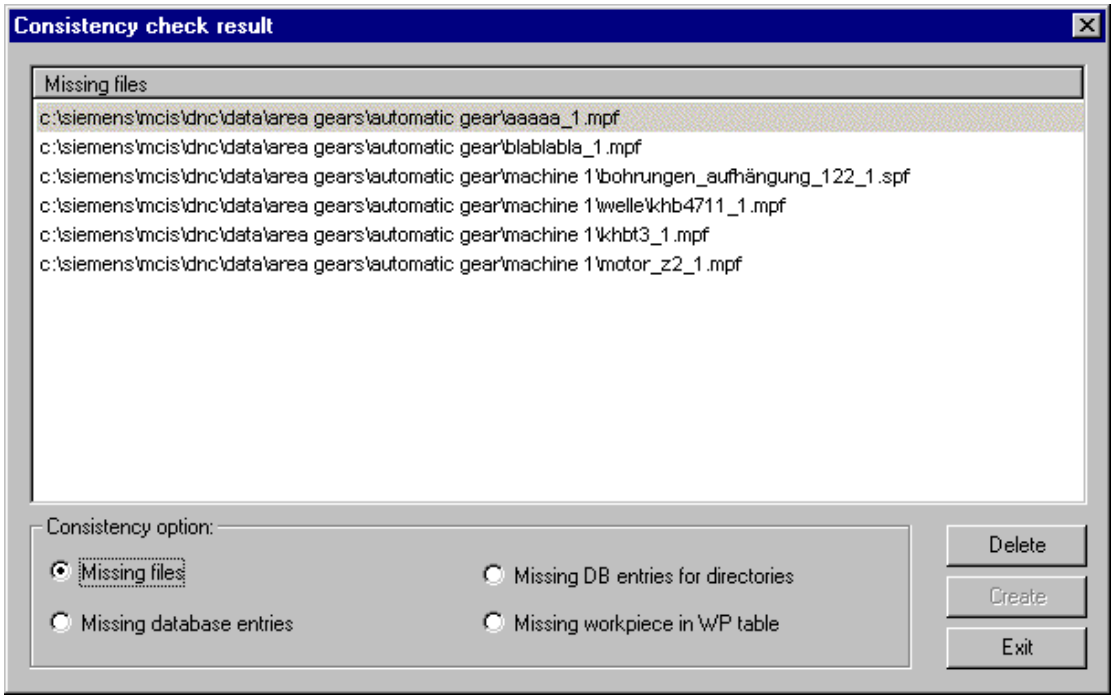

Fig. 4-19 Consistency Check dialog: Missing files

This dialog displays management data records, from which the file is missing.

The complete path, from which the file is missing, is displayed. This path comprises the NC data master directory (in this example: C:\DNC\Data) and the subdirectories for group, machine and workpiece. The file name of an NC management data record comprises the NC data name, the version number and the NC data type.
Example: Data name_13.MPF

You can delete selected **management data records** from the database by clicking the **Delete** button.

You can also use the Microsoft Explorer to insert the missing file at exactly this location. The file name is not case-sensitive. If you choose to use this method, you must close and then reopen the Consistency Check dialog to remove the inconsistency from the dialog.

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Missing database entries for NC data

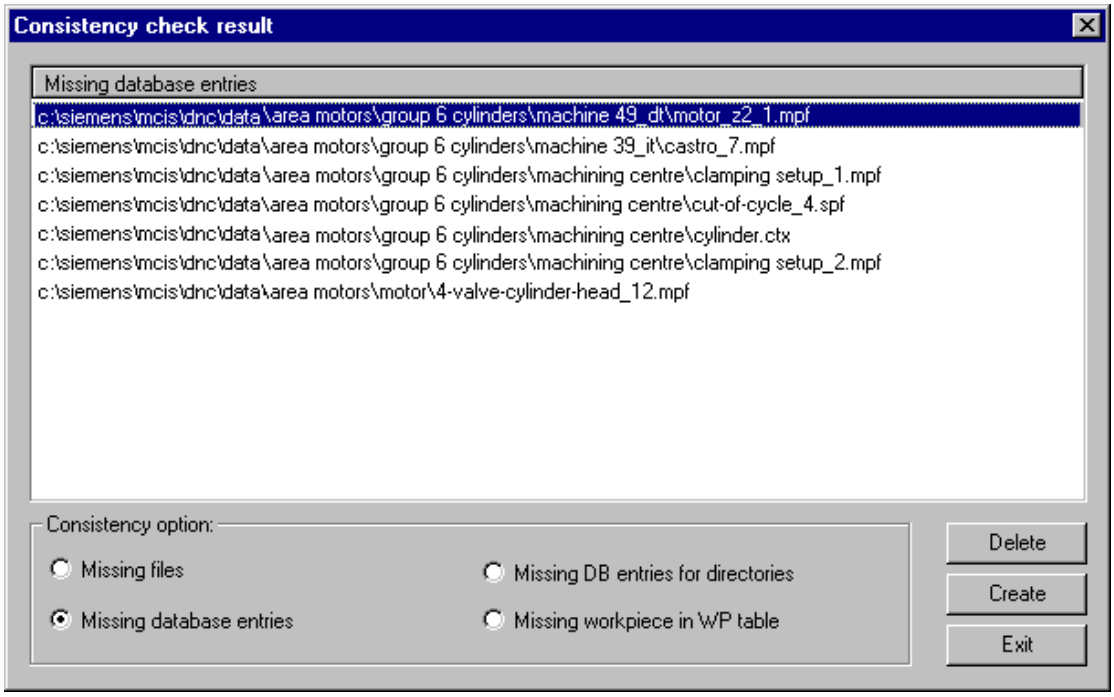

Fig. 4-20 Consistency Check dialog: Missing database entries for NC data

This dialog displays any files contained in the NC data master directory without a corresponding management data record in the database.

The complete path of the file without a management data record is displayed.

You can delete selected **files** from the NC data master directory by clicking the **Delete** button.

You can create a management data record for the file by clicking the **Create** button. The Properties dialog is displayed for each file.

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Missing database entries for directories

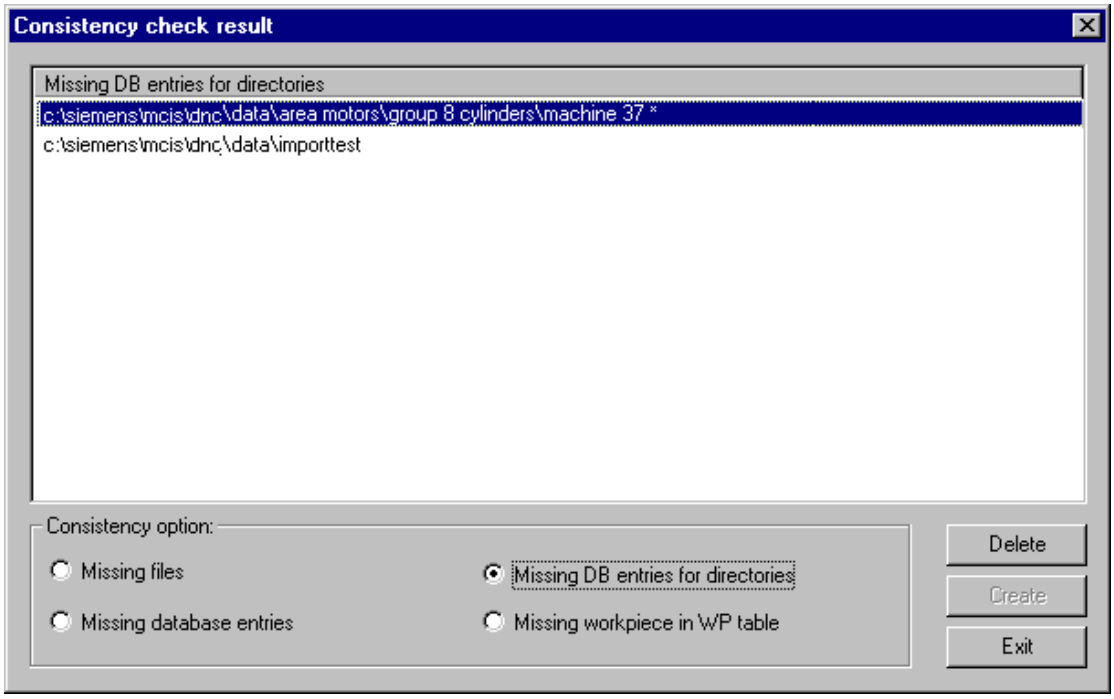

Fig. 4-21 Consistency Check dialog: Missing database entries for directories

This dialog displays directories contained in the NC data master directory, but not in the database as a group, machine or workpiece.

The complete path is shown.

You can delete selected **empty directories** from the NC data master directory by clicking the **Delete** button.

Empty directories that contain no files are identified by an "*" after the directory name. You will only be able to delete directories identified in this way.

To eliminate the inconsistency, you can also create a group, machine or workpiece of the same name using **DNC Admin** in configuration mode.

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Missing workpieces in the database workpiece table

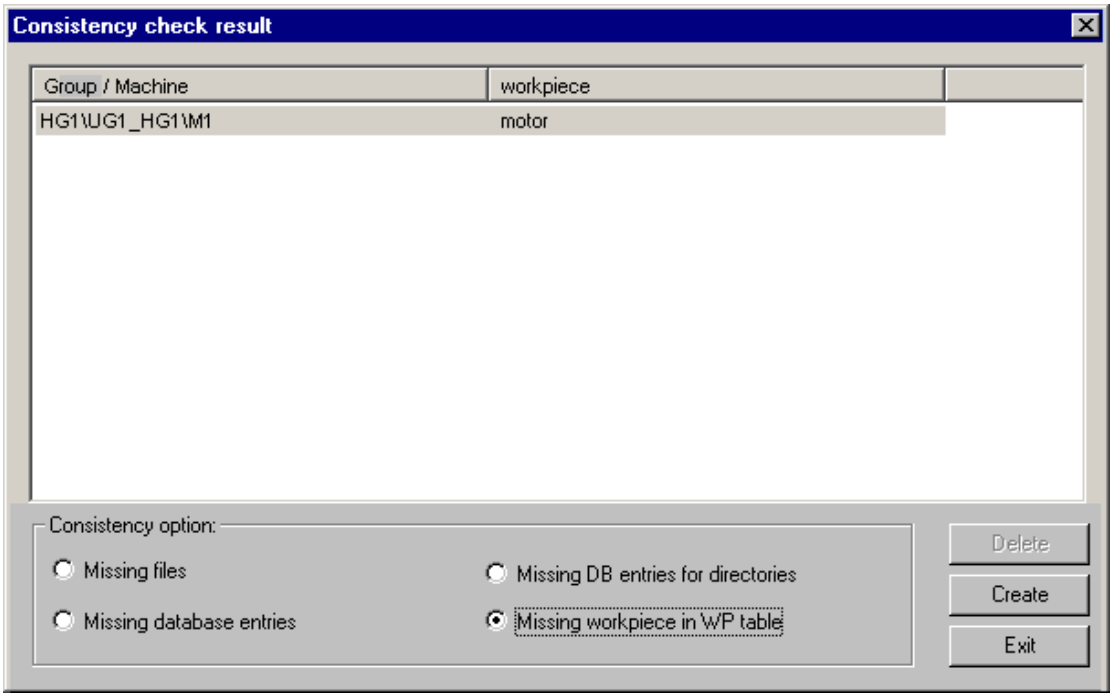

Fig. 4-22 Consistency Check dialog: Missing workpieces in the database workpiece table

The optional "**Missing workpiece in WP table**" button is activated only if inconsistencies have been detected in the workpiece data.

Note

If inconsistencies in workpieces do occur, we recommend that you eliminate the "missing files" inconsistencies before you correct the workpiece inconsistencies.

A workpiece inconsistency will occur automatically if you try to use an **MCIS** database from an earlier version of **DNC**. You can also use this dialog to update your **older 2.x version database** for workpiece data. To do this, select all your workpieces and click the **Create** button to update the database.

■

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Notes

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5

5 User Administration

5.1 Structure of user administration FBDN1/5-92

5.2 Manage user FBDN1/5-93
5.2.1 General FBDN1/5-93
5.2.2 Create new user/Change user properties FBDN1/5-94
5.2.3 Filter assignment for a user FBDN1/5-97

5.3 Manage user groups FBDN1/5-100
5.3.1 General FBDN1/5-100
5.3.2 Create new user group/Change user group properties FBDN1/5-100
5.3.3 Name of user group FBDN1/5-101
5.3.4 Comment FBDN1/5-101
5.3.5 User rights FBDN1/5-102
5.3.6 Display group FBDN1/5-105

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5.1 Structure of user administration

User-specific data are defined using the user administration settings under **Options→User Management**. This function is available only in **DNC Admin** and can only be accessed by authorized users. Each user must be assigned to a user group.

User groups

A user group combines users with the same user rights and the same display group. This means that each individual user within a user group has the same DNC user rights and the same list and screen display.

Users

Users must be configured with a password to permit individual access to the DNC software. Other special parameters are assigned to each user (see also: Chapters 5.2, 5.3).

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5.2 Manage user

5.2.1 General

When starting user administration, all user names are displayed in a list together with their user group, language and product.

When you click on **Change** and **New**, a dialog for managing users appears in which you can edit existing user data or define a new user. The selected user can be deleted using the **Delete** button. User-specific filter assignment can be carried out with the **Assign Filter** button.

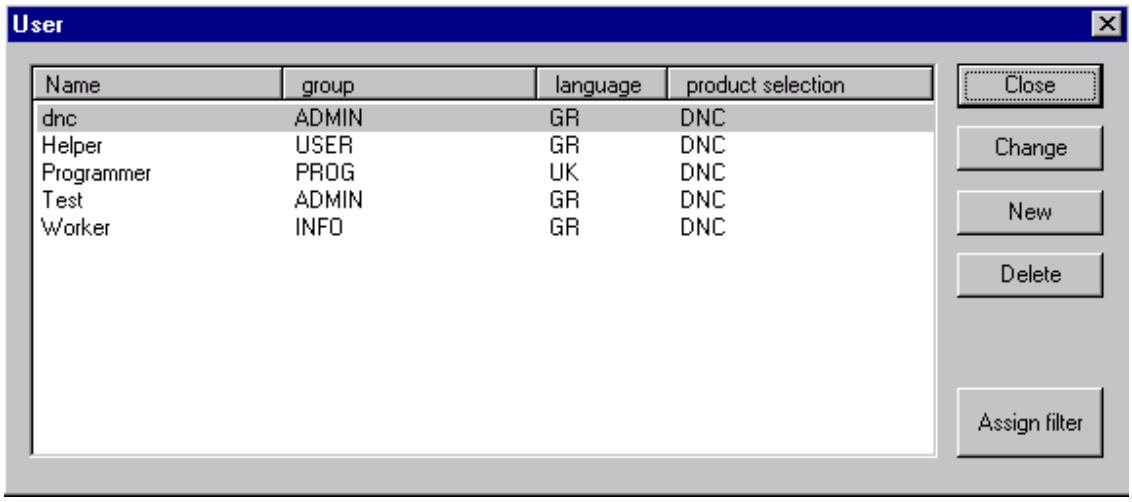

Fig. 5-1 Overview of existing users

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5.2.2 Create new user/Change user properties

The user definition dialog is called using the **New** or **Change** button on the user screen. A new user can then be created, or the properties of a selected existing user can be edited. The following parameters are available:

- User name
- Full name
- Access password
- User group, to which the user belongs
- Language (only relevant for MCIS Web)
- Product (only relevant for MCIS Web)
- Area to be displayed

The MCIS module (product) is predefined on the DNC.
The operator interface big view and the filter can be activated via two checkboxes.

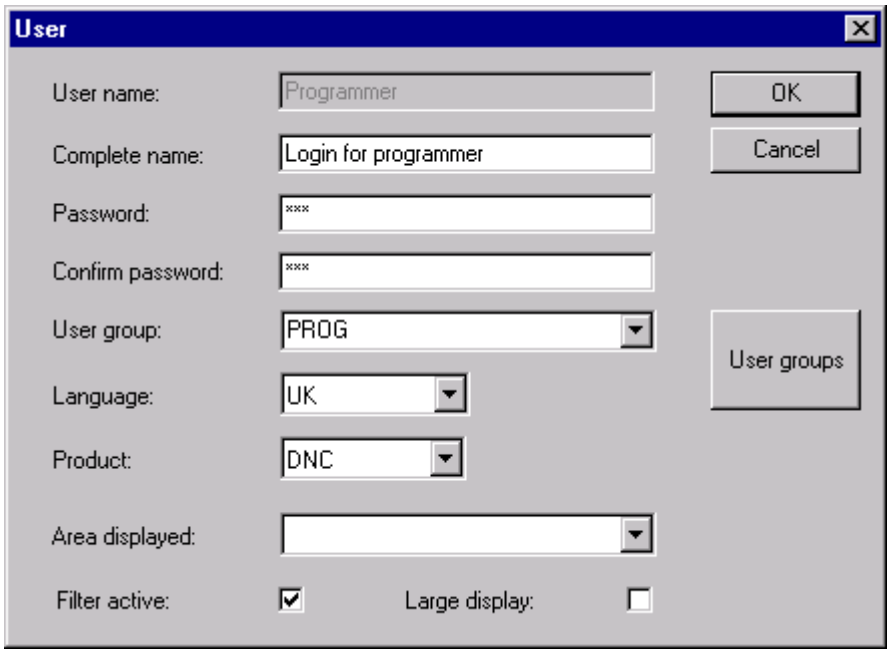

Fig. 5-2 Screen for creating or editing users

User name

The user name is the DNC login name.

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Full name

To specify the user name in more detail, extra text can be entered in the **Full name** input field. The text can only be viewed here.

Password

The password identifies the user and is required to log on. For added security, the password must be confirmed in the *Confirm password* field.

Note

A **DNC** user with administrator rights is always defined prior to delivery.
Before first use, a new administrator should be created and the DNC user deleted or at least a new password entered.

User group

An existing user group can be selected for the assignment of user rights and the display group in the User group selection box. If no user group with the desired access rights or the desired display group exists, a new user group will need to be created. The dialog for creating or editing user groups is selected using the **User Groups** button.
See also: Managing user groups.

Language

This setting is only relevant for MCIS Web.
The language selected in the selection box is set once MCIS Web has started up and the user has logged on.
DNC is available in the following languages:

- GR → German
- FR → French
- IT → Italian
- SP → Spanish
- UK → English
- RU → Russian
- CH → Chinese

Product

This setting is only relevant for MCIS Web.
The MCIS module selected in the selection box is called once MCIS Web has started up and the user has logged on. At present, DNC is the permanent default.

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Area displayed

The combo box for the displayed area controls the user's view of the tree structure. The view can be restricted to any group or subgroup from across the plant.
If no selection is made, the entire plant is displayed.
Selecting a group or subgroup means that only that restricted area is displayed for the user.

Filter active

If the **Filter active** box is checked, then the last filter assigned or used by the relevant user is activated on logon.

Note

If no filter has been defined, this user has an unfiltered view of all NC data.

Large display

The **Large display** checkbox controls the display size of icons and text on the operator interface. For users working in the factory, the big view option can improve screen visibility at greater distances.

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5.2.3 Filter assignment for a user

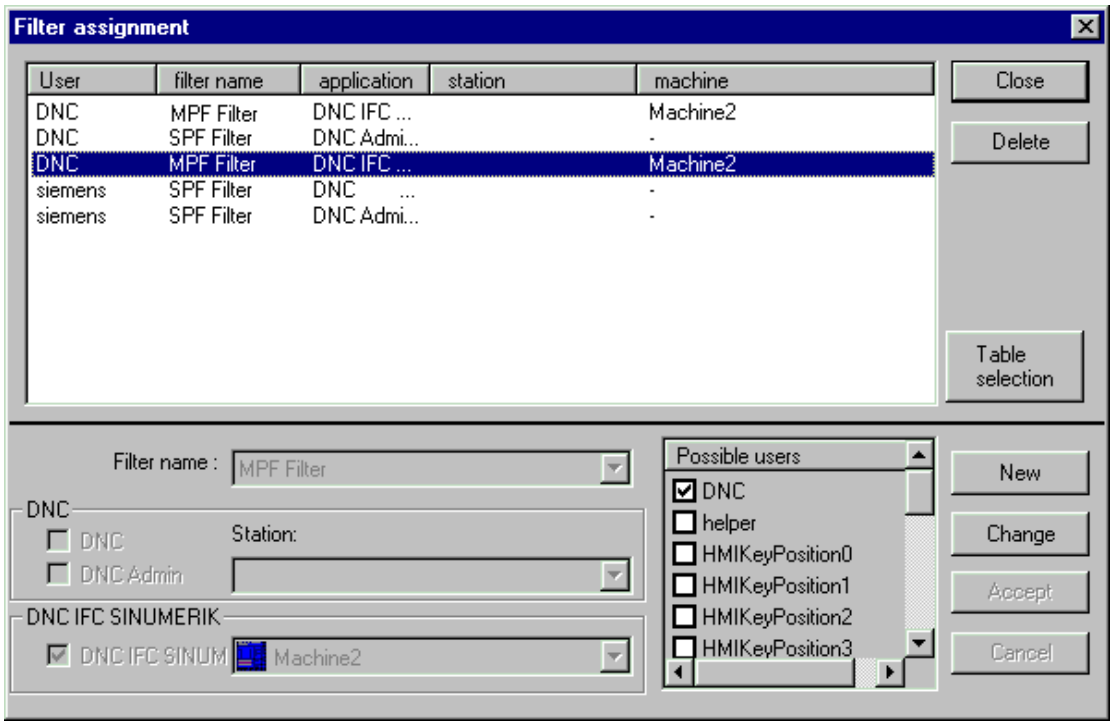

Fig. 5-3 Filter assignment

The filter assignment is made via the **Options→User Management** menu option and **Assign Filter** button.
Filter assignment can be used to assign a filter to users. The assignment can be made for the normal **DNC** operator interface, and for the **DNC Admin** program, as well as for machines with **DNC IFC SINUMERIK**.

You can create, edit or delete filter assignments using the filter assignment dialog.

The dialog screen is divided into two sections:

In the top section you select or delete an existing filter assignment. Use the "Select Table" button to select the database to which the filter assignment is to apply.

In the lower section you can edit or create assignments.

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Table Selection

The filter assignment database is selected using the **Table selection** button. You can choose one of the following two databases:

- Management data (NC management data)
- Log data (management of all errors and messages)

Delete filter assignment

To delete a filter assignment, you must first select the assignment to be deleted and then click the **Delete** button. You can only select and delete one filter assignment at a time.

To select a number of filter assignments, first sort the list so that all assignments to be deleted are listed one after the other. Select the first entry to be deleted, then continue through the entries until they have all been deleted.

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Add or change a filter assignment

One or a number of new filter assignments can be created by clicking the **New** button. When you click the **Change** button, the selected filter assignment changes and one or a number of new filter assignments may be created.

The following settings must be made:

- **Select the filter name**
  The names of the users who are entitled to use the filter are then displayed in the list of possible users. Access may be restricted to just a few users depending on how many limits you set when you configured the filter. (see also: Create or edit a filter).

- **Assign a user**
  You must activate the corresponding checkbox for each user to which the filter is to be assigned.

- **Select application(s)**
  After you have selected at least one application (**DNC IFC SINUMERIK**, **DNC** or **DNC Admin**) in which the filter is to be assigned to the selected users, you must choose an entry in the combo box on the right.

  DNC/DNC Admin
  If you leave the **DNC** and **DNC Admin Station name** combo box empty, the filter assignment will apply to all stations. Entering a station restricts the filter assignment to this station only.

  DNC IFC SINUMERIK
  If you select a group for **DNC IFC SINUMERIK**, a filter assignment is created, or an existing assignment edited, for all SINUMERIK 810D/840DI/840D machines in this group.

- **Accept data**
  New filter assignments are created, or existing assignments edited, when you click the Accept button.

Note

There can only be one filter assignment per user, application (**DNC IFC SINUMERIK**, **DNC** and **DNC Admin**) and machine or station. This means that if a filter assignment already exists and a **new** one is defined nevertheless, the old filter assignment will be replaced with the new one. **This process is automatic**.

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5.3 Manage user groups

5.3.1 General

When the user group administration is launched, all user groups and a comment are displayed in a list.

When you click **Edit** and **Change**, a dialog for managing user groups is displayed in which you can edit existing user group data or define a new user group. A selected user group can be deleted with the **Delete** button if all the users within this user group have been deleted previously.

5.3.2 Create new user group/Change user group properties

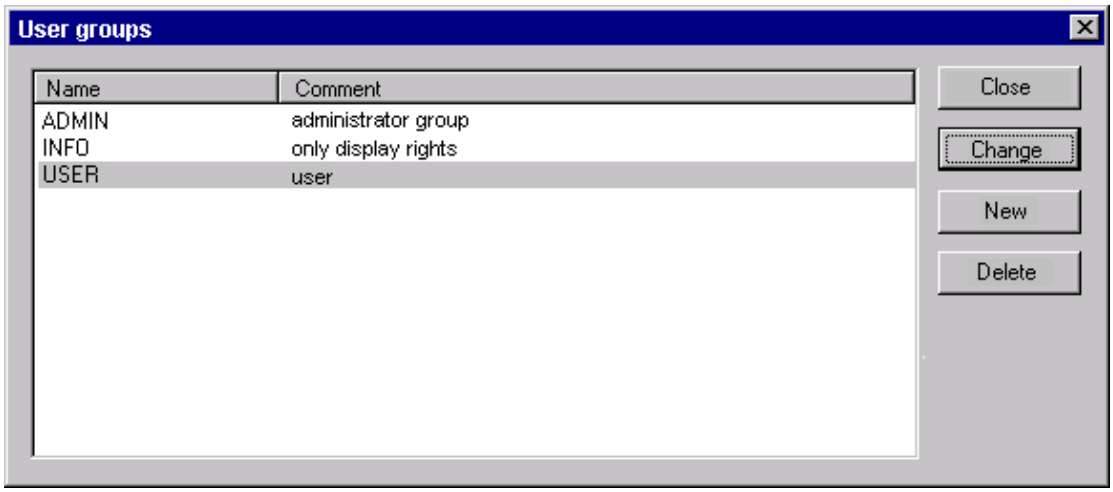

Fig. 5-4 Overview of existing user groups

The user group administration dialog is accessed via the **User Groups** button in the Create **User**/Change User Properties dialog. A new user group can be created here, or the properties of an existing user group can be edited.
The following user groups are defined in the standard version of DNC:

- Administrator ADMIN
- Users USER
- Information user INFO

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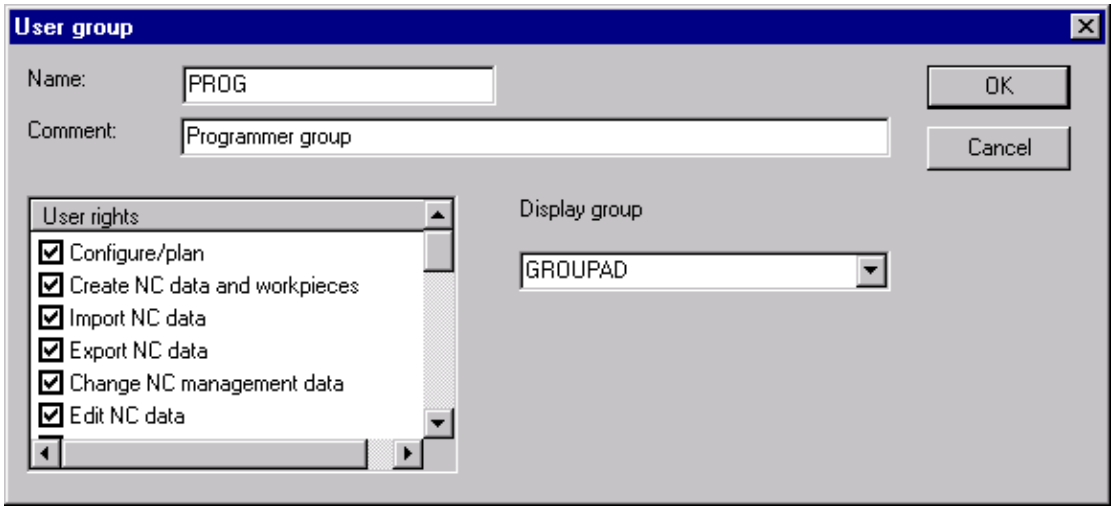

Fig. 5-5 Screen for managing user groups

Caution

Any changes made to the properties of a user group affect all users within the group.

The following data has to be entered to create or edit a user group:

5.3.3 Name of user group

The name of the user group is shown in the user group overview and in the dialog for creating or editing a user.

5.3.4 Comment

The comment is shown in the overview of all user groups and provides more detailed information about the user group.

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5.3.5 User rights

The purpose of assigning user rights in this screen is to enable or disable menu options in DNC or DNC Admin for users in the relevant user group.

Configure/Plan

Check this box to authorize the user to switch to the **DNC Admin** configuring mode for the purpose of configuring the system (**View** menu option).

Create NC data and workpieces

Check this box to enable the user group to create new NC data and workpieces via the **File → New** menu option or via the popup menu.

Import NC data

Check this box to enable manual import of NC data for the user group (**File** menu option).

Export NC data

Check this box to export NC data for the user group (**File** menu option).

Edit NC management data

Check this box to edit the NC data properties dialog.

Edit NC data

Uncheck this box to that only a read-only copy of an NC data file is opened when it is selected. Users will not be able to make or save any changes to the original file.

Copy/paste NC data in NC data

Check this box to copy and paste NC data (**Edit** menu option and popup menu).

Copy/paste NC data in link

Check this box to copy and paste links (**Edit** menu option and popup menu).

Note

Both rights must be assigned for a user to be able to copy and paste data from a link to management data or from management data to a link.

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Delete NC data

Check this box to delete NC data. The ability to delete versions in the Delete Version dialog is not affected by this setting.

Cut NC data

Check this box to cut NC data files (**Edit** menu option and popup menu).

Download NC data with release ID

Check this box to enable a user is to download NC data (**File** menu option, popup menu and icon in toolbar) with a set release identifier.

Download NC data with trial cut ID

Check this box to enable a user to download NC data (**File** menu option, popup menu and icon in toolbar) with a set trial cut identifier.

Upload NC data

Check this box to enable a user to upload NC data (**File** menu option, popup menu and icon in toolbar).

Compare NC data

Check this box to enable a comparison of two NC data files and enable Match machines with SINUMERIK 810D/840DI/840D.
However, this function is only available if the **DNC Compare** option has been installed.

Reset release IDs

Check this box to activate the *Reset release identifiers* function (with multiple selections) in the **Edit** menu option and in the popup menu. However, you can still set the release identifier for a single item of NC data file in the Properties dialog.

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Configure list descriptions

Check this box to enable the list editor to be called (**Options → List Editor** menu option).

Configure screen form descriptions

Check this box to enable the screen editor to be called (**Options → Screen Form Editor** menu option).

Configure user

Check this box to authorize the user group to call the user administration function, to set up users and user groups, to edit rights, or to delete users (**Options → User Management** in **DNC Admin** menu options).

Note

If you as a user deactivate your own *Configure User* right, you will no longer have access to the user administration function.

Change options settings

Check this box to enable the user group to carry out changes in the **Options → Settings** menu option, e.g., changing the language.

Perform consistency check

Check this box to enable the user group to perform consistency checks. The right to perform consistency checks should be reserved exclusively for administrators, as the consistency check dialog displays not only a list of any inconsistencies found, but also specifies means of eliminating them (**Options** menu option).

Configure filter

Check this box to authorize the user group to create, edit and select filters (**View** menu option).

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Chnage filter

Check this box to authorize the user group to change the value of filters (**View** menu option). The change is only effective temporarily, i.e., until the user exits **DNC** again.

Note

If the *Configure filter* right is activated, deactivating *Edit filter* will have no effect.

Select filter

Check this box to authorize users in this user group to select various filters (**View** menu option). If, however, the group is authorized to *Configure filters*, then removing its right to *Select filters* will have no effect.

Activate/Deactivate filter

Check this box to enable the user group to activate or deactivate filters using the filter icon.

Cross-area filtering

Check this box to enable cross-area filters the user group.

5.3.6 Display group

The drop-down list for the display group is generated from the DNCFORMDESCRIPTION form definition table in the database. All display groups defined in this table are listed in the User Administration screen.

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Notes

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6

6 Dialog Function

6.1 General information about the dialog function FBDN1/6-108

6.2 Dialog program FBDN1/6-109
6.2.1 Program structure FBDN1/6-109
6.2.2 Examples FBDN1/6-110

6.3 Dialog program responses FBDN1/6-111
6.3.1 Program structure FBDN1/6-111
6.3.2 Examples FBDN1/6-111

6.4 Configuration parameters FBDN1/6-112

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6.1 General information about the dialog function

The dialog function (**DNC IFC Dialog**) is optional. With machines connected via a serial interface, data can be uploaded/downloaded directly to/from the CNC machine tool. Dialog programs for requests (created by editor on the control system) and responses are exchanged between the **DNC** and the machine server. These programs contain the data relevant for the upload and download operations.

If a machine is configured with a dialog function (see also: Configuration), in contrast to the general operating mode, when **DNC** programs are started, the relevant machine server is started and runs until the end of the program. This means that unlike in the general operating mode, the defined interface is permanently assigned.

To meet special requirements, an external dialog interpreter in the form of an ActiveX Dll can be integrated in addition to the standard dialog interpreter.

! **Important**

The following control requirements must be met:

- It must be possible to store at least two NC programs on the control system.
- An NC program editor must be available for creating an NC dialog program.
- The machine control panel must include the alphanumeric characters in the chosen NC program name.

If one or more of the above requirements cannot be, the dialog function can be used in combination with an additional input terminal (handheld).

Fig. 6-1 Dialog function with additional terminal

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6.2 Dialog program

6.2.1 Program structure

DNC IFC Dialog evaluates the following lines from section [DIALOGFUNCTION] in the machine configuration file:

Program number

Dialog function identifier
%MPF9999

Command program line

Dialog function command
(S), (ST); (SL) or (R)

File name program line

File name
- Name (character string)
- (Wildcard)
- X999 (dummy alternative for controls, which cannot edit all characters)

File type program line

File type
- Type (character string)
- (Wildcard)
- Y001 (alternative for file type on controls, which cannot edit all characters. Y001 stands for MPF files in standard NCDATATYPE.)

The program end identifiers M00, M17 and M30 are evaluated indirectly.

Note

You can configure this section of the machine configuration file using the Config dialog, which is described in more detail in chapter Configuration → Configuration dialog → Dialog Function tab sheet.

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6.2.2 Examples

Table 6-1 Example of a download request with configuration parameters set to defaults

Sample file	Meaning
%MPF9999	Dialog program Request from the CNC machining unit
(S)	Request for download of a released NC data file
(TEST_1)	File name of the requested file
(MPF)	File type of the requested file
M30	Program end identifier

Table 6-2 Example of a standard request for transfer of an NC data files list

Example file	Meaning
%MPF9999	Dialog program Request from the CNC machining unit
(SL)	Request for transmission of an NC data files list
X999	Wildcard substitute for "*".
Y002	File type SPF, because 2nd field entry in standard DNCDATATYPE
M30	Program end identifier

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6.3 Dialog program responses

6.3.1 Program structure

Program number

Identifier of a response to a formulated request
%MPF9998

1st to nth program line

- List (response to a list request)
- Error message (response to a request for a program that cannot be supplied)

Program end identifier

M30

6.3.2 Examples

Table 6-3 Example of a response to a standard list request

Sample file	Meaning
%MPF9998	Response identifier to a formulated request
(name size...modified on)	List header
(cyhd_1.mpf 24096 06.05.99 17:59:04)	List content
(cyhd_2.mpf 28116 10.05.99 08:03:40)	List content
....	....
M30	Program end identifier

Table 6-4 Example of a response to a program request that cannot be fulfilled

Sample file	Meaning
%MPF9998	Response identifier to a formulated request
Cannot find requested data! Request:Zkpf_2.mpf	Error message
M30	Program end identifier

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6.4 Configuration parameters

The configuration parameters for the dialog function are defined in the machine configuration files (.MCF) in section [DIALOGFUNCTION]. The standard configuration parameters and their meaning are listed in the following table.

Note

You can configure this section of the machine configuration file using the Config dialog, which is described in more detail in chapter Configuration → Configuration dialog → Dialog Function tab sheet.

Table 6-5 Configuration parameters for the dialog function

Configuration parameter	Meaning	Default setting
DlgScanLines	Number of lines to be scanned after a DlgID parameter in the NC data file, starting with line 1.	10
DlgID	Identifier of a dialog program for a formulated request	%MPF9999
DlgIDSend	Identifier of a response to a formulated request. The response might contain the following: • List (response to a list request) • Error message (response to a request for a program that cannot be supplied)	%MPF9998
DlgSendEnd	Program end of a response (list, error) from **DNC** to the machine	M30
DlgSendCmd	"Download released NC data files" command.	(S)
DlgSendTcCmd	"Download NC data with trial-cut identifier" command	(ST)
DlgReceiveCmd	"Upload NC data files" command. Two programs are sent in succession: • Request program • Program to be uploaded	(R)
DlgSendListCmd	"Send a list" command. The identifier must be on the 1st line of the NC data file.	(SL)
DlgWpdMark	Identifier for workpieces in the dialog program. If the connected control system cannot edit all characters, positional data or preparatory functions (e.g., Z888 or G040) can be programmed instead.	WPD
DlgExchangeCNCType	Identifier for file types in the dialog program. If the connected control system cannot edit all characters, positional data or preparatory functions (e.g., Y001 or G02) can be programmed instead. In this case, the character is identified via the Dialog section. The numerical part of the identifier refers to field ODERNUM in the database table DNCDATATYPE.	Y

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Configuration parameter	Meaning	Default setting
DlgExchangedummy	Wildcard alternative for controls, which cannot edit "*" (e.g., in the case of list requests for lists of all data types or file names).	X999
DlgConverter	An external dialog interpreter can be configured via this parameter.	DNCDlgI.DNCCntrl
DlgSubNumber	This parameter can be set to attach an additional mode of interpretation to the external dialog interpreter.	0

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7

7 Code Conversion Function

7.1 Code conversion FBDN1/7-116

7.2 Examples FBDN1/7-117

7.3 Code conversion tables FBDN1/7-118

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7.1 Code conversion

General

DNC works with NC programs in ASCII code. NC programs are always uploaded to and downloaded from the CNC machine tool in the code requested by the machine. For this reason, code may need to be converted. The code conversion server of the **DNC** system supports 3 types of code:

- ASCII code
- ISO code
- EIA code

To be able to upload/download NC programs in a particular code, code conversion must be implemented via a code conversion table, allowing characters to be converted or filtered out individually.

Code conversion tables

The CODES.TXT file in the program directory contains all code conversion tables. One table is defined for each code type and transfer direction. It begins with its name, which consists of code type and transfer direction (OUT = download; IN = upload). The table content is enclosed in { }. Each table line consists of a series of assignments, with each input value assigned to one output value. An input/output assignment string is structured as follows: #2A AA '*'

#	First assignment character
2 A	Two-digit hexadecimal input value
	Blank as separator
AA	Two-digit hexadecimal output value
	Blank as separator
'*'	Mnemonic as comment
	2 blanks as separator

Characters can also be filtered out via the code conversion table. This is done by entering **FF** as the output value.

Note

The offset must never be altered as this may result in initialization failures or errors.

Note

There is only one CODES.TXT code conversion file per station.
Modifications to one of the six code conversion tables only affect machines, which operate with the type of code defined in the modified table.

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7.2 Examples

Users can use the code conversion tables to create their own machine-specific code. To do this, a different output value is assigned to an input value in the ASCII code conversion table.

Table 7-1 Modified ASCII code conversion table

Original code conversion table	**Modified code conversion table**

ASCII_OUT
{
....
....
#0D 0D 'CR' ...
...
}
	ASCII_OUT
	{
	....
	....
	#0D 0A 'CR' ...
	...
	}

Table 7-2 Filtered out "CR" character in ISO code

Original code conversion table	**Modified code conversion table**

ISO_OUT
{
....
....
#0D 8D 'CR' ...
...
}
	ISO_OUT
	{
	....
	....
	#0D FF 'CR' ...
	...
	}

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7.3 Code conversion tables

Table 7-3 Code conversion table ASCII_OUT

```
ASCII_OUT
{
#00 00 NUL      #01 01 SOH      #02 02 STX      #03 03 ETX      #04 04 EOT      #05 05 ENQ
#06 06 ACK      #07 07 BEL      #08 08 BS       #09 09 HT       #0A 0A LF       #0B 0B VT
#0C 0C FF       #0D 0D CR       #0E 0E SO       #0F 0F SI       #10 10 DLE      #11 11 DC1
#12 12 DC2      #13 13 DC3      #14 14 DC4      #15 15 NAK      #16 16 SYN      #17 17 ETB
#18 18 CAN      #19 19 EM       #1A 1A SUB      #1B 1B ESC      #1C 1C FS       #1D 1D GS
#1E 1E RS       #1F 1F US       #20 20 SP       #21 21 '!'      #22 22 ""       #23 23 (1)
#24 24 '$'      #25 25 '%'      #26 26 '&'      #27 27 '"'      #28 28 '('      #29 29 ')'
#2A 2A '*'      #2B 2B '+'      #2C 2C ','      #2D 2D '-'      #2E 2E '.'      #2F 2F '/'
#30 30 '0'      #31 31 '1'      #32 32 '2'      #33 33 '3'      #34 34 '4'      #35 35 '5'
#36 36 '6'      #37 37 '7'      #38 38 '8'      #39 39 '9'      #3A 3A ':'      #3B 3B ';'
#3C 3C '<'      #3D 3D '='      #3E 3E '>'      #3F 3F '?'      #40 40 '@'      #41 41 'A'
#42 42 'B'      #43 43 'C'      #44 44 'D'      #45 45 'E'      #46 46 'F'      #47 47 'G'
#48 48 'H'      #49 49 'I'      #4A 4A 'J'      #4B 4B 'K'      #4C 4C 'L'      #4D 4D 'M'
#4E 4E 'N'      #4F 4F 'O'      #50 50 'P'      #51 51 'Q'      #52 52 'R'      #53 53 'S
#54 54 'T'      #55 55 'U'      #56 56 'V'      #57 57 'W'      #58 58 'X'      #59 59 'Y'
#5A 5A 'Z'      #5B 5B '['      #5C 5C '\'      #5D 5D ']'      #5E 5E '^'      #5F 5F '_'
#60 60 '`'      #61 61 'a'      #62 62 'b'      #63 63 'c'      #64 64 'd'      #65 65 'e'
#66 66 'f'      #67 67 'g'      #68 68 'h'      #69 69 'i'      #6A 6A 'j'      #6B 6B 'k'
#6C 6C 'l'      #6D 6D 'm'      #6E 6E 'n'      #6F 6F 'o'      #70 70 'p'      #71 71 'q'
#72 72 'r'      #73 73 's'      #74 74 't'      #75 75 'u'      #76 76 'v'      #77 77 'w'
#78 78 'x'      #79 79 'y'      #7A 7A 'z'      #7B 7B (2)      #7C 7C '|'      #7D 7D (3)
#7E 7E '~'      #7F 7F DEL
}
```

Table 7-4 Code conversion table ASCII_IN

```
ASCII_IN
{
#00 00 NUL      #01 01 SOH      #02 02 STX      #03 03 ETX      #04 04 EOT      #05 05 ENQ
#06 06 ACK      #07 07 BEL      #08 08 BS       #09 09 HT       #0A 0A LF       #0B 0B VT
#0C 0C FF       #0D 0D CR       #0E 0E SO       #0F 0F SI       #10 10 DLE      #11 11 DC1
#12 12 DC2      #13 13 DC3      #14 14 DC4      #15 15 NAK      #16 16 SYN      #17 17 ET
#18 18 CAN      #19 19 EM       #1A 1A SUB      #1B 1B ESC      #1C 1C FS       #1D 1D GS
#1E 1E RS       #1F 1F US       #20 20 SP       #21 21 '!'      #22 22 ""       #23 23 (1)
#24 24 '$'      #25 25 '%'      #26 26 '&'      #27 27 '"'      #28 28 '('      #29 29 ')'
#2A 2A '*'      #2B 2B '+'      #2C 2C ','      #2D 2D '-'      #2E 2E '.'      #2F 2F '/
#30 30 '0'      #31 31 '1'      #32 32 '2'      #33 33 '3'      #34 34 '4'      #35 35 '5'
#36 36 '6'      #37 37 '7'      #38 38 '8'      #39 39 '9'      #3A 3A ':'      #3B 3B ';'
#3C 3C '<'      #3D 3D '='      #3E 3E '>'      #3F 3F '?'      #40 40 '@'      #41 41 'A'
#42 42 'B'      #43 43 'C'      #44 44 'D'      #45 45 'E'      #46 46 'F'      #47 47 'G'
#48 48 'H'      #49 49 'I'      #4A 4A 'J'      #4B 4B 'K'      #4C 4C 'L'      #4D 4D 'M'
#4E 4E 'N'      #4F 4F 'O'      #50 50 'P'      #51 51 'Q'      #52 52 'R'      #53 53 'S'
#54 54 'T'      #55 55 'U'      #56 56 'V'      #57 57 'W'      #58 58 'X'      #59 59 'Y'
#5A 5A 'Z'      #5B 5B '['      #5C 5C '\'      #5D 5D ']'      #5E 5E '^'      #5F 5F '_'
#60 60 '`'      #61 61 'a'      #62 62 'b'      #63 63 'c'      #64 64 'd'      #65 65 'e'
#66 66 'f'      #67 67 'g'      #68 68 'h'      #69 69 'i'      #6A 6A 'j'      #6B 6B 'k'
#6C 6C 'l'      #6D 6D 'm'      #6E 6E 'n'      #6F 6F 'o'      #70 70 'p'      #71 71 'q'
#72 72 'r'      #73 73 's'      #74 74 't'      #75 75 'u'      #76 76 'v'      #77 77 'w'
#78 78 'x'      #79 79 'y'      #7A 7A 'z'      #7B 7B (2)      #7C 7C '|'      #7D 7D (3)
#7E 7E '~'      #7F 7F DEL
}
```

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Table 7-5 Code conversion table EIA_OUT

```
EIA_OUT
{
#00 FF NUL      #01 FF SOH      #02 FF STX      #03 FF ETX      #04 FF EOT      #05 FF ENQ
#06 FF ACK      #07 FF BEL      #08 2A BS       #09 3E HT       #0A FF LF       #0B FF VT
#0C FF FF       #0D 80 CR       #0E FF SO       #0F FF SI       #10 FF DLE      #11 FF DC1
#12 FF DC2      #13 FF DC3      #14 FF DC4      #15 FF NAK      #16 FF SYN      #17 FF ETB
#18 FF CAN      #19 FF EM       #1A FF SUB      #1B FF ESC      #1C FF FS       #1D FF GS
#1E FF RS       #1F FF US       #20 10 SP       #21 FF '!'      #22 FF '"'      #23 FF (1)
#24 FF '$'      #25 0B '%'      #26 0E '&'      #27 FF '''      #28 1A '('      #29 4A ')'
#2A FF '*'      #2B 70 '+'      #2C 3B ','      #2D 40 '-'      #2E 6B '.'      #2F 31 '/'
#30 20 '0'      #31 01 '1'      #32 02 '2'      #33 13 '3'      #34 04 '4'      #35 15 '5'
#36 16 '6'      #37 07 '7'      #38 08 '8'      #39 19 '9'      #3A FF ':'      #3B FF ';'
#3C FF '<'      #3D FF '='      #3E FF '>'      #3F FF '?'      #40 FF '@'      #41 61 'A'
#42 62 'B'      #43 73 'C'      #44 64 'D'      #45 75 'E'      #46 76 'F'      #47 67 'G'
#48 68 'H'      #49 79 'I'      #4A 51 'J'      #4B 52 'K'      #4C 43 'L'      #4D 54 'M'
#4E 45 'N'      #4F 46 'O'      #50 57 'P'      #51 58 'Q'      #52 49 'R'      #53 32 'S'
#54 23 'T'      #55 34 'U'      #56 25 'V'      #57 26 'W'      #58 37 'X'      #59 38 'Y'
#5A 29 'Z'      #5B FF '['      #5C FF '\'      #5D FF ']'      #5E FF '^'      #5F FF '_'
#60 FF '`'      #61 61 'a'      #62 62 'b'      #63 73 'c'      #64 64 'd'      #65 75 'e'
#66 76 'f'      #67 67 'g'      #68 68 'h'      #69 79 'i'      #6A 51 'j'      #6B 52 'k'
#6C 43 'l'      #6D 54 'm'      #6E 45 'n'      #6F 46 'o'      #70 57 'p'      #71 58 'q'
#72 49 'r'      #73 32 's'      #74 23 't'      #75 34 'u'      #76 25 'v'      #77 26 'w'
#78 37 'x'      #79 38 'y'      #7A 29 'z'      #7B FF (2)      #7C FF '|'      #7D FF (3)
#7E FF '~'      #7F 7F DEL
}
```

Table 7-6 Code conversion table EIA_IN

```
EIA_IN
{
#00 00 NUL      #FF 01 SOH      #FF 02 STX      #FF 03 ETX      #FF 04 EOT      #FF 05 ENQ
#FF 06 ACK      #FF 07 BEL      #2A 08 BS       #3E 09 HT       #FF 0A LF       #FF 0B VT
#FF 0C FF       #80 0D CR       #FF 0E SO       #FF 0F SI       #FF 10 DLE      #FF 11 DC1
#FF 12 DC2      #FF 13 DC3      #FF 14 DC4      #FF 15 NAK      #FF 16 SYN      #FF 17 ETB
#FF 18 CAN      #FF 19 EM       #FF 1A SUB      #FF 1B ESC      #FF 1C FS       #FF 1D GS
#FF 1E RS       #FF 1F US       #10 20 SP       #FF 21 '!'      #FF 22 '"'      #FF 23 (1)
#FF 24 '$'      #0B 25 '%'      #0E 26 '&'      #FF 27 '''      #1A 28 '('      #4A 29 ')'
#FF 2A '*'      #70 2B '+'      #3B 2C ','      #40 2D '-'      #6B 2E '.'      #31 2F '/'
#20 30 '0'      #01 31 '1'      #02 32 '2'      #13 33 '3'      #04 34 '4'      #15 35 '5'
#16 36 '6'      #07 37 '7'      #08 38 '8'      #19 39 '9'      #FF 3A ':'      #FF 3B ';'
#FF 3C '<'      #FF 3D '='      #FF 3E '>'      #FF 3F '?'      #FF 40 '@'      #61 41 'A'
#62 42 'B'      #73 43 'C'      #64 44 'D'      #75 45 'E'      #76 46 'F'      #67 47 'G'
#68 48 'H'      #79 49 'I'      #51 4A 'J'      #52 4B 'K'      #43 4C 'L'      #54 4D 'M'
#45 4E 'N'      #46 4F 'O'      #57 50 'P'      #58 51 'Q'      #49 52 'R'      #32 53 'S'
#23 54 'T'      #34 55 'U'      #25 56 'V'      #26 57 'W'      #37 58 'X'      #38 59 'Y'
#29 5A 'Z'      #FF 5B '['      #FF 5C '\'      #FF 5D ']'      #FF 5E '^'      #FF 5F '_'
#FF 60 '`'      #FF 61 'a'      #FF 62 'b'      #FF 63 'c'      #FF 64 'd'      #FF 65 'e'
#FF 66 'f'      #FF 67 'g'      #FF 68 'h'      #FF 69 'i'      #FF 6A 'j'      #FF 6B 'k'
#FF 6C 'l'      #FF 6D 'm'      #FF 6E 'n'      #FF 6F 'o'      #FF 70 'p'      #FF 71 'q'
#FF 72 'r'      #FF 73 's'      #FF 74 't'      #FF 75 'u'      #FF 76 'v'      #FF 77 'w'
#FF 78 'x'      #FF 79 'y'      #FF 7A 'z'      #FF 7B (2)      #FF 7C '|'      #FF 7D (3)
#FF 7E '~'      #7F 7F DEL
}
```

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Table 7-7 Code conversion table ISO_OUT

```
ISO_OUT
{
#00 00 NUL      #01 81 SOH      #02 82 STX      #03 03 ETX      #04 84 EOT      #05 05 ENQ
#06 06 ACK      #07 87 BEL      #08 88 BS       #09 09 HT       #0A 0A LF       #0B 8B VT
#0C 0C FF       #0D 8D CR       #0E 8E SO       #0F 0F SI       #10 90 DLE      #11 11 DC1
#12 12 DC2      #13 93 DC3      #14 14 DC4      #15 95 NAK      #16 96 SYN      #17 17 ETB
#18 18 CAN      #19 99 EM       #1A 9A SUB      #1B 1B ESC      #1C 9C FS       #1D 1D GS
#1E 1E RS       #1F 9F US       #20 A0 SP       #21 21 '!'      #22 22 '"'      #23 A3 '0'
#24 24 '$'      #25 A5 '%'      #26 A6 '&'      #27 27 '''      #28 28 '('      #29 A9 ')'
#2A AA '*'      #2B 2B '+'      #2C AC ','      #2D 2D '-'      #2E 2E '.'      #2F AF '/'
#30 30 '0'      #31 B1 '1'      #32 B2 '2'      #33 33 '3'      #34 B4 '4'      #35 35 '5'
#36 36 '6'      #37 B7 '7'      #38 B8 '8'      #39 39 '9'      #3A 3A ':'      #3B BB ';'
#3C 3C '<'      #3D BD '='      #3E BE '>'      #3F 3F '?'      #40 C0 '@'      #41 41 'A'
#42 42 'B'      #43 C3 'C'      #44 44 'D'      #45 C5 'E'      #46 C6 'F'      #47 47 'G'
#48 48 'H'      #49 C9 'I'      #4A CA 'J'      #4B 4B 'K'      #4C CC 'L'      #4D 4D 'M'
#4E 4E 'N'      #4F CF 'O'      #50 50 'P'      #51 D1 'Q'      #52 D2 'R'      #53 53 'S'
#54 D4 'T'      #55 55 'U'      #56 56 'V'      #57 D7 'W'      #58 D8 'X'      #59 59 'Y'
#5A 5A 'Z'      #5B DB '['      #5C 5C '\'      #5D DD ']'      #5E DE '^'      #5F 5F '_'
#60 60 '`'      #61 E1 'a'      #62 E2 'b'      #63 63 'c'      #64 E4 'd'      #65 65 'e'
#66 66 'f'      #67 E7 'g'      #68 E8 'h'      #69 69 'i'      #6A 6A 'j'      #6B EB 'k'
#6C 6C 'l'      #6D ED 'm'      #6E EE 'n'      #6F 6F 'o'      #70 F0 'p'      #71 71 'q'
#72 72 'r'      #73 F3 's'      #74 74 't'      #75 F5 'u'      #76 F6 'v'      #77 77 'w'
#78 78 'x'      #79 F9 'y'      #7A FA 'z'      #7B 7B (2)      #7C FC '|'      #7D 7D (3)
#7E 7E '~'      #7F FF DEL
}
```

Table 7-8 Code conversion table ISO_IN

```
ISO_IN
{
#00 00 NUL      #81 01 SOH      #82 02 STX      #03 03 ETX      #84 04 EOT      #05 05 ENQ
#06 06 ACK      #87 07 BEL      #88 08 BS       #09 09 HT       #0A 0A LF       #8B 0B VT
#0C 0C FF       #8D 0D CR       #8E 0E SO       #0F 0F SI       #90 10 DLE      #11 11 DC1
#12 12 DC2      #93 13 DC3      #14 14 DC4      #95 15 NAK      #96 16 SYN      #17 17 ETB
#18 18 CAN      #99 19 EM       #9A 1A SUB      #1B 1B ESC      #9C 1C FS       #1D 1D GS
#1E 1E RS       #9F 1F US       #A0 20 SP       #21 21 '!'      #22 22 '"'      #A3 23 '0'
#24 24 '$'      #A5 25 '%'      #A6 26 '&'      #27 27 '''      #28 28 '('      #A9 29 ')'
#AA 2A '*'      #2B 2B '+'      #AC 2C ','      #2D 2D '-'      #2E 2E '.'      #AF 2F '/'
#30 30 '0'      #B1 31 '1'      #B2 32 '2'      #33 33 '3'      #B4 34 '4'      #35 35 '5'
#36 36 '6'      #B7 37 '7'      #B8 38 '8'      #39 39 '9'      #3A 3A ':'      #BB 3B ';'
#3C 3C '<'      #BD 3D '='      #BE 3E '>'      #3F 3F '?'      #C0 40 '@'      #41 41 'A'
#42 42 'B'      #C3 43 'C'      #44 44 'D'      #C5 45 'E'      #C6 46 'F'      #47 47 'G'
#48 48 'H'      #C9 49 'I'      #CA 4A 'J'      #4B 4B 'K'      #CC 4C 'L'      #4D 4D 'M'
#4E 4E 'N'      #CF 4F 'O'      #50 50 'P'      #D1 51 'Q'      #D2 52 'R'      #53 53 'S'
#D4 54 'T'      #55 55 'U'      #56 56 'V'      #D7 57 'W'      #D8 58 'X'      #59 59 'Y'
#5A 5A 'Z'      #DB 5B '['      #5C 5C '\'      #DD 5D ']'      #DE 5E '^'      #5F 5F '_'
#60 60 '`'      #E1 61 'a'      #E2 62 'b'      #63 63 'c'      #E4 64 'd'      #65 65 'e'
#66 66 'f'      #E7 67 'g'      #E8 68 'h'      #69 69 'i'      #6A 6A 'j'      #EB 6B 'k'
#6C 6C 'l'      #ED 6D 'm'      #EE 6E 'n'      #6F 6F 'o'      #F0 70 'p'      #71 71 'q'
#72 72 'r'      #F3 73 's'      #74 74 't'      #F5 75 'u'      #F6 76 'v'      #77 77 'w'
#78 78 'x'      #F9 79 'y'      #FA 7A 'z'      #7B 7B (2)      #FC 7C '|'      #7D 7D (3)
#7E 7E '~'      #FF 7F DEL
}
```

■

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8

8 System Platform

8.1 Hardware FBDN1/8-122
8.1.1 Requirements for DNC Cell FBDN1/8-122
8.1.2 Requirements for DNC Plant FBDN1/8-123

8.2 Software FBDN1/8-124
8.2.1 Requirements for DNC Cell FBDN1/8-124
8.2.2 Requirements for DNC Plant FBDN1/8-125

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8.1 Hardware

8.1.1 Requirements for DNC Cell

Table 8-1 Hardware requirements for **DNC Cell**

Hardware component	Requirement
PC	At least a Pentium class processor PIII
RAM	≥ 512 MB
Hard disk	≥ 1 GB for the system (operating system, database, **DNC**, etc.) plus disk storage for data to be managed
Screen resolution	≥ 800 x 600
Disk drive	CD ROM
COM interfaces	Optional, depending on the serial interfaces required: 4-port/8-port interface cards
Network card	Optional for networking

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8.1.2 Requirements for DNC Plant

Table 8-2 Hardware requirements for **DNC Plant**

Hardware component	**Requirement of the server and DNC HMI computer**	**Requirement of the station PCs**
PC	At least a Pentium class processor PIII	At least a Pentium class processor PIII
RAM	≥ 512 MB	≥ 256 MB
Hard disk	≥ 2GB for the system (operating system, database, **DNC**, etc.) plus disk storage for data to be managed	≥ 200 MB for the system (operating system, database, **DNC**, etc.) plus disk storage for data to be managed
Screen resolution	≥ 1024 x 768	≥ 800 x 600
Disk drive	CD ROM	CD ROM
COM interfaces		Optional, depending on the serial interfaces required: 4-port/8-port interface cards
Network card	yes	yes
Backup medium	Depends on backup strategy	
Raid system	Depends on availability requirements	

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8.2 Software

8.2.1 Requirements for DNC Cell

Table 8-3 Software requirements for **DNC Cell**

Remarks	**Software component**
Operating system	Windows 2000 Professional/Server Windows 2003 Server Windows XP Professional
One operating system per networked PC/SINUMERIK when server operating systems are used	Client access license
MSDE required	Internet Explorer
Network protocol, optional for networking (included in Windows)	TCP/IP
When appropriate modules are used	Driver software for multiple serial interfaces
MCIS database	• MSDE (license-free SQL server) – contained in **DNC Cell** • SQL server *

* If an SQL server is already installed on the system, this is used as a data management system and MSDE is not installed.

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8.2.2 Requirements for DNC Plant

Table 8-4 Software requirements for **DNC Plant** computer

Remarks	Software component
Operating system	Windows 2000 Server Windows 2003 Server
Per networked PC/SINUMERIK	Client access license
MSDE required	Internet Explorer
Network protocol, optional for networking (included in Windows)	TCP/IP
When appropriate modules are used	Driver software for multiple serial interfaces
MCIS database	• MSDE (license-free SQL server) – contained in **DNC Plant** • SQL server * • Oracle **

* If an SQL server is already installed on the system, this is used as a data management system and MSDE is not installed.

** Oracle 9i (V9.2) can also be used as a data management system, rather than MSDE/SQL server. This is not a default installation. See: readme.pdf

Requirements for station PCs and HMI computers

Table 8-5 Software requirements for **stations PCs and HMI computers**

Remarks	Software component
Operating system	Windows 2000 Professional/Server Windows 2003 Windows XP Professional
Additional license of server operating system	Client access license
MSDE required	Internet Explorer
Network protocol, optional for networking (included in Windows)	TCP/IP
When appropriate modules are used	Driver software for multiple serial interfaces (not required with an HMI computer)

* If an SQL server is already installed on the system, this is used as a data management system and MSDE is not installed.

■

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Notes

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9

9 Software Structure

9.1 Software structure FBDN1/9-128

9.2 Machine server FBDN1/9-129
9.2.1 SerIntSvr FBDN1/9-129
9.2.2 Customized serial machine servers FBDN1/9-129

9.3 Code conversion server FBDN1/9-129

9.4 External dialog interpreter FBDN1/9-130

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9.1 Software structure

The software structure diagram below shows the data flow between the **DNC** operator interface, the servers and the machine.
All transmission functions are processed via the machine server. Any standard or customer-generated code conversions can be optionally integrated in the process. The **DNC** code conversion server or a customer code conversion server can be called. The customer code conversion server can be programmed so that it calls the **DNC** code conversion server on completion of its run. An external dialog function can be used to implement the dialog function for specific projects, in which case the data flows from the machine server to the dialog interpreter for code conversion and then on to the machine.

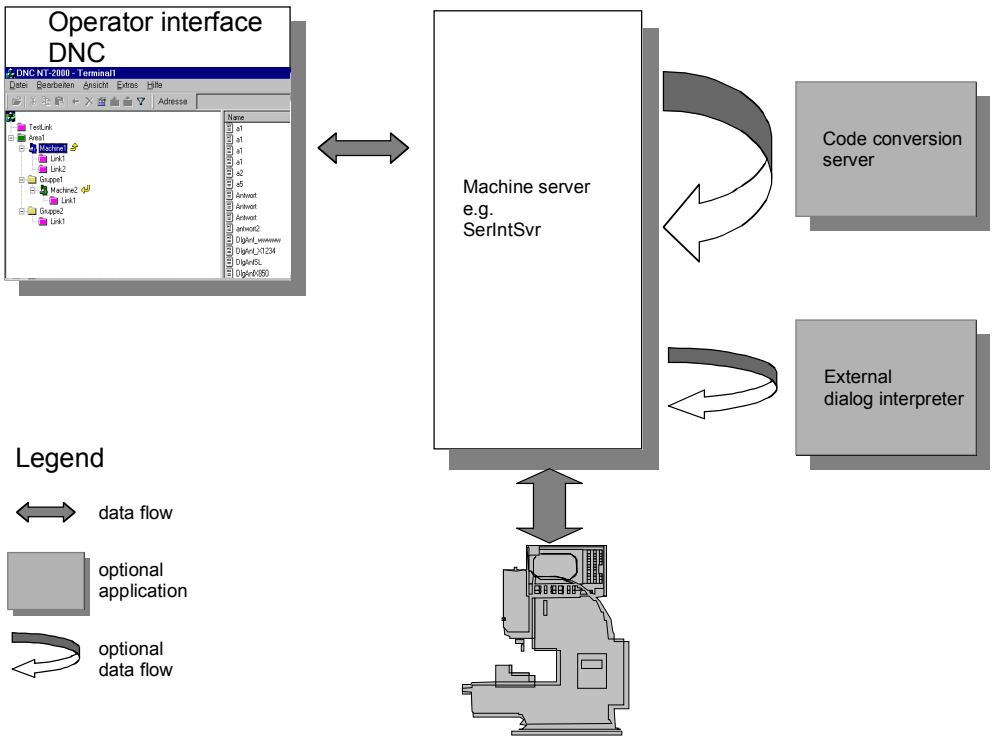

Bild 9-1 Software structure

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9.2 Machine server

DNC works with transmission functions implemented in machine servers for the following reasons:

- The server can be replaced independently of **DNC**.
- Modifications to the server can be made independently of **DNC**.

All machine servers are OLE/COM servers with defined interfaces to **DNC**.
By default, **DNC** interfaces with serial machines via SerIntSvr. Separate machine servers can be created for machines requiring a different mode of data transmission.

9.2.1 SerIntSvr

Function

By default, **DNC** features SerIntSvr for unsecured serial transmission. SerIntSvr includes a dialog interpreter function and is capable of calling an additional external dialog interpreter and code converter server if required.

9.2.2 Customized serial machine servers

If SerIntSvr cannot meet the requirements of a particular application, users can create their own customized machine server.
Typical applications of customized servers are:

- Machines without a serial interface
- Machines, which require secure serial transmission

9.3 Code conversion server

DNC code conversion server

The **DNC** code conversion server supports three conversion codes: ISO, ASCII and EIA. The conversion definition tables contain the file CODES.TXT. They are stored together with the DNCConvSvr code conversion server in the **DNC** program directory.

Customized code conversion server

If DNCConvSvr does not meet the relevant requirements, users can create their own code conversion server. Possible applications include:
Conversion of another code
Further conversions, such as: A = AV

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9.4 External dialog interpreter

General

DNC features an optional interface for an external dialog interpreter, with which, for example, names can be converted on a project-specific basis or the dialog program can be interpreted in a particular way. The dialog interpreter must be implemented as an ActiveX/DLL with Visual C++ or Visual Basic. It is called by the machine server.
This is a different type of conversion than the method used on the code conversion server, since it is configured only for the dialog function. Typical applications include control systems, which cannot edit all characters. In this type of case, for example, conversion from G00 to cylinder head, etc., could be implemented.

Note

A brief description of the external dialog interpreter can be found in "ExternalDialogInterpreter.doc" in directory IBS_Docu on the project CD.
Further information about the external dialog interpreter is available on request.

Configuring

The dialog interpreter is configured in the [DIALOGFUNCTION] section of the machine configuration file.

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10

10 Configuration

10.1 General FBDN1/10-132

10.2 Separate DNC Admin and DNC FBDN1/10-132
10.2.1 General FBDN1/10-132
10.2.2 Differences FBDN1/10-133

10.3 Plant structure FBDN1/10-135

10.4 Machine interfaces FBDN1/10-136
10.4.1 Machine configuration files FBDN1/10-139
10.4.2 Standard machine configuration file for serial unsecured interface FBDN1/10-141
10.4.3 Standard machine configuration file for interface type SINUMERIK 840D/840Di/810D FBDN1/10-145
10.4.4 Configuration dialog for serial unsecured interface ... FBDN1/10-147
10.4.5 Configuration file for interface type SINUMERIK 840D/840Di/810D FBDN1/10-172
10.4.6 Configuration dialog for file system interface type FBDN1/10-183
10.4.7 Dialog function FBDN1/10-184

10.5 Global settings FBDN1/10-188
10.5.1 Maximum permissible number of versions FBDN1/10-188
10.5.2 Versions strategy for uploads FBDN1/10-189
10.5.3 Store strategy after editing FBDN1/10-190
10.5.4 Machine-specific version management FBDN1/10-191

10.6 List Editor FBDN1/10-193
10.6.1 General FBDN1/10-193
10.6.2 Description of part 1 of the List Editor FBDN1/10-195
10.6.3 Description of part 2 of the List Editor FBDN1/10-196

10.7 Screen Editor FBDN1/10-198
10.7.1 General FBDN1/10-198
10.7.2 Description of part 1 of the Screen Editor FBDN1/10-200
10.7.3 Description of part 2 of the Screen Editor FBDN1/10-202
10.7.4 Saving the screen display in the database FBDN1/10-207

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10.1 General

All configuration settings should be made by an authorized user. Data and settings can and/or must be defined and configured in the following areas:

- Plant structure (software-based simulation of plant topology)
- Machine interfaces (machine interface type)
- Screen form definition for NC data properties and imports
- List definition
- Parameters for the dialog function
- User-specific data (access and display definition, see Chapter 5)

The "**DNC Admin**" program can be used to make the majority of configuration settings. Very few configuration settings, such as the creation and editing of filters and NC data, can be made in **DNC**.

10.2 Separate DNC Admin and DNC

10.2.1 General

The purpose of using a structure with separate **DNC Admin** and **DNC** programs is to prevent you, the user, modifying the **DNC** configuration unintentionally. The advantage of dividing the system into these two programs is that its configuration can be changed only if you explicitly intend to do so. **DNC** is easier to operate with the configuration functions removed.

DNC Admin should be operated only by authorized personnel, while **DNC** is simple enough for anyone to use.

Note

DNC Admin can also be operated by other users. A precise distinction must be made in respect of which user can do what, with each function assigned explicitly to each user type. See also: Chapter 5 - User administration.

Some of the **configurations** implemented in **DNC Admin** do not become **operative** until you **restart** the **DNC** program!

At first glance, both programs appear to be the same, but they each perform different functions.

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10.2.2 Differences

Table 10-1 Differences between **DNC** and **DNC Admin**

Function	DNC	DNC Admin
Background color (default)	White	Light blue/green
Configuration mode	-	X (green)
Consistency check and debugging	-	X
Configure user	-	X
Screen Form Editor	-	X
List Editor	-	X
Download NC data	X	-
Upload NC data	X	-
Machine Alignment	X	-

The **background color** should show you at a glance which program you are working in and whether you have activated configuration mode (green). You can alter the background colors in **DNC Admin** as part of the startup process. See also: readme.pdf

Additional functions in DNC Admin

Configuration mode (View→Configuration) enables you to set up and modify the plant topology. In this mode, you can set up and delete groups, machines and links, and parameterize machines. See also: Plant structure

Configure user (Options→User Management). In this screen, a user who is authorized to configure other users can set up or delete users, or change their rights, passwords, display groups, and other user-specific settings.

You can use the **Screen Form Editor** (Options→Screen Form Editor) to modify the NC Data Properties dialogs and set up new display groups for dialogs of this type.

You can use the **List Editor** (Options→List Editor), to change the appearance and content of the list display and set up new display groups for list displays of this type.

Note

These functions are available only if you have the appropriate authorization. See also: User administration

---

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Additional functions in DNC

Download NC Data (File→Download) enables you to send NC data from the **DNC** to the NC machine.

Upload NC Data (File→Upload) is the reverse process, i.e., for sending NC data from the NC machine to the **DNC** data management system.

The **Machine Alignment** function enables you to identify the programs stored on the machine, in comparison to those stored for this machine in the **DNC** data management system. You can also compare the files on the machine with the files in **DNC**. This function is only supported by machines with **SINUMERIK 840D/840Di/810D** and **PCU50/70**, as well as **DNC IFC SINUMERIK**.

Note

These functions are available only if you have the appropriate authorization.
See also: User administration

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10.3 Plant structure

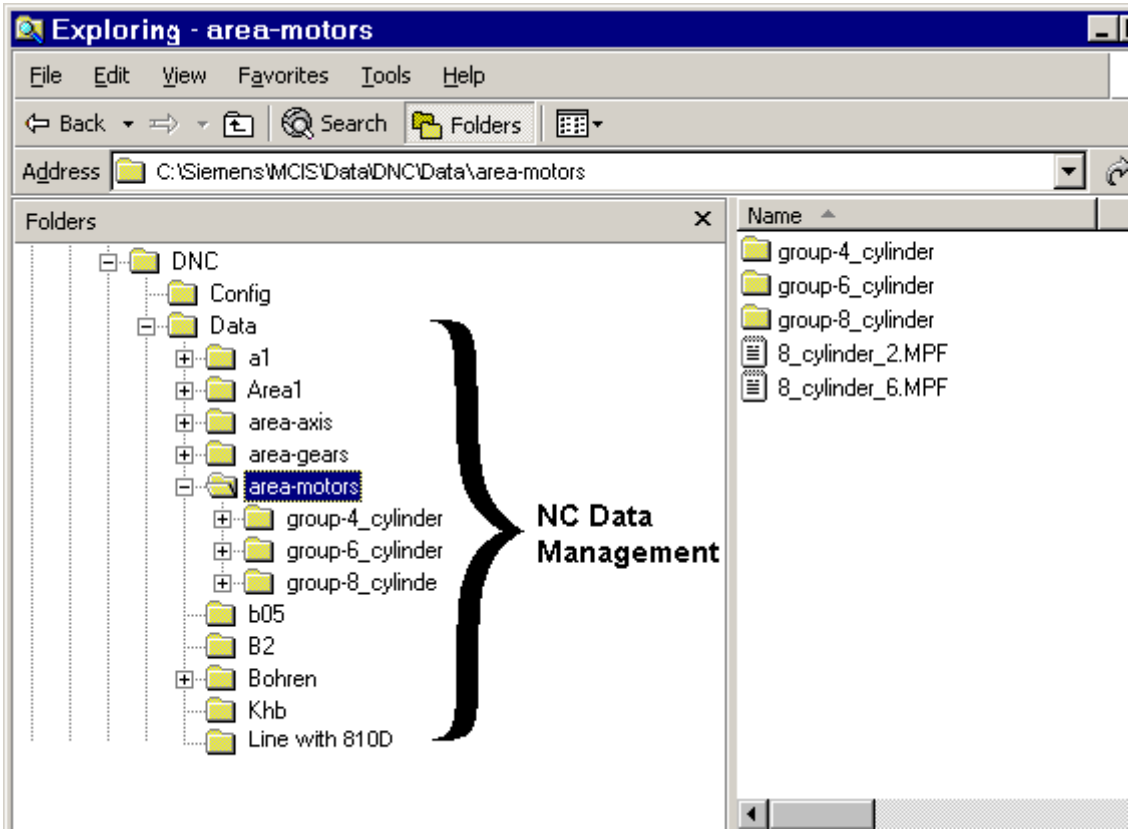

Fig. 10-1 Plant structure in the file system

The plant structure is configured via the **DNC** operator interface. Configuration mode must be selected.
The directories and subdirectories in the file system correspond to the tree structure displayed on the operator interface.

The file system is stored in path: ...Siemens\MCIS\Data\DNC\Data (default).

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10.4 Machine interfaces

The machine interfaces are configured in machine configuration files. If no configuration file exists for the selected machine, the user is provided with a selection of predefined template files for machine configurations. After a template has been selected, the configuration file is named: *MachineName*.*MCF*.

See also: Templates for configuration files

You can choose between the following types of interface:
- Serial unsecured
- SINUMERIK 840D/840Di/810D connected via Ethernet
- Via Windows file system

The entries in the machine configuration file differ accordingly.
Configuration files are divided into different sections, which are evaluated by the corresponding servers. The *MachineType* entry in the [GLOBAL] section contains the interface type. Other sections can be added to those already provided, in order to connect other servers. Comment lines are preceded by a ";".
You can edit the configuration file by clicking the **EDIT** button in the Editor.
You can edit the serially unsecured machine interface entry in the machine configuration file by calling the configuration dialog. It is started with the **Config Dialog** button. Each section is displayed on a separate tab sheet.

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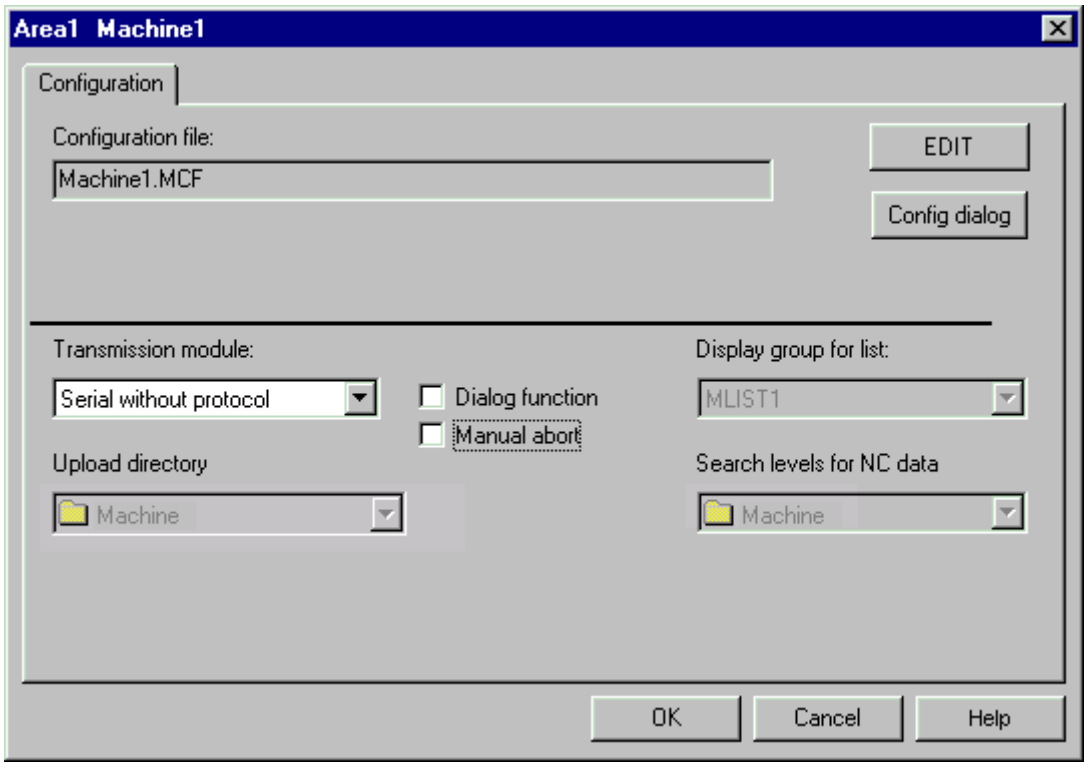

Fig. 10-2 Machine properties in download mode: Serial unsecured

Note

If the machine properties are edited in **DNC Plant** on the server, you must assign a station PC to the machine via the **Station** input field.

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Manual abort

You can control the system's response to an active NC data upload being aborted by checking the **Manual abort** box.

- When this box is checked, a dialog opens when a data receive operation is aborted; this dialog asks you to confirm whether you wish the received data to be accepted or discarded.
- If the box is not checked, the upload is aborted with no dialog. None of the received data are received.

See also: Uploading NC data from the machine

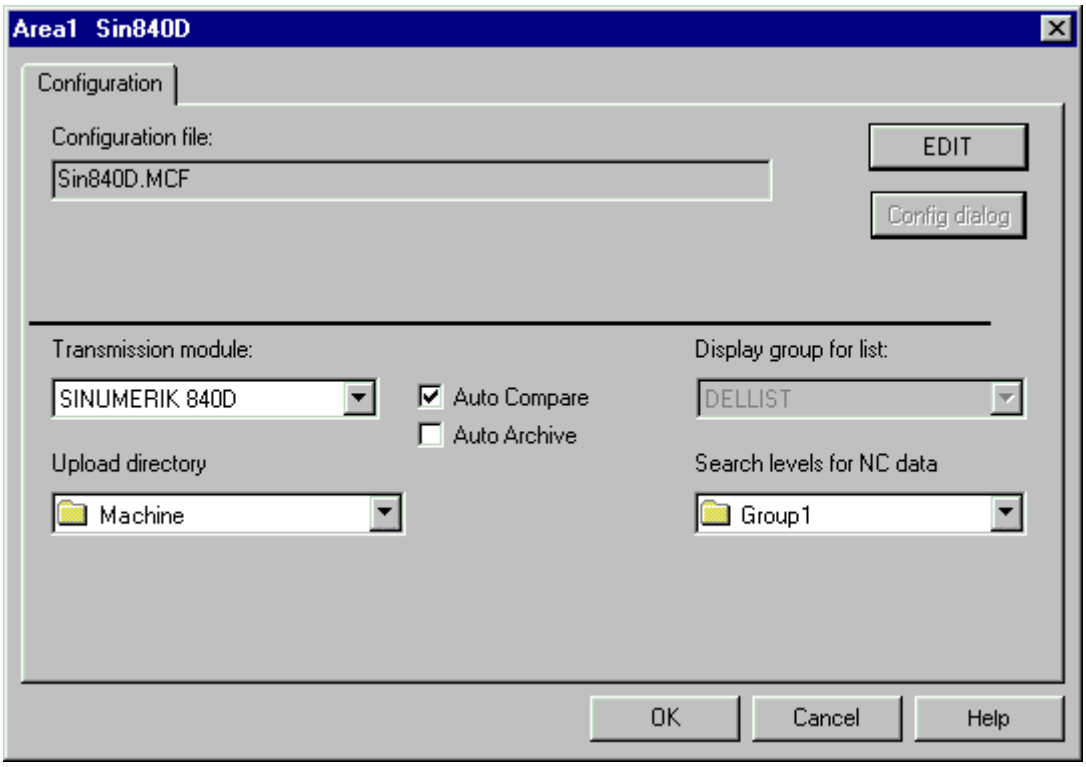

Fig. 10-3 Machine properties in download mode: SINUMERIK 840D/840Di/810D

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10.4.1 Machine configuration files

Standard configuration files

DNC uses the following standard machine configuration files:

- Dncmastd.MCF for machine interfaces with a serial, unsecured interface
- SIN840DStd.MCF for SINUMERIK 840D/840DI/810D machine interfaces
  When the Auto Compare and Auto Archive boxes are checked, the NC data from SINUMERIK 840D/840Di/810D machines are compared with the NC data in the **DNC** system. If deviations are detected, the machine data are automatically downloaded to the **DNC** system.
- With the **file system** machine type, it is possible to transfer NC data to and from any shared network drives. Any network-capable control system can be linked to the DNC system under Windows. There are two configurable directories for uploading and downloading NC data. The version strategy is used for uploading. The management data are refreshed as they are uploaded or downloaded.
- It is also possible to create any kind of machine server to make a link to controls with other types of interface, e.g., OLE/COM, or special serial protocols.

Note

No defaults are specified in the machine configuration files for some parameters with string assignment. If you are using functions that contain parameters with string assignments, the standard machine configuration file should be adjusted so that all relevant entries are available. Separate adjustments do not then have to be made for each individual machine.

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Templates for configuration files

Apart from the standard machine configuration files, you can also create your own machine configuration file templates. The following supplementary conditions apply in this context:

- The file extension must be **.MCF**.
- The files must include a [GLOBAL] section with a MachineType key corresponding to the selected control type:

Table 10-2 Control types for machine configuration file templates

Template file	MachineType	Remarks
Dncmastd.MCF ...	Serial	For unsecured serial transmission
SIN840DStd.MCF	SINUMERIK840D	For SINUMERIK 810D/840Di/840D
DNCFSStd.MCF	File system	For transmission to network drives

! Important

You must store the templates in the ...config/template directory.

It includes the following 3 template files as standard:

- Dncmastd.MCF, etc.
- SIN840DStd.MCF
- DNCFSStd.MCF

If the ...config/template directory contains several template files of the selected machine type, you can click the **Edit** or **Config Dialog** button to open a template selection dialog, in which you can select any of the stored template files. Various template files are available for controls from different manufacturers.

Note

This selection dialog is displayed only if the template directory contains more than one template file of the corresponding machine type.

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10.4.2 Standard machine configuration file for serial unsecured interface

Table 10-3 Example of a machine configuration file for the serially unsecured interface

```
; MCIS DNC V2 Machine configuration templatefile
; Base: "__standard-serial.MCF"
; more infos see the machine configuration documentation on
; Install-CDROM in "IBS_Docu\Machine-configuration-docu\*.pdf"
;
[GLOBAL]
MachineType=serial
MachineServer=SerIntSvr.Machine
   ;
[SERINTSVR]
   ;CNCConverter=DNCConv.CodeConvert
CNCConverter=

   ;Server for Code conversion
[DNCConv]
   ;CNCcode=  (ASCII,ISO,EIA)
CNCcode=ISO

   ;Serial COM-port Paramter
[COM]
   ;---CommPort---:  1=COM1 ... 16=COM16
ComPort =  2
   ;---BaudRate---: 110, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 ;57600, 115200
Bd
BaudRate = 9600
   ;---ByteSize---: 6,7,8
ByteSize = 8
   ;---StopBits---: 1, 2
StopBits = 1
   ;---Parity---: No=N, Odd=O, Even=E; Mark=M; Space=S
Parity = N
   ;---FlowCtrl---: DTRDSR, RTSCTS, XONXOFF, NONE
FlowCtrl = RTSCTS
   ;---XON/XOFF---: in ASCII-decimal- Code (0 ... 255)
XONChar=17
XOFFChar=19
  ;---Binary---: 0= NO 1 = YES (transfermode: 0=ASCII, 1=binary)
Binary = 0

   ;Program Output Parameter
[SEND]
   ;Parameters in ASCII- Dezimal- Code (0 ... 255)
   ;---ProgramStart---: (character, added before each file)
ProgramStart=0
   ;---ProgramEnd---: (character, added after each file)
ProgramEnd=0
   ;---CommentStart---: (character which marks the begin of an comment)
CommentStart=40
   ;---CommentEnd---: (character which marks the end of an comment)
CommentEnd=41
   ;---HeaderChar---: (character, added "HeaderSize"-times before each file)
HeaderChar=0
   ;---TrailerChar---: (character, added "TrailerSize"-times before each file)
TrailerChar=0
   ;---HeaderSize---: (Size in Bytes to add Parameter "HeaderChar" before each file)
HeaderSize=0
   ;---TrailerSize---: (Size in Bytes to add Parameter "TrailerChar" after each file)
TrailerSize=0
   ;---SpacerChar---: (character, added "SpacerSize"-times before/after each
SpacerMark)
SpacerChar=0
   ;---SpacerSize---: (Size in Bytes to add Parameter "SpacerChar" before/after each
SpacerMark)
SpacerSize=0
   ;---SkipFirstSpacerMark---: 0= NO 1 = YES (to suppress Spacer before 1. NC Programm)
SkipFirstSpacerMark=0
   ;---SpacerMarkers (max 16 Byte each)
   ;---SpacerMark1..3 ---: (before each line in which these SpaceMarkers appear a
spacer will be inserted)
   ;SpacerMark3=%MPF
SpacerMark1=
SpacerMark2=
```

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```
SpacerMark3=
   ;---SpacerMarkInsertAfter1..3 ---:(after each line in which this SpacerMarkers
appear a spacer will be inserted)
   ;SpacerMarkInsertAfter3=M30
SpacerMarkInsertAfter1=
SpacerMarkInsertAfter2=
SpacerMarkInsertAfter3=
   ;---EOBcode---:    (This parameter is used for the end of line conversion to/from
CNC)
   ; 0=No, 1 = CR + CR, 2 = CR + LF, 3 = LF + CR, 4 = LF + LF,
   ; 5 = CR + CR + CR,   6 = CR + CR + LF,   7 = CR + LF + CR,   8 = CR + LF + LF,
   ; 9 = LF + CR + CR,  10 = LF + CR + LF,  11 = LF + LF + CR,  12 = LF + LF + LF,
   ; 13 = CR, 14 = LF
EOBcode=0
   ;---SuppressComment---: 0= NO 1 = YES (comments will not be transferred)
SuppressComment=0
   ;---SendTimeOut in minutes---: 0= infinite (job will be cancelled after that time,
if machine is not in receive mode)
SendTimeout=1
   ;---Different Baudrate for sending---: (SendBaudRate=0 = same Baudrate as in [COM]
section)
SendBaudRate=0
   ;---SendDelay in seconds---: (the system waits for this time before the data will be
send to the machine)
SendDelay=0

   ;Program Input Parameter
[RECEIVE]
   ;---Parameters in ASCII- Dezimal- Code (0 ... 255)---
   ;---ValidData---: (This charakter shows the first valid character of the NC-program.
All charakters before will be cut)
ValidData=0
   ;---ProgramStart---: (character in ASCII dec. added in front of each file after
uploading)
ProgramStart=0
   ;---ProgramEnd---: (character in ASCII dec. trailed at the end of each file after
uploading)
ProgramEnd=0
   ;---EofChar---: (character, which indicates the end of uploading) 0=none -> receive
ends after TimeOut (see below)
EofChar=0
   ;TimeOut in seconds. Uploading is stopped after this time, if no bit further more is
received (1 ... 600, 0=infinite)
TimeOut=5
   ;---HeaderSize---: (Size in Bytes to cut from program header after receiving each
file)
HeaderSize=0
   ;---TrailerSize---: (Size in Bytes to cut from program end after receiving each
file)
TrailerSize=0
   ;---NullDiscard---: 0 = NO 1 = YES (binary NULL values will discarded everywhere in
the file)
NullDiscard=1
   ;---TestMode---: 0 = NO 1 = YES (received Tmpfile will not be deleted)
TestMode=0

   ;---NCSplit---: 0= deactivated  1 = SINUMERIK 840D  2 = any other CNC
NCSplit=0
   ;---NCNameLines---: (number of the signifcant lines, beginning with line 1)
NCNameLines=5
   ;---NCNameBegin---: Startmark in front of NameInfo
NCNameBegin=#Name#
   ;---NCNameEnd---: Endmark behind NameInfo
NCNameEnd=#End#
   ;---NCNameWPD---: seperator between WPD and Name
NCNameWPD=
   ;---NCNameType---: seperator between Name and Type
NCNameType=
   ;
NCProgrammStart1=%
   ;
NCProgrammStart2=
   ;
NCProgrammStart3=
   ;
NCProgrammEnd1=M30
   ;
NCProgrammEnd2=M17
   ;
```

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```
NCProgrammEnd3=

[DIALOGFUNCTION]
   ;---DlgScanLines---: (number of the signifcant lines, beginning with line 1)
DlgScanLines=10
   ;---Parameters in special ASCII-Character- Words---
   ;---DlgID---: (Name of the dialogue file)
DlgID=%MPF9999
   ;---DlgIDSend---: (Name of the answer file (list, error), sent from DNC_NT to
machine)
DlgIDSend=%MPF9998
   ;---DlgSendEnd---: (Program End for the answer file (list, error), sent from DNC_NT
to machine)
DlgSendEnd=M30
   ;---DlgSendCmd---: (character which indicades to download a file with releaseID)
DlgSendCmd=(S)
   ;---DlgSendTcCmd---: (character which indicades to download a file with trialcutID)
DlgSendTcCmd=(ST)
   ;---DlgReceiveCmd---: ( character which indicades to upload a file from machine to
DNC)
DlgReceiveCmd=(R)
   ;---DlgSendListCmd---: ( character which indicades to download a filelist of the
machinedirectory in DNC)
DlgSendListCmd=(SL)
   ;---DlgWpdMark---:  (allows to change the shortcut of an workpiece directory)
DlgWpdMark=WPD
   ;if it is impossible to write MPF, SPF, TOA ... you can define a character followed
by a number
   ;Y001 = MPF, Y002 = SPF, Y003 = TOA ... ordernumber as defined in Databasetable
NCDATATYPE
DlgExchangeCNCType=
   ;in exchange for * if it is impossible to write *, eg. X999 (only for use with
DlgSendListCmd!)
DlgExchangeWildcard=

   ;DlgConverter=DNCDlgI.DNCCntrl
DlgConverter=
DlgSubNumber=0

   ;CutFromName=


   ;------- The following parameters are directly corresponding to MiniDNC ------------
---------------
   ;
   ;MiniDNC                          DNC_NT-2000
   ;#####################################

   ;   [COM]
   ;   #1210                 [COM] XONChar
   ;   #1211                 [COM] XOFFChar
   ;   #1401                 [COM] ComPort,  or Paramter: [SEND] SendBaudRate
   ;   #1402                 [COM] FlowCtrl,
   ;   #1403                 [COM] BaudRate, Parity, ByteSize, StopBits
   ;   #1501                 [COM] ComPort,
   ;   #1502                 [COM] FlowCtrl,
   ;   #1503                 [COM] BaudRate, Parity, ByteSize, StopBits
   ;   not existent          [COM] binary

   ;   [SEND]
   ;   #1201                 [SEND] ProgramStart
   ;   #1202                 [SEND] ProgramEnd
   ;   not existent          [SEND] CommentStart
   ;   not existent          [SEND] CommentEnd
   ;   #1205                 [SEND] HeaderChar
   ;   #1207                 [SEND] TrailerChar
   ;   #1204                 [SEND] HeaderSize
   ;   #1206                 [SEND] TrailerSize
   ;   #1209                 [SEND] SpacerChar
   ;   #1208                 [SEND] SpacerSize
   ;   not existent          [SEND] SkipFirstSpacerMark
   ;   #1217                 [SEND] SpacerMark1
   ;   #1218                 [SEND] SpacerMark2
   ;   #1219                 [SEND] SpacerMark3
   ;   #1220                 [SEND] SpacerMarkInsertAfter1
   ;   not existent          [SEND] SpacerMarkInsertAfter2
   ;   not existent          [SEND] SpacerMarkInsertAfter3
   ;   #1203                 [SEND] EOBcode
   ;   not existent          [SEND] SuppressComment
```

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```
;   #1103                   [SEND] SendTimeout
;   #1401                   [SEND] SendBaudRate
;   #1117                   [SEND] SendDelay

;   [RECEIVE]
;   #1302                   [RECEIVE] ValidData
;   #1303                   [RECEIVE] ProgramStart
;   #1304                   [RECEIVE] ProgramEnd
;   not existent            [RECEIVE] EofChar
;   #1102                   [RECEIVE] TimeOut
;   #1301                   [RECEIVE] HeaderSize
;   not existent            [RECEIVE] TrailerSize
;   #1324                   [RECEIVE] NullDiscard
;   not existent            [RECEIVE] TestMode

;   [DIALOGFUNCTION]
;   not existent            [DIALOGFUNCTION] DlgScanLines
;   #1109                   [DIALOGFUNCTION] DlgID
;   not existent            [DIALOGFUNCTION] DlgIDSend
;   #1123                   [DIALOGFUNCTION] DlgSendCmd
;   not existent            [DIALOGFUNCTION] DlgSendTcCmd
;   #1124                   [DIALOGFUNCTION] DlgReceiveCmd
;   not existent            [DIALOGFUNCTION] DlgSendListCmd
;   not existent            [DIALOGFUNCTION] DlgWpdMark
;   not existent            [DIALOGFUNCTION] DlgExchangeCNCType
;   not existent            [DIALOGFUNCTION] DlgExchangeWildcard
;   #1101                   [DIALOGFUNCTION] DlgConverter
;   not existent            [DIALOGFUNCTION] DlgSubNumber

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```

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10.4.3 Standard machine configuration file for interface type SINUMERIK 840D/840Di/810D

Table 10-4 Example of a machine configuration file for interface type SINUMERIK 840D/840Di/810D

```
[GLOBAL]
MachineType=SINUMERIK840D
;  NCU_Id=NCU Identifier, only for N:M functionality
;  NCU_Id=NCU_1
;  MachineIpAddress=195.212.26.xxx   (or MMC Computername)
MachineIpAddress=127.0.0.0
;  DHPath = Sharename of the released Network-Path of
;  MMC/PCU e.g. PCU50: the directory f:\dh is shared as
;  "data" --> DHPATH=data
DHPath=c\dh
;  You can use FTP for Filetransfer, if you have an FTP-Server
;  in your Subnet available. UseFTP  0=NO, 1=YES
;  Note: You must set the right ftp-path in your ftp-settings, to
;  put the files in the DNC directory
UseFTP = 0

NC_LOGIN=
DCOMDhsWait=20

[FTP]
;  HostIpAddress=  (or DNC Computername)
HostIpAddress=127.0.0.0
User=???
Password=???
;  Mode (1=ASCII/2=Binär)
Mode=2

[COMPARE]
; Specify directories on the SINUMERIK 810D/840DI/840D/810D side, which have to be
compared with
; the directories in the DNC-System
; AutoArchive-function will archive missing directories in the DNC-System
; if necessary, compare or archive DH-directories (ARC...) with a pseudo-workpiece-
; directory (*.DIR)
; limit to special filetypes, if requested
;
;
;  EXAMPLES:
;      DHDIR2 = SPF.DIR;0; SPF
;           ^ 2: second DH-Direcory. List all your DH-DIRs. from 1-30, if necessary.
;
;      DHDIR2 = SPF.DIR;0; SPF
;               ^^^^^^^ SPF.DIR is the name of the DH-directory.
;                       Files belonging to  DH\SPF.DIR (SINUMERIK) will be
;                       compared/archived
;
;      DHDIR5 = CST.DIR;TRUE; AWB;COM;SPF
;                       ^^^^ TRUE: specifies, that files from this DH-directory will be
;                            archived in a PSEUDO-Workpiece(*.DIR) (here: CST.DIR)
;
;                       TRUE  or 1:  DH-directory will be archived as a Pseudo-
;                                    workpiece-directory in DNC-System
;                       FALSE or 0:  files of the DH-directory will be archived
;                                    directly in the default-upload-directory
;                                    in the DNC-System
;
;      DHDIR3 = WKS.DIR;0; MPF;SPF;TOA
;                          ^^^^^^^^^^^ MPF;SPF;TOA: Listing of filetypes,
;                                      which have to be compared/archived.
;                                      Caution: All filetypes have also to be
;                                      configurated in the DNC-database!!
;
;  Exclude special files from comparing/archiving-function.
;  EXAMPLES:
;      DHDIR1= MPF.DIR;0; MPF; CEC
;      EXCLUDE_MPF.DIR = Test; Test1
;                        ^^^^^^^^^^^^Test.mpf, Test.cec,Test1.mpf and Test1.cec
;                                    of the the DH-directory "MPF.DIR" will be excluded
;
```

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```
DHDIR1= MPF.DIR;0; MPF
EXCLUDE_MPF.DIR =

DHDIR2= SPF.DIR;0; SPF
EXCLUDE_SPF.DIR =

DHDIR3 = WKS.DIR;0; MPF;SPF;TOA;ZOA;RPA;WPL;JOB;BMP;ARC;INI
EXCLUDE_WKS.DIR =

DHDIR4= ARC.DIR;1; ARC
EXCLUDE_ARC.DIR =

;
; Note: If you don't find the directory, you want in this list, please
; refere the MMC/PCU - Services and add the directory you want with the
; next free DHDIR - Number (e.g. 11).


;Sicherungsauftrag für NC aktive Daten
'Archivauftragsdatei muss in selben Verzeichnis liegen wie der DHS.EXE
;ARCJOB=NCACT1
;zu erstellende Archivdatei in der Datenhaltung
;ARCFILE=NCACT1.ARC
'Timeout in Minutes
ARCTIMEOUT= 5


[REMOTELOGIN]
; Only necessary, if FTP is not used
; IP-Address, DNS or NetBIOS name of the Remote Network Server, default is
; the Name of the Machine in the network like in [GLOBAL] MachineIpAddress
RemoteName=PCUxxxxxxx

; User with read/write access to the network share/directory of [GLOBAL] DHPath
User=AUDUSER

; Password for the User with read/write access the network share
Password=*******

; Domainname, where this user is assignet to, if it is a local user in e.g.
; Win NT or XP, same like [REMOTELOGIN] RemoteName  (PCUxxxxxxx)
Domain=PCUxxxxxxx

[ULOADDLG]
;DHDIR1=MPF.DIR
;DHDIR2=SPF.DIR


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```

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10.4.4 Configuration dialog for serial unsecured interface

General tab sheet/section [GLOBAL]

The General tab sheet describes the [GLOBAL] section of the machine configuration file. The machine server to be used is configured here. The program identifier (ProgID, consisting of *ComponentName*.*ClassName*) of the relevant machine server must be entered for this purpose.

Note

The serial machine server is called: SerIntSvr.Machine (default).

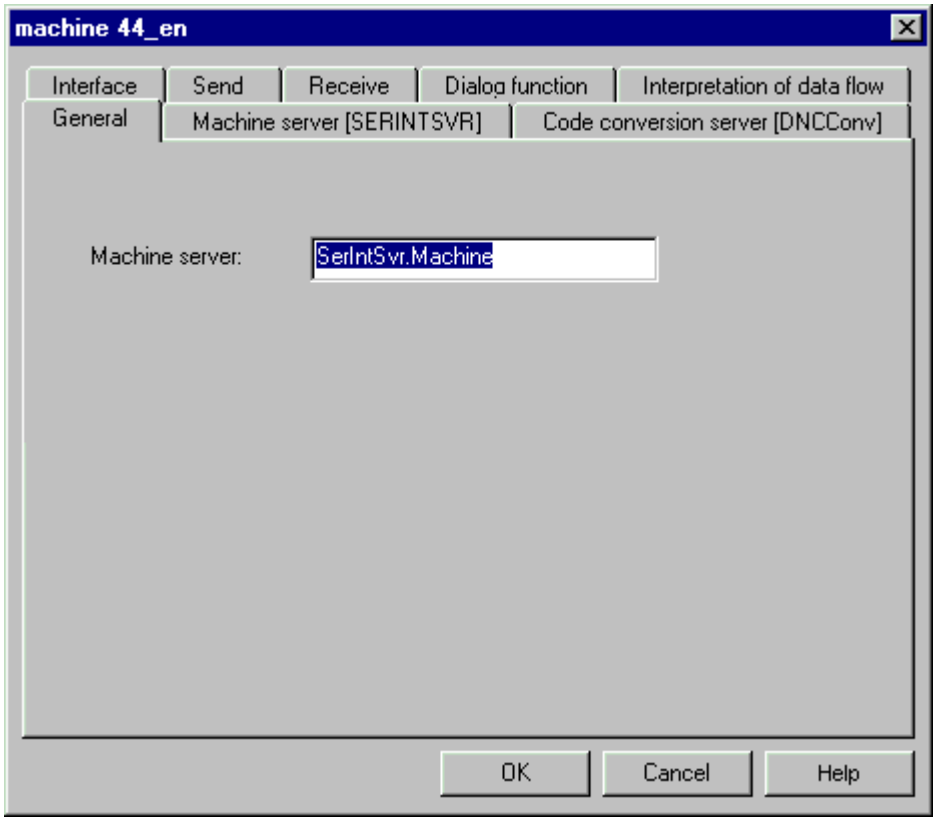

Fig. 10-4 Config dialog/tab sheet: General

Extract from the machine configuration file:

```
[GLOBAL]
MachineServer=SerIntSvr.Machine
```

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Machine server tab sheet/section [SERINTSVR]

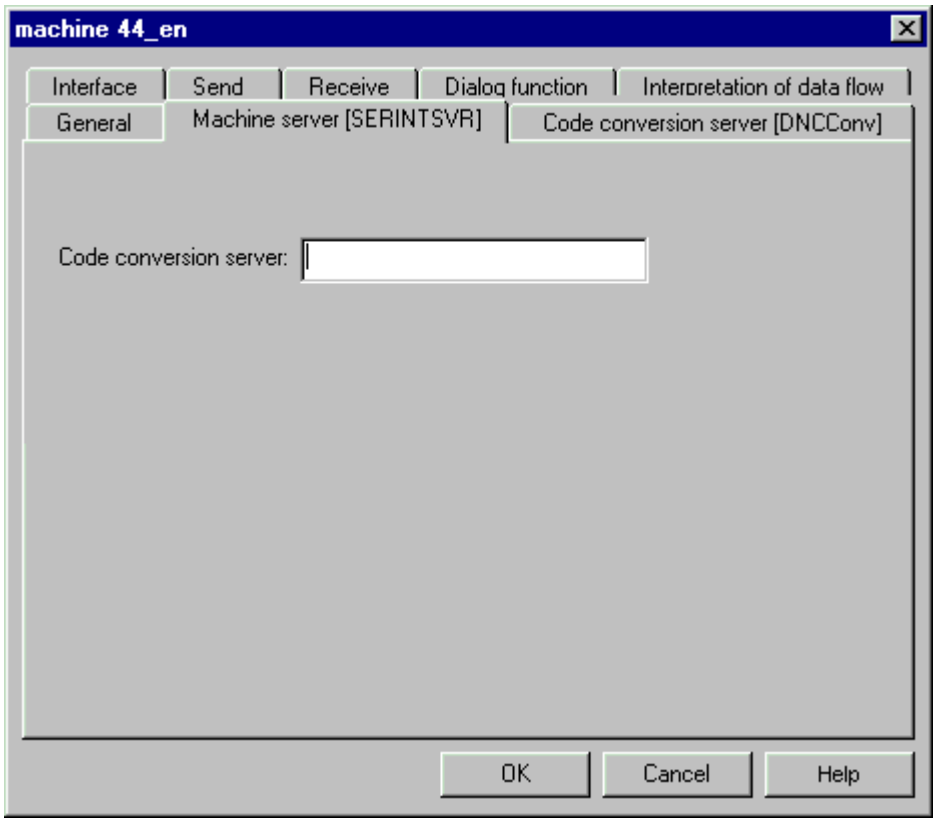

Fig. 10-5 Config dialog/tab sheet: Machine server

The Machine server tab sheet describes the [SERINTSVR] section of the machine configuration file. The code conversion server to be used is configured here. The program identifier (ProgID, consisting of *ComponentName*.*ClassName*) of the relevant code conversion server must be entered for this purpose.

Note

The code conversion server is called: DNCConv.CodeConvert (default).
If you wish the code conversion server to be run by another machine server, we recommend that you add a new section for this purpose.

Warning

If you do not want to perform code conversion, do not enter a code conversion server.

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Extract from the machine configuration file:

```
[SERINTSVR]
;CNCConverter=DNCConv.CodeConvert
```

Note

The extract from the machine configuration file shows a code conversion server as comment text because no code conversion is to be performed.

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Code conversion server tab sheet/section [DNCConv]

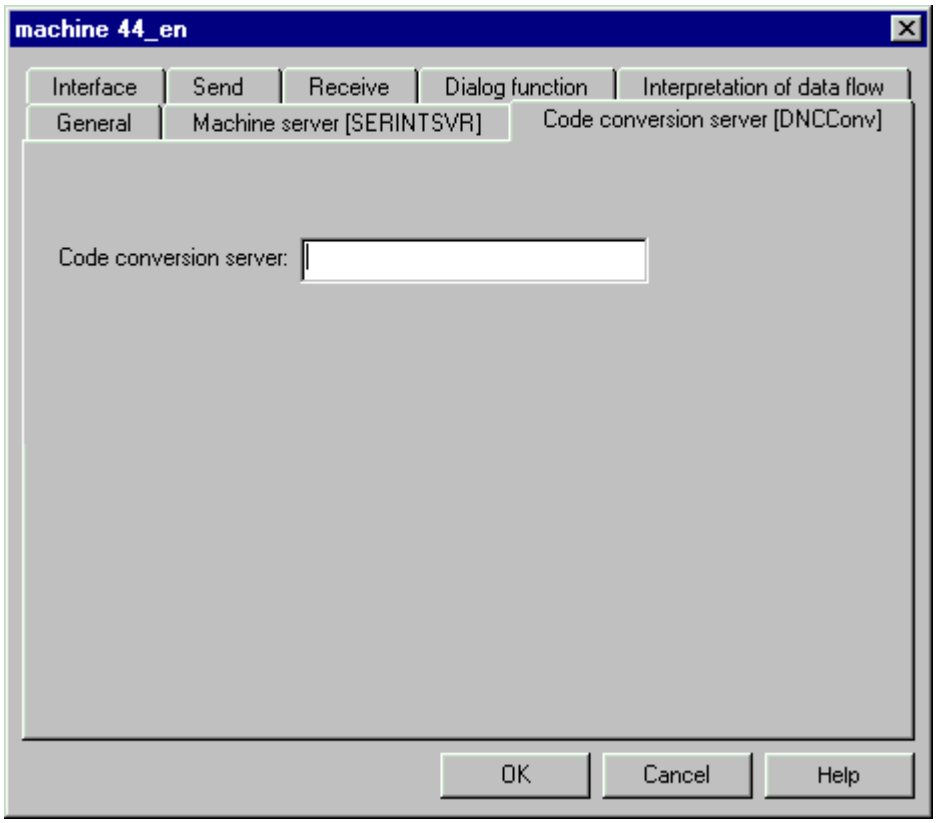

Fig. 10-6 Config dialog/tab sheet: Code conversion server

The Code Conversion Server tab sheet describes the [DNCConv] section of the machine configuration file. The type of code conversion is configured here. In this case, NC is converted from ASCII (ISO, EIA) to CNC code for downloads and back to ASCII (ISO, EIA) for uploads.
You can select the following code conversions in a combo box:

- ASCII
- ISO
- EIA

Note

If you do not want code conversion to be performed, simply omit the entry of a code conversion server in the [SERINTSVR] section or on the tab.

```
;CNCConverter=DNCConv.CodeConvert
```

Extract from the machine configuration file:

```
DNCConv]
CNCcode=ISO
```

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Interface tab sheet/section [COM]

The Interface tab sheet describes the [COM] section of the machine configuration file. The serial interface parameters are set here:

Note

The entries on the Interface tab must match the settings of the serial interface of the CNC machine.

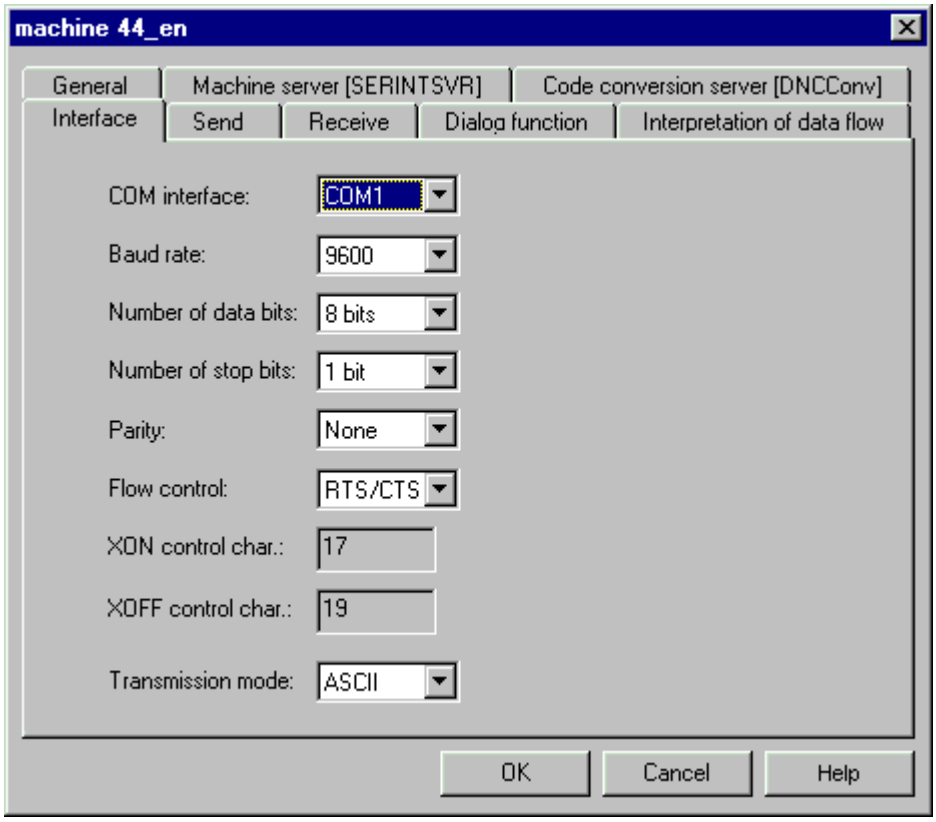

Fig. 10-7 Config dialog/tab sheet: Interface

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- COM interface
  The COM interface is the machine interface. Interfaces 1 to 16 can be assigned.

  1= COM1
  ....
  16= COM16

  Extract from the machine configuration file:
  ```
  [COM]
  ComPort = 2
  ```

Note

ComPort=0 is not a valid interface.

- Baud rate
  The baud rate defines the transmission speed of the interface.
  Baud rates between 110 and 256000 can be selected.

  Extract from the machine configuration file:
  ```
  BaudRate = 9600
  ```

- Number of data bits
  6, 7 or 8 bits can be evaluated as data bits.

  Extract from the machine configuration file:
  ```
  ByteSize = 8
  ```

- Number of stop bits
  1 or 2 bits can be evaluated as stop bits.

  Extract from the machine configuration file:
  ```
  StopBits = 1
  ```

- Parity
  The following parities can be defined:

Table 10-5 Parity of the serial interface

N=No	No parity check
O=Odd	Odd parity
E=Even	Even parity
M=Mark	Logical 1
S=Space	Logical 2

Extract from the machine configuration file:
```
Parity = N
```

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- Flow control
  The flow control defines the handshake procedure setting. You can define the following parameters:

Table 10-6 Flow control of the serial interface

DTRDSR (DTR/DSR)	Hardware handshake
RTSCTS (RTS/CTS)	Hardware handshake
XONXOFF (XON/XOFF)	Software handshake
NONE	No handshake

Extract from the machine configuration file:
```
FlowCtrl = RTSCTS
```

- XON control character/XOFF control character
  If control systems with a different code type are connected, the XON or XOFF character can deviate from the character specified here. If flow control is controlled with XON/XOFF, the control character for XON/XOFF must be defined to suit the control.

  Extract from the machine configuration file:
```
;XONChar=17
;XOFFChar=19
```

Note

If the control characters for XON/XOFF are deactivated as comment text in the machine configuration file, the internal defaults apply.

- Transmission mode
  This defines the mode of transmission. The following transmission modes are available:

Table 10-7 Transmission modes of the serial interface

0	ASCII
1	Binary

Note

The transmission mode forwarded 1:1 and no editing is performed prior to transmission.

Extract from the machine configuration file:
```
Binary = 0
```

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Send tab sheet/section [SEND]

The Send tab sheet describes the [SEND] section of the machine configuration file. The transmission parameters of the machine server are set here.

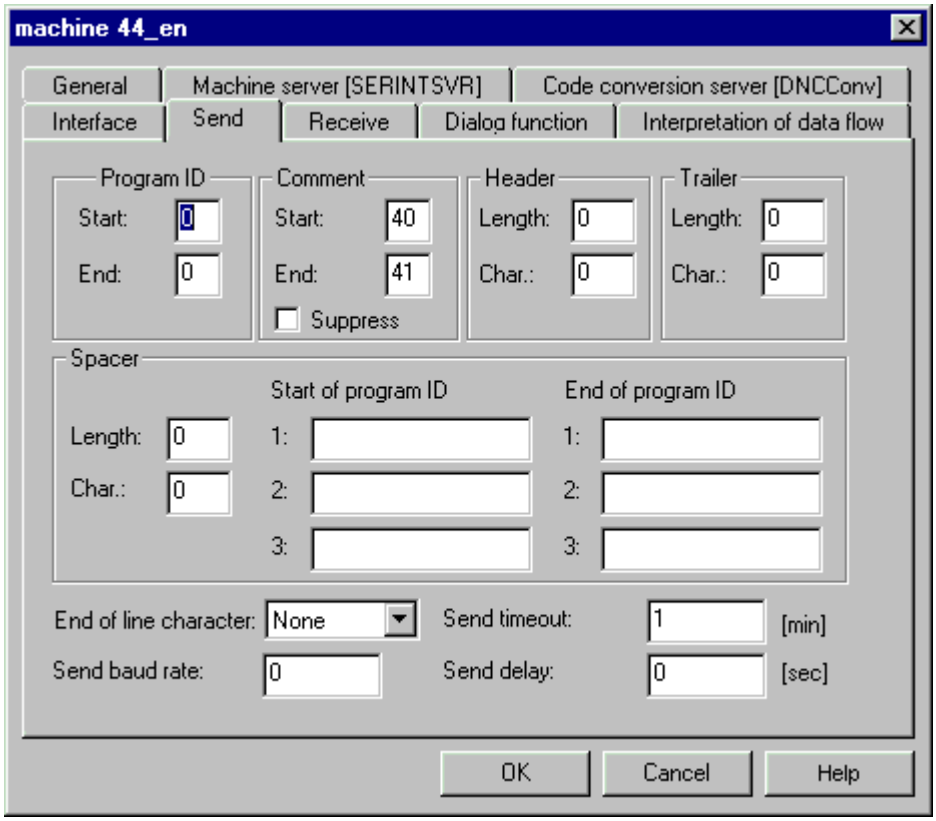

Fig. 10-8 Config dialog/tab sheet: Send

Note

The ASCII characters are entered in decimal code (0 to 255).

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- Program start ID
  The program start identifier defines the program start marker inserted in front of every NC data file as an ASCII character in decimal code (0 to 255). (Example 065 for A)

  Extract from the machine configuration file:
  ```
  ProgramStart=65
  ```

- Program end ID
  The program end identifier defines the program end marker added at the end of every NC data file as an ASCII character in decimal code (0 to 255). (Example 069 for E)

  Extract from the machine configuration file:
  ```
  ProgramEnd=69
  ```

- Comment start
  The comment start identifier defines the comment start marker inserted in front of every comment as an ASCII character in decimal code (0 to 255). (Example 075 for K)

  Extract from the machine configuration file:
  ```
  CommentStart=75
  ```

- Comment end
  The comment end identifier defines the comment end marker added at the end of every comment as an ASCII character in decimal code (0 to 255) (example 101 for e).

  Extract from the machine configuration file:
  ```
  ProgramEnd=101
  ```

- Suppress comment
  This box can be checked to suppress comments when NC data are transmitted.

Table 10-8 Comment during transmission

0	Comment is transmitted with other data
1	Comment is suppressed

Extract from the machine configuration file:
```
SupressComment=1
```

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- Header length
  The leader length is specified in bytes. It describes the number of header characters to be inserted.

  Extract from the machine configuration file:
  ```
  HeaderSize=8
  ```

- Header character
  The header character is inserted with the “header length” factor as an ASCII character in decimal code (0 to 255) (example 072 for H).

- Extract from the machine configuration file:
  ```
  HeaderChar=72
  ```

Note

The header then looks like this: HHHHHHHH

- Trailer length
  The trailer length is specified in bytes. It describes the number of trailer characters to be appended.

  Extract from the machine configuration file:
  ```
  TrailerSize=6
  ```

- Trailer character
  The trailer character is inserted with the “trailer length” factor as an ASCII character in decimal code (0 to 255). (Example 078 for N)

  Extract from the machine configuration file:
  ```
  TrailerChar=78
  ```

Note

The trailer then looks like this: TTTTTT

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- Spacer
  If a file contains several NC programs to be downloaded together to the machine, on some controls it will be necessary to insert a spacer between the individual programs.
  A spacer consists of a configurable number (SpacerSize) of identical characters (SpacerChar).

Note

Spacers are converted when code conversion is selected (unlike the header and trailer, which must be configured directly according to the code type).

Up to 6 strings can be configured to search for a location to insert a spacer. Three strings are for the search for a program start identifier (**SpacerMark1.. 3**) and three for the search for a program end identifier (**SpacerMarkInsertAfter1..3**).

Note

Searches should be configured either for program start identifiers only or for program end identifiers only. Mixed searches can cause two spacers to be inserted between the NC programs.

With a program start identifier search, the spacer is inserted in front of the line with the start identifier.
With a program end identifier search, the spacer is inserted after the line with the end identifier.

- Spacer length
  The spacer length is specified in bytes. It describes the number of spacer characters to be inserted.

  Extract from the machine configuration file:
  ```
  SpacerSize=15
  ```

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- Spacer character
  The spacer character is added to the “spacer length” factor as an ASCII character in decimal code (0 to 255) (example 090 for Z).

  Extract from the machine configuration file:
  ```
  SpacerChar=90
  ```

Note

The spacer then looks like this: SSSSSSSSSSSSSS

Up to 6 strings can be configured to search for a location to insert a spacer. Three strings are for the search for a spacer program start identifier (**SpacerMark1..3**) and three for the search for a spacer program end identifier (**SpacerMarkInsertAfter1..3**).

Note

Searches should be configured either for spacer program start identifiers only or for spacer program end identifiers only. Mixed searches can cause two spacers to be inserted between the NC programs.

- Spacer start of program ID
  The spacer is inserted in front of the line containing the program start identifier. Program start identifiers can be up to 16 characters long.

  Extract from the machine configuration file:
  ```
  SpacerMark1 =%MPF
  SpacerMark2 =%SPF
  SpacerMark3 =
  ```

- Spacer end of program ID
  The spacer is inserted after the line containing the program end identifier. Program end identifiers can be up to 16 characters long.

  Extract from the machine configuration file:
  ```
  SpacerMarkInsertAfter1 =M30
  SpacerMarkInsertAfter2 =M17
  SpacerMarkInsertAfter3 =
  ```

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- End-of-line character
  The end-of-line character is the character, which identifies the end of a line. If conversion of the end-of-line character is selected, SerIntSvr will proceed as follows:
  - When data are transferred to the machine, all end-of-line characters are converted to CR-LF.
  - When data are transmitted back from the machine, all CR-LF and LF are converted as follows:

Table 10-9 End-of-line character conversion during transmission

End-of-line character	Meaning
0	Not converted
1	CR CR
2	CR LF
3	LF CR
4	LF LF
5	CR CR CR
6	CR CR LF
7	CR LF CR
8	CR LF LF
9	LF CR CR
10	LF CR LF
11	LF LF CR
12	LF LF LF
13	CR
14	LF

Extract from the machine configuration file:
```
EOBcode=0
```

- Send baud rate
  The send baud rate specifies the transmission rate for transferring data, which deviate from the interface definition ([COM] section). If the send baud rate is set to 0, the baud rate of the interface definition ([COM] section) is used.

  Extract from the machine configuration file:
  ```
  SendBaudRate =0
  ```

- Send timeout
  The send timeout specifies the time in minutes at the end of which the send job will be aborted if the machine is not ready to receive. The value 0 stands for unlimited waiting.

  Extract from the machine configuration file:
  ```
  SendTimeout=1
  ```

- Send delay
  The send delay specifies the time in seconds by which the send job to the machine will be delayed.

  Extract from the machine configuration file:
  ```
  SendDelay=0
  ```

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Receive tab sheet/section [RECEIVE]

The Receive tab sheet describes the [RECEIVE] section of the machine configuration file. The return transmission parameters of the machine server are set here.

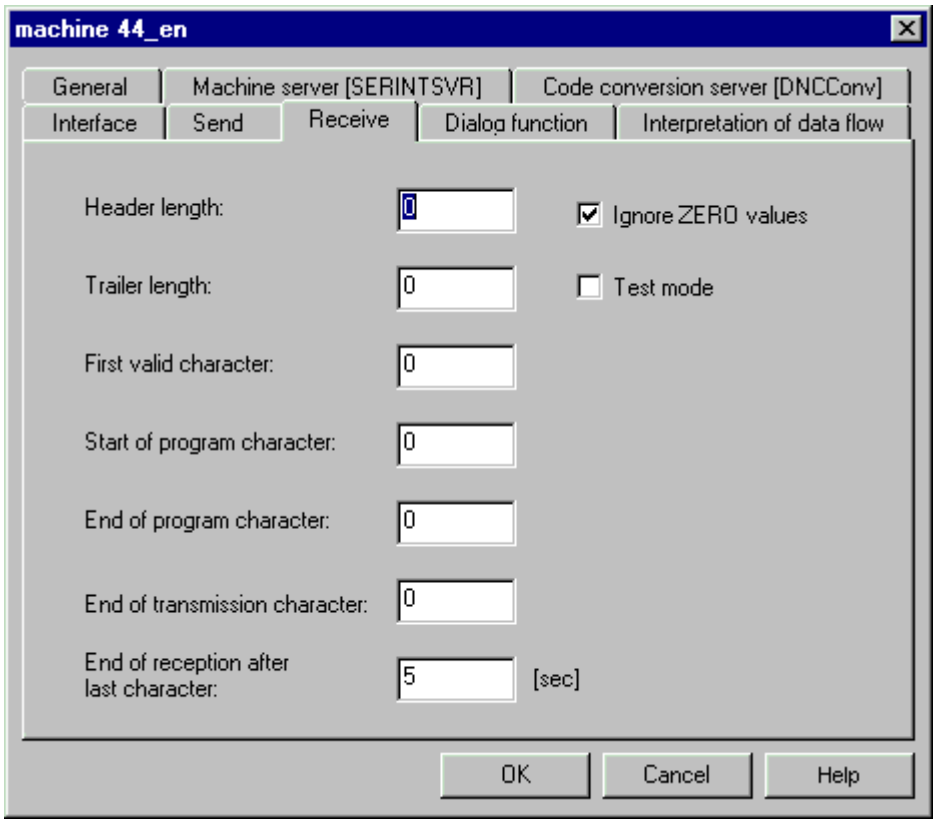

Fig. 10-9 Config dialog/Receive tab sheet

Note

The ASCII characters are entered in decimal code (0 to 255).

- Header length
  The header length is specified in bytes. It describes the number of header characters to be removed after receiving.

  Extract from the machine configuration file:
  ```
  HeaderSize=8
  ```


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- Trailer length
  The trailer length is specified in bytes. It describes the number of trailer characters to be removed after receiving.

  Extract from the machine configuration file:
  ```
  TrailerSize=6
  ```

- First valid character
  This is the first valid character of the NC program as an ASCII character in decimal code (0 to 255) (example 086 for V). It is searched for in the header range. All characters before this first valid character are cut off.

  Extract from the machine configuration file:
  ```
  ValidData=86
  ```

- Start of program character
  This is the program start character as an ASCII character in decimal code (0 to 255) (example 083 for S). It is placed at the start of the file before each NC program is received.

  Extract from the machine configuration file:
  ```
  ProgramStart=83
  ```

- End of program character
  This is the program end character as an ASCII character in decimal code (0 to 255) (example 069 for E). It is placed at the end of the file before each NC program is received.

  Extract from the machine configuration file:
  ```
  ProgramEnd=69
  ```

- End of transmission character
  This is the end-of-transmission character as an ASCII character in decimal code (0 to 255) (example 4 for EOT). Reception is terminated when this character is received.
  If **EOFChar=0**, there is no monitoring for an end-of-transmission character and reception is terminated on timeout.

  Extract from the machine configuration file:
  ```
  EOFChar=4
  ```

Note

If the machine does not send an EOFChar, uploading is terminated on timeout.

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- End of reception after last character
  This is the time in seconds at the end of which transmission will be terminated if no further characters have been received. Values between 1 and 600 can be entered. If a value of 0 is entered, no time monitoring is performed and reception is only terminated by the end-of-transmission character.

  Extract from the machine configuration file:
  ```
  TimeOut=10
  ```

- Ignore ZERO values
  This parameter specifies whether binary ZERO values in the transmission file must be discarded.

  Extract from the machine configuration file:
  ```
  NullDiscard=1
  ```

- Test mode
  If the text mode is switched on (TestMode=1), temporary files in the parameterizable temporary directory (default: …Dnc\Tmp) are not deleted. This allows the data transmitted and received to be compared.

  Extract from the machine configuration file:
  ```
  TestMode=0
  ```

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Dialog Function tab sheet/section [DIALOGFUNCTION]

The Dialog Function tab sheet describes the [DIALOGFUNCTION] section of the machine configuration file. The parameters for the dialog function are set here.

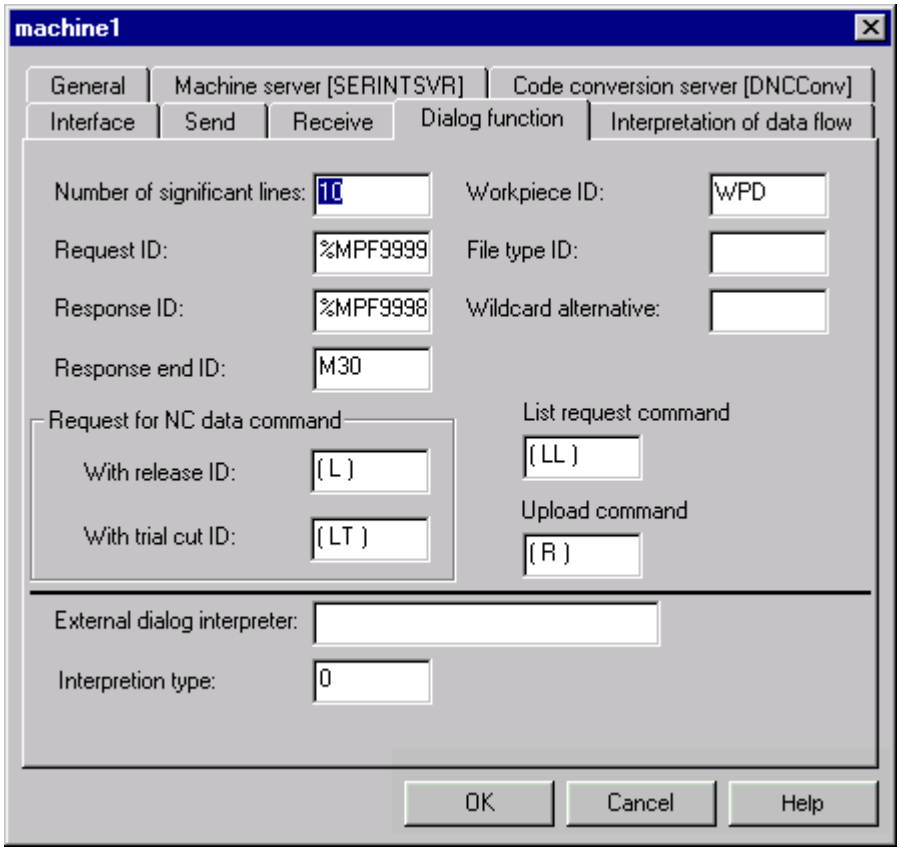

Fig. 10-10 Config dialog/Dialog Function tab sheet

Note

The ASCII characters are entered in decimal code (0 to 255).

If a machine is configured with the dialog function, the machine server is started when the program is launched and runs until it ends.

You can see some examples of this in the **Dialog programs** and **Dialog program responses** chapters.

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- Number of significant lines
  This parameter defines the number of lines (starting at line 1) within the NC data file, which are scanned for request identifier **DlgID**.

  Extract from the machine configuration file:
  ```
  DlgScanLines=10
  ```

- Request ID
  This parameter defines the identifier of a request sent by the CNC machining unit using the dialog function.

  Extract from the machine configuration file:
  ```
  DlgID=%MPF9999
  ```

- Response ID
  This parameter defines the identifier of the response to a request sent by the CNC machining unit using the dialog function.
  The response might contain the following:
  List (response to list request)
  Error message (response to a nonexecutable program request)

  Extract from the machine configuration file:
  ```
  DlgIDSend=%MPF9998
  ```

- Response end ID
  The end identifier for the response to a request made via the dialog function is formulated with the **DlgSendEnd** parameter. It terminates either a list or an error message.

  Extract from the machine configuration file:
  ```
  DlgSendEnd=M30
  ```

- Request for NC data command with release ID
  DlgSendCmd defines the command for requesting NC data with release identifier using the dialog function. The parameter is a string that must be formulated in accordance with the NC program.

  Extract from the machine configuration file:
  ```
  DlgSendCmd=(S)
  ```

- Request for NC data command with trial cut ID
  DlgSendTcCmd defines the command for requesting NC data with trial cut identifier using the dialog function. The parameter is a string that must be formulated in accordance with the NC program.

  Extract from the machine configuration file:
  ```
  DlgSendTcCmd=(ST)
  ```

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- List request command
  DlgSendListCmd defines the command for requesting a list of NC data files using the dialog function. The parameter is a string that must be formulated in accordance with the NC program. It must be in the first line of the NC data file.

  Extract from the machine configuration file:
  ```
  DlgSendListCmd=(SL)
  ```

- Upload command
  DlgReceiveCmd defines the command for responding to a request. The parameter is a string that must be formulated in accordance with the NC program. Two programs are sent in succession:
  Request program
  Program to be uploaded

  Extract from the machine configuration file:
  ```
  DlgReceiveCmd=(R)
  ```

- External dialog interpreter
  This parameter contains the name of an optional dialog interpreter. Using the external dialog interpreter, it is possible to performed project-specific name conversions. The program identifier (ProgID, consisting of *ComponentName.ClassName*) of the relevant dialog interpreter must be entered for this purpose.

  Extract from the machine configuration file:
  ```
  DlgConverter=DNCDlgI.DNCCntrl
  ```

- Interpretation type
  This parameter can be set to attach an additional identifier for code conversion mode to the external dialog interpreter.

  Extract from the machine configuration file:
  ```
  DlgSubNumber=0
  ```

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- Workpiece ID
  Parameter **DlgWpdMark** defines the workpiece identifier in the dialog program. For control systems, which are unable to edit all characters, combined axis/numerical identifiers (e.g., Z888) can be used instead.

  Extract from the machine configuration file:
  ```
  DlgWpdMark=WPD
  ```

- File type ID
  The file type identifier parameter specifies the identifier for file types in the dialog program. For control systems, which are unable to edit all characters, combined axis/numerical identifiers (e.g., Y002) can be used instead. The character is communicated in the **DlgExchangeCNCType** parameter. The numerical part of the identifier refers to the sequence of file types in database table DNCDATATYPE, starting at 001, increment=1.

  Extract from the machine configuration file:
  ```
  DlgExchangeCNCType=Y
  ```

- Wildcard alternative
  This parameter specifies the wildcard alternative in the dialog program for control systems, which are unable to edit the * character. The parameter is important for list requests, for example, to request lists of all data types or filenames.

  Extract from the machine configuration file:
  ```
  DlgExchangedummy=X999
  ```

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Interpretation of Data Stream tab sheet/section [RECEIVE]

The Interpretation of Data Stream tab sheet is controlled in the [RECEIVE] section of the machine configuration file.

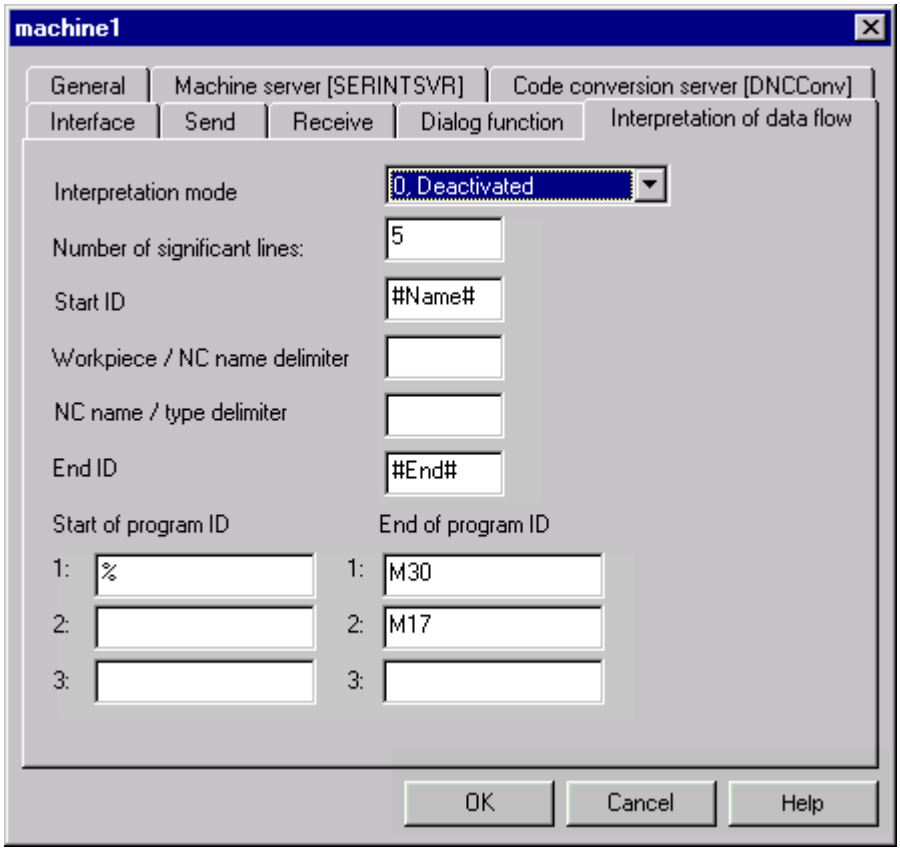

Fig. 10-11 Config dialog/Interpretation of Data Stream tab sheet

Note

If the number of significant lines (NCNameLines) is > 0 when separator strings for workpiece and type identifiers have not been defined, the machine configuration is interpreted as containing an error (red dot on machine symbol).
If the dialog function and the interpretation of data stream are both active, the data stream interpretation has priority over the dialog function, even when a request program has been received immediately beforehand.
The data received are rejected if they are not a request program and do not contain the identifiers (start identifier, workpiece identifier, etc.) for interpreting the data stream.
If the received data contain a type, which **DNC** does not recognize, they are rejected with an error message. None of the data are saved.

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Interpretation mode

Interpretation mode (**NCSplit** parameter) controls how data received are distributed among the connected control systems. This parameter can have 3 settings:

Table 10-10 Interpretation of data stream: Interpretation mode: NCSplit parameter

Interpretation mode	Description
NCSplit = 0	**Deactivated**
NCSplit = 1	**SINUMERIK 840D/840Di/810D:** This setting activates the name assignment in accordance with the SINUMERIK convention. The parameters for determining the file name are irrelevant. The program start and program end identifiers must be parameterized.
NCSplit = 2	**Other control:** The parameters for determining the file name as well as the program start and program end identifiers must be parameterized.

If a variety of external non-Siemens controls (**other controls**) is connected, the syntax of the lines to be interpreted is not clearly defined.
In this case, you must set configuration parameters to specify how separator symbols in the data and the name and type of the NC program file are stored.

Parameters for determining the file name

Table 10-11 Interpretation of data stream: Parameters for configuring NC data files for other types of control (NCSplit=2)

Parameters	Type	Meaning
Number of significant lines (NCNameLines)	integer	Number of lines (from start of program), which are scanned for the name string 0 = Function deactivated (default)
Start ID (NCNameBegin)	string	String for identifying start of file name
Workpiece/NC name delimiter (NCNameWPD)	String	Separator string between workpiece and NC program name
NC name/type delimiter (NCNameTyp)	String	Separator string between NC program name and type
End ID (NCNameEnd)		String for identifying the end of the NC program name

Note

It is essential for each individual NC program to have a name with identifiers (start identifier, workpiece identifier, etc.) so that the data stream can be interpreted. Failure to use proper identifiers can cause mix-ups and problems!
If a program file does not have the necessary identifiers, the name of the previously stored NC program is used and identified uniquely by a serial number as follows: *_i* (i=1, 2, 3, etc.). The file name (of the complete data stream) assigned by the user is assigned to the first NC program in a data stream.

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Start of program ID/End of program ID (NCProgramStart.../NCProgramEnd...)

3 strings can be defined for the start and end of the program respectively; any combination of start and end strings is valid.
Data can be split according to several different principles:

1. **Start identifiers are the only defined identifiers**
   The data preceding the first start identifier are ignored. The data located between the first identifier and the next identifier are stored in the first file, the data between the second and third identifier are stored in the second file, and so on, until the end of the file is reached.
   If a start identifier cannot be located, all the data are discarded and an appropriate message is generated.
2. **End identifiers are the only defined identifiers**
   All data from the beginning of the data stream up to and including the line containing the first end identifier are stored in the first file. Data in the subsequent lines are saved to the next file - up to the next end identifier, etc. The last block is stored even if no more end identifiers are found. Similarly, the entire data stream is stored if the file does not contain any end identifiers.
3. **Both start and end identifiers are defined**
   Each data set located between a pair of start and end strings (including the lines containing the identifier strings) is stored in a separate file. Data located outside these string pairs are ignored.

The system searches alternately for either a start string or an end string:
The system initially searches only for the string containing the start identifier. Once it finds the beginning of the program, it continues to search only for the string with the end identifier, i.e., further start strings are ignored. Once it finds the end identifier, it starts to search for the start string again.
The data are discarded if a start identifier cannot be found. If the final end identifier cannot be found, all data up to the end of the file are stored.

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File interpretation on SINUMERIK 840D/840Di/810D

Data received serially from a SINUMERIK 840D/840Di/810D/802D/840C control always contain information about the storage path as well as the file names in the data management system on the control. The NC program name and file type of these serially received data in the **DNC** are determined by the information used to interpret the data stream. The syntax is specified by the SINUMERIK 840D/840Di/810D. If the files are received from a workpiece directory on the control, then this directory information is also evaluated, in which case a corresponding workpiece is created, or the NC program files are saved to a workpiece directory with the same name (if one exists).

Note

All control lines contained in the data are always interpreted and the data thus distributed among several files if necessary.

Important

The **number of significant lines** must be less than the number of lines in the shortest NC program!

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Example

Start ID:	#Name#
Workpiece/NC name delimiter	#SWPN#
NC name/type delimiter	#SNT#
End ID	#End#

Table 10-12 Example of data stream interpretation

File content	Meaning
#Name#4-VALVE-CYLINDER-HEAD.MPF#End#	
	NC program: 4-VALVE-CYLINDER-HEAD.MPF
#Name#MOTOR#SWPN#4-VALVE-CYLINDER-HEAD.MPF#End#	
	Workpiece: Motor **NC program**: 4-VALVE-CYLINDER-HEAD.MPF
#Name#MOTOR#SWPN#4-VALVE-CYLINDER-HEAD.MPF#SNT#MPF#End#	
	Workpiece: Motor **NC program**: 4-VALVE-CYLINDER-HEAD.MPF **File type**: MPF

Internal syntax for SINUMERIK 840D

Number of significant lines:	3
Start of program ID:	%
End of program ID:	M30
End of program ID2:	M17

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10.4.5 Configuration file for interface type SINUMERIK 840D/840Di/810D

General tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [GLOBAL]

The General tab sheet defines the [GLOBAL] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces.

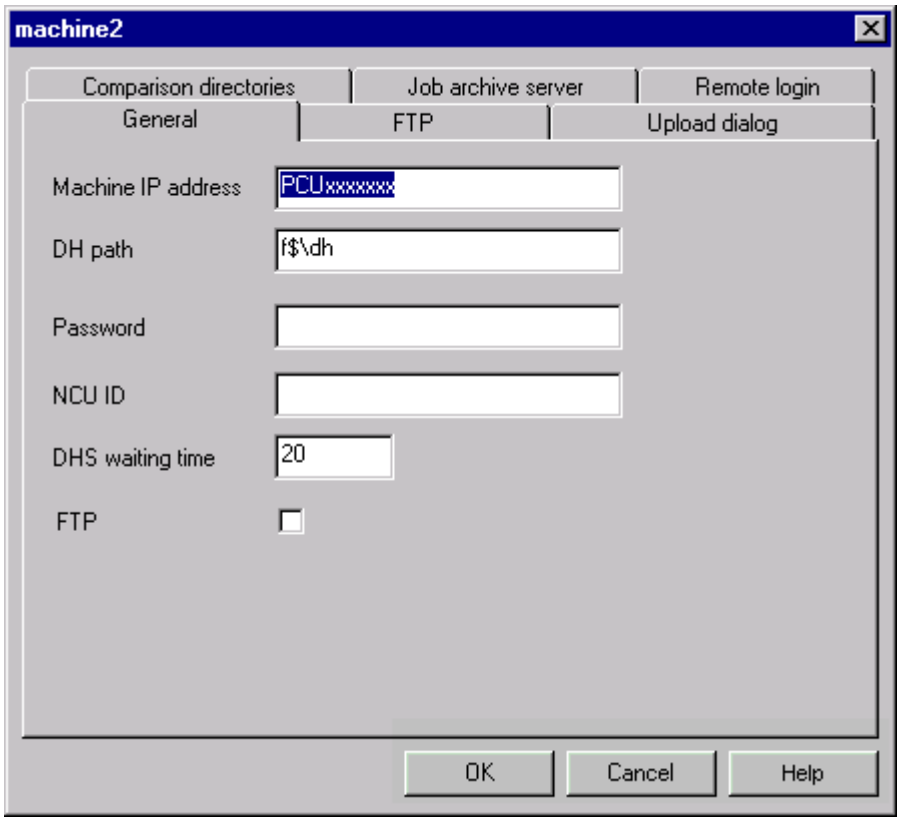

Bild 10-11 Config dialog 840D/General tab sheet

- **Machine IP address**
  The IP address or name of the machine (control) is entered here.

  Extract from the machine configuration file:
  `MachineIpAddress=PCU50`

- **DH path**
  This input field contains the path to the data management system on the control. An enable (share) must be set up on the control to permit the control's data management system to be accessed from the DNC computer.

  Extract from the machine configuration file:
  `DHPath=f$\dh`

- **Password**
  In order to be able to access SINUMERIK 840D/840Di/810D operating with a

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high protection level from the DNC, the protection level for downloading and uploading must be set accordingly on the DNC. To do this, the password can be entered in the MCF file. If this is configured, the machine's protection level is read out prior to downloading/uploading and, if necessary, the configured password is set and reset after the download/upload procedure.
Using DNC to change the protection level also affects the SINUMERIK operator interface, i.e., the machine operator has access to all the possible operations afforded by this protection level.

Extract from the machine configuration file:
```
NC_LOGIN=
NCU ID
```

- **Control identifier (ID) with M:N functionality**

  Extract from the machine configuration file:
  ```
  NCU_Id=1
  ```

- **DHS waiting time**
  Time input for monitoring calls to the sag control server. (Accept default value, if possible.)

  Extract from the machine configuration file:
  ```
  DCOMDhsWait=20
  ```

- **FTP**
  If the FTP checkbox is activated (UseFTP=1), the download is performed via FTP. Settings must also be made on the FTP tab.

  Extract from the machine configuration file:
  ```
  UseFTP = 1
  ```

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FTP tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [FTP]

The FTP tab sheet defines the [FTP] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces. The settings for downloading data via FTP are made on this tab.

Note

The FTP checkbox also needs to be activated on the General tab sheet.

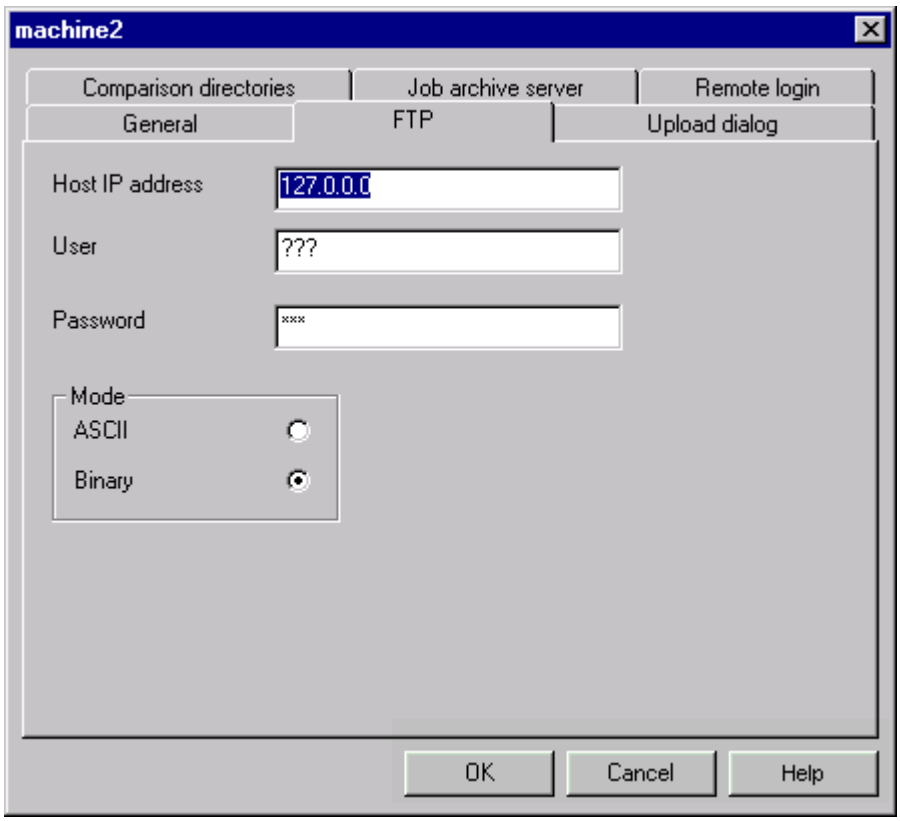

Fig. 10-12 Config dialog 840D/FTP tab sheet

- **IP host address**
  This input field contains the IP address or the name of the DNC computer. (The computer must be configured as an FTP server.)

  Extract from the machine configuration file:
  `HostIpAddress=127.0.0.0`

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- **User and password**
  The user name and password required for FTP are entered here.

  Extract from the machine configuration file:
  ```
  User=
  Password=
  ```

- **Mode**
  This defines the mode of transmission. The following transmission modes are available:
  1: ASCII
  2: Binary

  Extract from the machine configuration file:
  ```
  Mode=2
  ```

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Upload Dialog tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [UPLOADDLG]

The Upload Dialog tab sheet defines the [UPLOADDLG] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces.

Note

The SINUMERIK 840D840DI/810D directories, which the user views when uploading from SINUMERIK 840D/840DI/810D, are defined here.

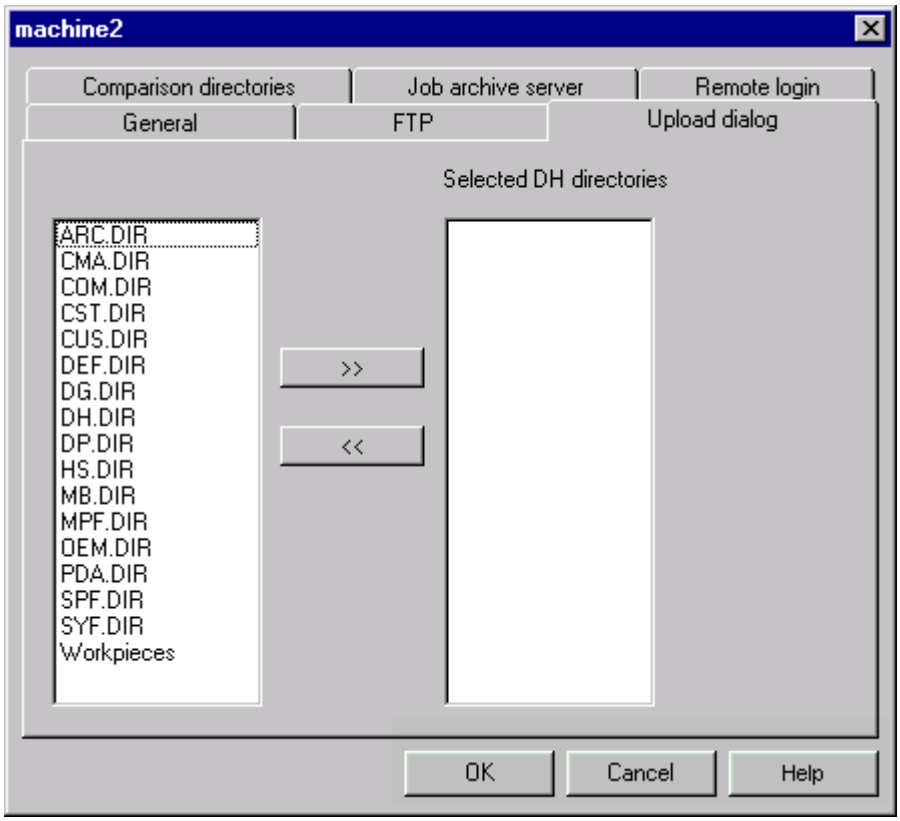

Fig. 10-13 Config dialog 840D/Upload Dialog tab sheet

The list on the left-hand side contains all possible 840D directories. Selected directories can be transferred to the list of selected DH directories on the right-hand side, or removed from that list, using the arrow keys.

Extract from the machine configuration file:

```
DHDIR1=MPF.DIR
DHDIR2=SPF.DIR
```

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Compare Directories tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [COMPARE]

The Compare Directories tab sheet defines the [COMPARE] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces. The SINUMERIK 840D/840DI/810D directories to be compared with the corresponding DNC system directories are specified on this tab sheet.

Note

The directories specified here are used for the Upload, (manual) Archive, Auto Archive and Match Machines functions.

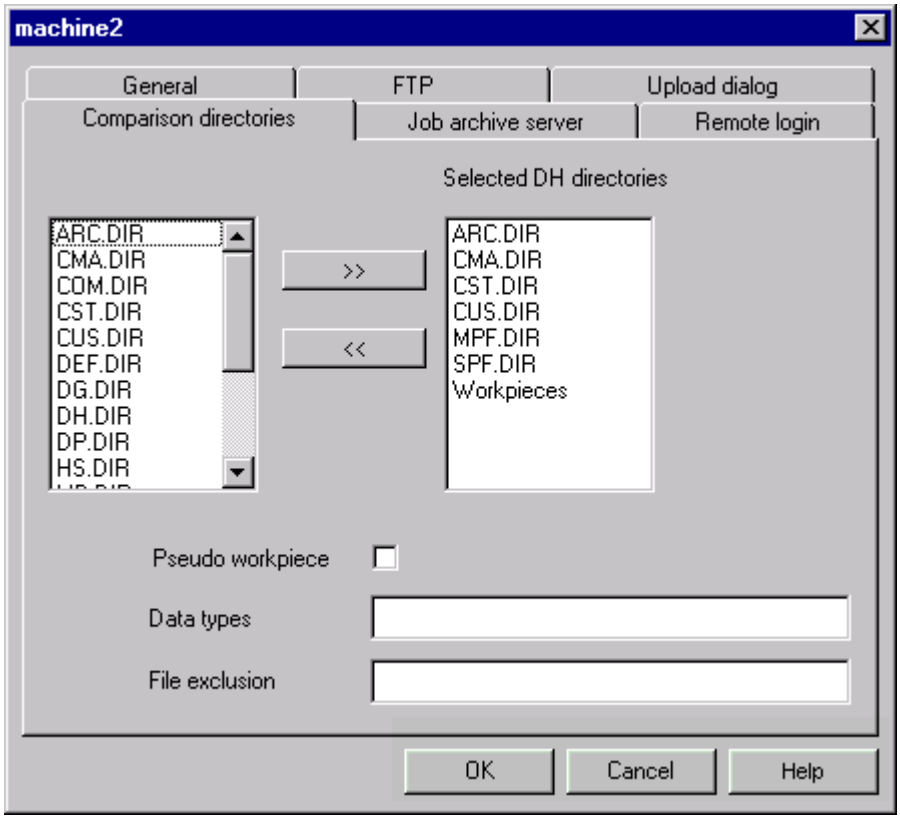

Fig. 10-14 Config dialog 840D/Compare Directories tab sheet

The list on the left-hand side contains all possible 840D directories. Selected directories can be transferred to the list of selected DH directories on the right-hand side, or removed from that list, using the arrow keys.

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- **Pseudo workpiece**
  If data from a selected DH directory are to be compared with a pseudo workpiece called name.DIR, or archived in a pseudo workpiece, this checkbox must be activated.

Note

If the Pseudo workpiece checkbox is activated, it is also taken into account when uploading data.
If DNC IFC SINUMERIK is also installed on the relevant machine, the pseudo workpiece identifier has to be set on that machine for the same data management directory during configuration.

0: No pseudo workpiece
1: Pseudo workpiece

- **Data types**
  The data types to be taken into account when comparing and archiving are specified here for the selected directory.

- **File exclusion**
  If certain files are to be excluded when comparing and archiving, they can be specified in the File exclusion field.
  e.g., EXCLUDE_MPF.DIR =Test1

  Extract from the machine configuration file:
  e.g., directory WKS.DIR (no pseudo workpiece), files of types MPF, SPF, TOA, etc., are taken into account, file WKSA1 is excluded

```
DHDIR1 = WKS.DIR;0;MPF;SPF;TOA;ZOA;RPA;WPL;JOB;BMP;ARC;INI
EXCLUDE_WKS.DIR =WKSA1
```

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Archive Server Job tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [COMPARE]

The Archive Server Job tab sheet defines the [COMPARE] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces.
As part of the Auto Archive process, NC active data (a subset of the series startup data to be defined) from the control are to be secured as required. The relevant settings are made on this tab sheet.

Note

The Auto Archive and Auto Compare boxes in the machine configuration must also be checked in the machine's Properties dialog.

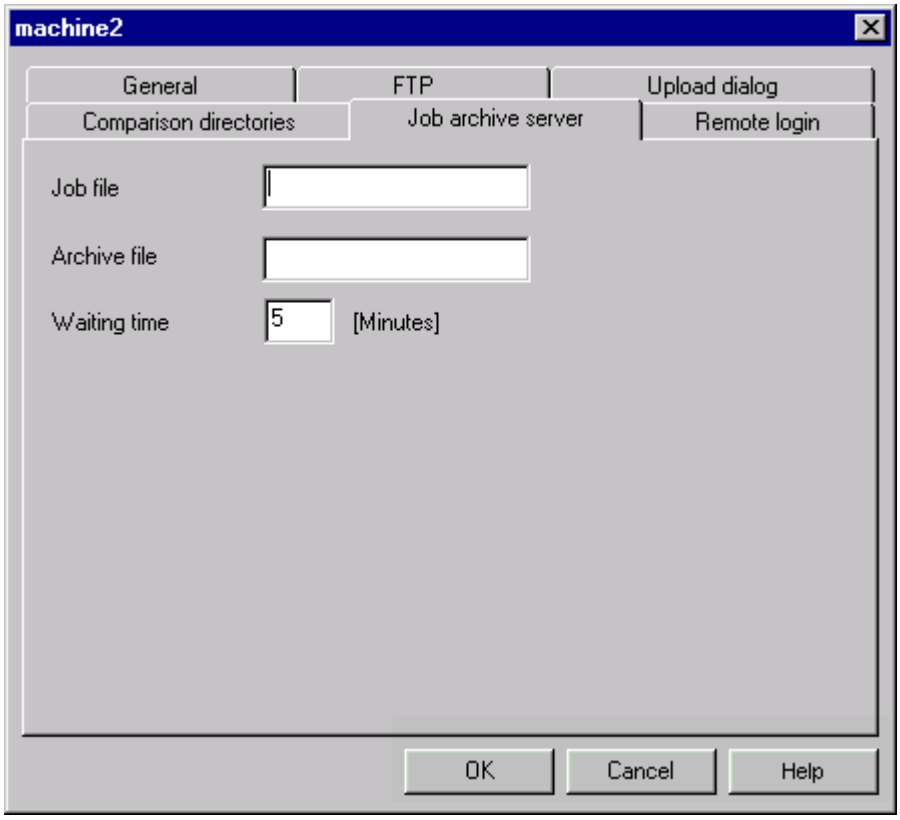

Fig. 10-156 Config dialog 840D/Archive Server Job tab sheet

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- **Job file**
  Job data for Auto Archive are stored in the job file. The data must be stored on the PCU50/MMC103 in the add_on directory (same directory as DHS.EXE). The name of this job file must be entered in the appropriate input field.

  Extract from the machine configuration file:
  ```
  ARCJOB=aaa
  ```

- **Archive file**
  This field contains the name of the archive file to be created. It is first created on the machine's data management system and then uploaded to the DNC system. If no name is specified, the name of the job file is used as the name of the archive file.

  Extract from the machine configuration file:
  ```
  ARCFILE=
  ```

- **Waiting time**
  Auto Archive is time-monitored, i.e., if no completed message is output for an individual archive job within the specified wait time, Auto Archive continues with the next subtask. This is recorded in the form of an appropriate entry in the log file (ARSERVER.TXT in add_on\tmp).

  Extract from the machine configuration file:
  ```
  ARCTIMEOUT=5
  ```

! Important

Please call our hotline if you have any questions about setting up this function (particularly regarding definition of the job file).

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Remote Login tab sheet (machine configuration SINUMERIK 840D/840Di/810D) [REMOTELOGIN]

The Remote Login tab sheet defines the [REMOTELOGIN] section of the machine configuration file for SINUMERIK 840D/840DI/810D machine interfaces.
Remote login is necessary for downloading data if the download is not performed via FTP and the data management directory on the control is enabled (share), but the user logged onto the PC does not have access rights to the control.
Remote Login permits the user on the DNC PC to log onto the control using the name and password set on this tab sheet.

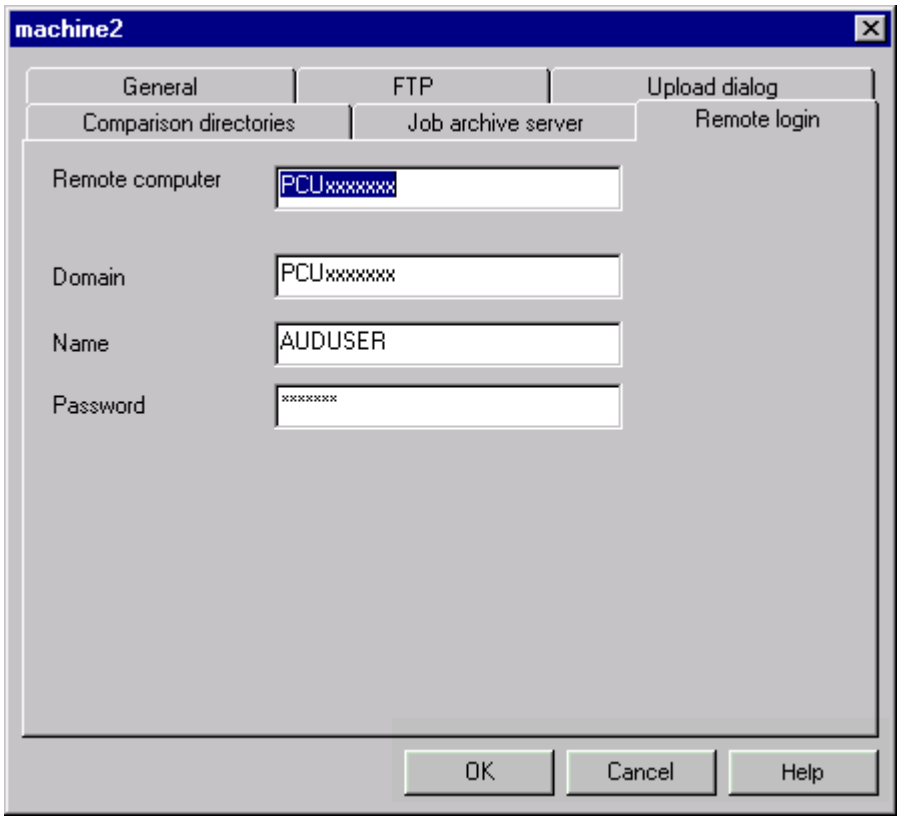

Fig. 10-16 Config dialog 840D/Remote Login tab sheet

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- **Remote computer**
  This input field contains the IP address or the name of the Remote Network Server.

  Extract from the machine configuration file:
  ```
  RemoteName=PCU50
  ```

- **Domain**
  The domains to which the user is assigned are specified here. If the user has local access only, this matches the name in the Remote computer field.

  Extract from the machine configuration file:
  ```
  Domain=PCU50
  ```

- **Name and password**
  The name and password used to access the data management system on the control are entered here
  (see DHPath path in General - [GLOBAL] section).

  Extract from the machine configuration file:
  ```
  User=AUDUSER
  Password=*******
  ```

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10.4.6 Configuration dialog for file system interface type

General

The **file system** machine type can be used to transfer NC data to and from any shared network drives. Any network-capable control system can be linked to the DNC system under Windows. Two directories must be configured for downloading and uploading NC data.

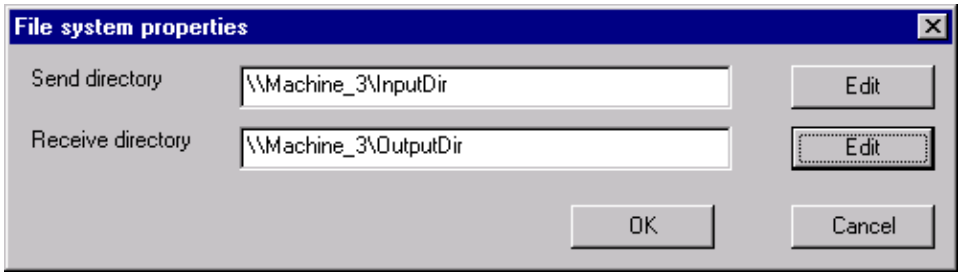

Fig. 10-17 Config dialog, File System

Note

Only users with project design/configuration user rights are authorized to define directories for the **file system** machine type.

Send directory

This is the directory to which NC data are downloaded.

Receive directory

When uploading, NC data transfer the specified receive directory taking the version strategy into account.

Note

The directory specification is not computer-dependent if the directories are specified using UNC notation, e.g., \\Server1\DNC\Data.

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10.4.7 Dialog function

General

To configure the dialog function, the Dialog function box on the Configuration tab in the Machine Properties dialog must be checked. The dialog function remains active until it is unchecked again in configuration mode.

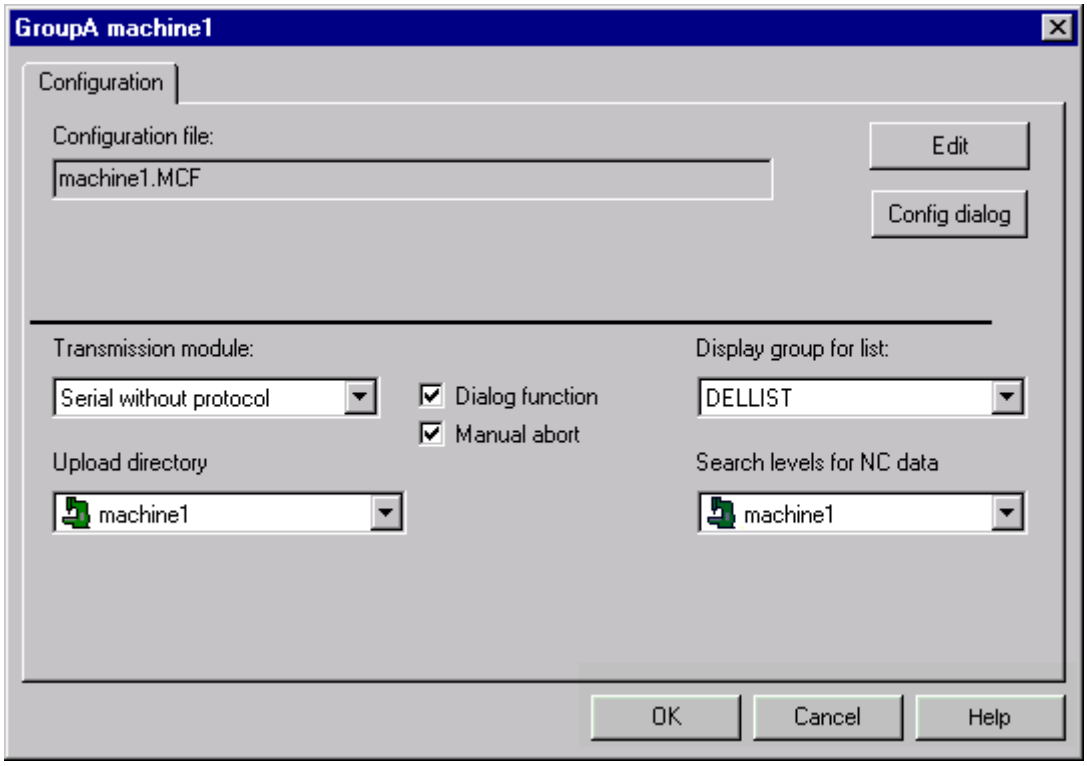

Fig. 10-18 Machine properties/tab: Configuration

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Display groups for response lists

LISTDESCRIPTION : Tabelle

DISPLAYGROUP	LPOS	COLUMNNAME	FIELDNAME_GR	FIELDNAME_UK	COLWIDTH
GROUPAD	1	NCDATANAME	Name	Name	20
GROUPAD	2	NCDATATYPE	Typ	Type	5
GROUPAD	3	VERSION	Version	Version	7
GROUPAD	4	RELEASEID	Freigabekennung	Release Id.	10
GROUPAD	5	TRIALCUTID	Einfahrkennung	Trialcut Id.	10
GROUPAD	6	LENGTH	Länge	Length	10
GROUPAD	7	AREA	Bereich	Area	5
MLIST1	1	NCDATANAME	Name	Name	1
MLIST1	2	NCDATATYPE	Typ	Type	1
MLIST1	3	VERSION	Version	Version	1
MLIST1	4	RELEASEID	Freigabekennung	Release Id.	1
MLIST1	5	LENGTH	Länge	Length	1
					0

Datensatz: 5 von 12

Fig. 10-19 List description for dialog function lists

The display group of the list refers to response lists requested via the dialog function.

You can edit the **list display** of a display group in the **List Editor**. The List Editor can also be used to set up a new display group if no suitable list display is available. Display groups are defined via the **DNC** database table **DNCLISTDESCRIPTION**.

Display groups can be selected from all defined lists, even those created for the customized list display in the right-hand window of the operator interface.

Depending on the options available in the Control System Editor, it can be advisable in some instances to select short list displays for the dialog function.

Note

The contents in displays of response lists requested via the dialog function for links are predefined as follows:

- Name
- Size
- Changed on

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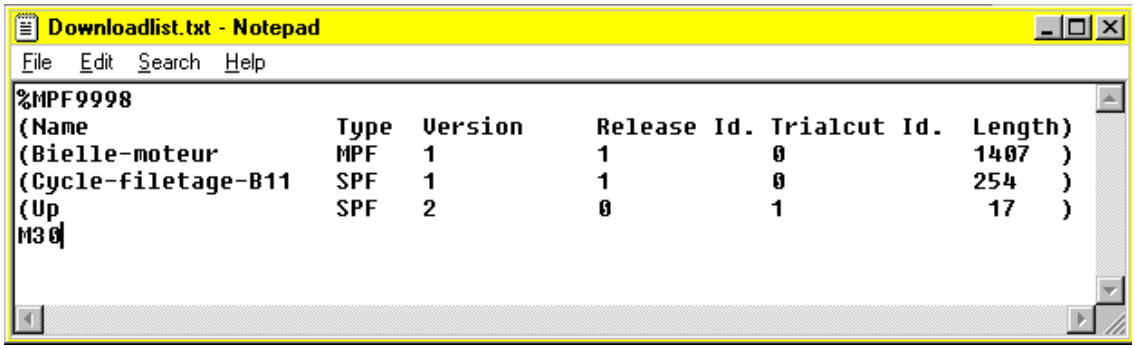

Fig. 10-20 Response list for a dialog function request

Search levels for NC data

The search directory configured for the dialog function is machine-specific, i.e., all requested programs and lists can only be copied from this defined section. The search directory is configured via a combo box offering the following search areas:

- Link (When the “Link” option is selected, a second combo box appears displaying all the links configured on the machine. One link for the configuration must be selected from this list.)
- Machine
- Machine, group (search area is machine and higher-level group)

Upload directory

The upload directory configured for the dialog function is machine-specific, i.e., all uploaded programs must be copied from within this defined section. The search directory is configured via a combo box offering the following search areas:

- Link (Upload directory: Link assigned to the machine; the file is stored here without management data.)
- Machine
- Group (Upload directory: Group superordinate to the machine)

Note

DNC generates management data for uploaded files stored in a Machine or Group directory. All automatic processes regarding data versions and release/trial-cut identifiers are applied.

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Errors

Configuration errors on the machine server in connection with the dialog function are indicated by a red square on the machine icon on the operator interface. Communication errors in the dialog function are caused by configuration errors on the machine server.

The following situation is an example of how a communication error can occur on a machine when the dialog function is activated:
Machine 1 and machine 2 are both working with the dialog function. The machine server for machine 1 is configured at COM port 1 and the machine server for machine 2 as well. In this instance, the operator interface displays a communication error on machine 2.

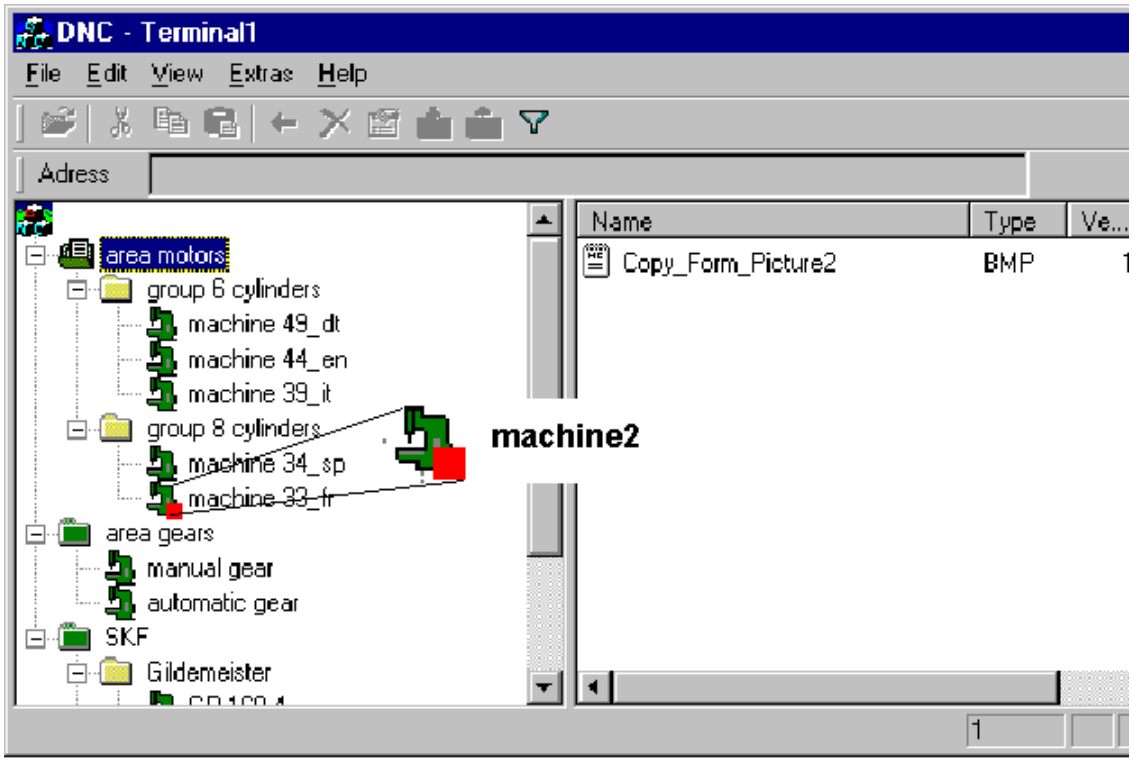

Fig. 10-21 Communication error on machine server with active dialog function

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10.5 Global settings

The following global settings are defined in database fields *NAME* and *INTVAL* in database table **DNCGLOBALSETTINGS**:

- Maximum permissible number of versions (default: 5)
- Version strategy for uploads (default: 1)
- Store strategy after editing (default: 1 (new version after editing))
- Maximum number of NC blocks displayed in a list (default 1000).

Note

In order to change the default value of 1000, the “ReadMaxRecords” entry may have to be recreated.

- Invalid characters for NC data identification
- Version strategy for automatic import
- Other entries for special options

An integer value *INTVAL* or a string *STRINGVAL* is assigned to the key of the *NAME* field for this purpose.

10.5.1 Maximum permissible number of versions

The maximum permissible number of versions is assigned via the MaxNCVersions key.

Table 10-13 Global settings for maximum permissible number of versions

Database field *NAME*	**Database field *INTVAL***
MaxNCVersions	>1

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10.5.2 Versions strategy for uploads

The version strategy assignment is defined via the *VersionStrategy* key.

Table 10-14 Global settings for version strategy for uploads

Database field *NAME*	**Database field *INTVAL***
VersionStrategy	1 ... 6

One of 6 strategies can be selected:

Table 10-15 Version strategy for uploads

Configurable numbers for version strategy	Version strategy for uploaded NC data	Release strategy for uploaded NC data	Delete strategy when max. no. of versions is reached
1 (default)	The next free version is assigned.	The release identifier is **not** set.*	The version with the oldest modification date and not released is deleted.
2	"	"	The "Delete dialog" version is displayed.***
3	"	The release identifier is set.**	The version with the oldest modification date and not released is deleted.
4	"	"	The "Delete dialog" version is displayed.
5	The highest version is replaced.	The release identifier is **not** set.*	
6	"	The release identifier is set.**	

* The existing release identifier from an older version remains unchanged.
** The existing release identifier from an older version is reset.
*** The dialog function does not support a Delete Version dialog, for reasons of automation. Strategy 1 or 3 is therefore applied when version strategy 2 or 4 is configured.

Version strategies do not apply to links since no management information is available in the database for link NC data.

Note

The version strategy is set once when the software is installed. Any subsequent changes should be made by Siemens to avoid inconsistencies in the data management system.

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10.5.3 Store strategy after editing

The assignment of the store strategy after editing is defined via the *NewVersionAfterEdit* key.

Table 10-16 Global settings for store strategy after editing

Database field *NAME*	**Database field *INTVAL***
NewVersionAfterEdit	0/1

One of 2 strategies can be selected:

- 0 = Unchanged version and existing identifiers
- 1 = Next free version with identifiers from the edited version

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10.5.4 Machine-specific version management

General

Machine-specific version management uses version ranges to define the hierarchy level at which NC data with the same name (same name, same type and same version) are permissible. Defining a version range ensures that the same program will always be used for processing within the version range.

Version ranges are always defined on higher-level nodes (Groups or Subgroups). The node on which the version range is defined and all lower-level nodes (Groups, Subgroups, Machines) comprise the version range.

Note

The plant root (at the very top) is a node, but not a group.

Version ranges can only be defined on nodes (Groups, Subgroups) and not at machine level.
Defining a version range means that all lower-level objects are directed by these nodes (including NC data located directly underneath that node).

Note

If no version range is defined, **every object** (all nodes and all machines) forms a separate version range. This is the default setting.

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Setting a version range resets all lower-level version ranges. Version ranges cannot be set on lower-level nodes of the version range that has been set.

Nodes marking the start of a version range are indicated by a white field with a “V” in tree view.

The version range is defined via the PROCESSINGRANGEID field in the **DNCNODEINFO** table.
The NODEID of the node, which defines the version range, is entered here.
The NODEID of the node on which the version range is based is entered in the PROCESSINGRANGEID field for this node and all lower-level nodes.

Upload

The version range is taken into account when uploading an NC data file. Before uploading begins, a check is performed to see whether the maximum permissible number of versions of this NC data has already been reached within this version range.
If this maximum has been reached, an older version is deleted or the Delete Version dialog is activated automatically before uploading, regardless of the version strategy. The user can delete versions manually using the Delete Version dialog.

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10.6 List Editor

10.6.1 General

The appearance of the **list display** is also stored in the database. This means that it can be adapted to suit the individual requirements of users and machines (display groups). You can create one list display in several languages for each display group.

Name	*	Type	Version	Trialcut Id	Release Id	Length
cut-off-cycle		SPF	4	1	0	787
cut-off-cycle		SPF	3	1	0	787
cut-off-cycle		SPF	2	1	0	787
manual_gear		MPF	3	1	0	4965
gear-yellow						

Fig. 10-22 Variant of list display on operator interface

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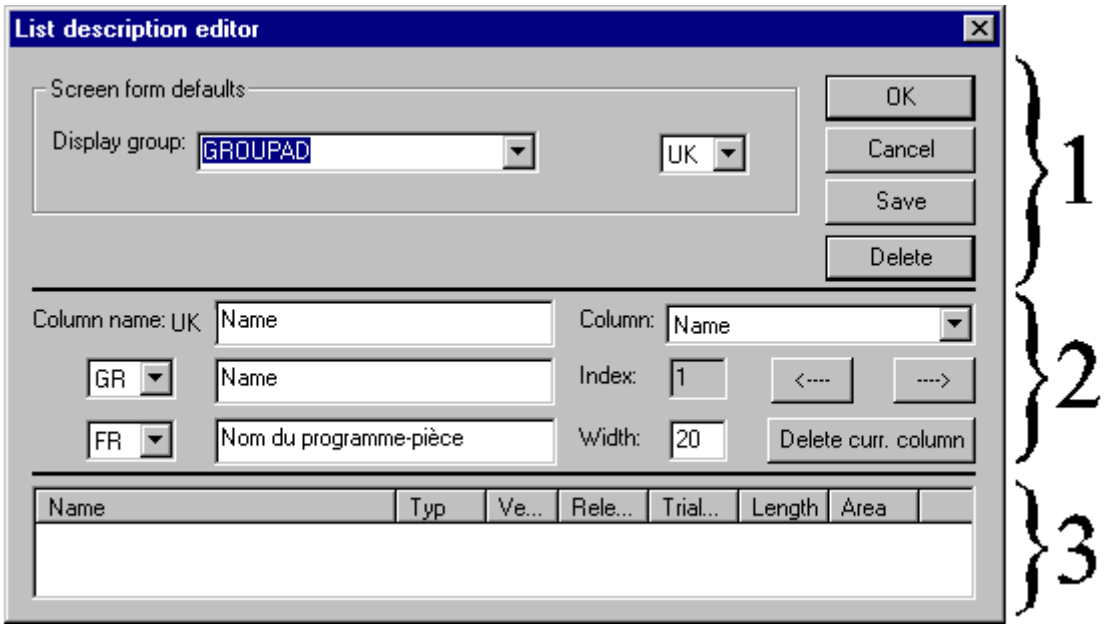

Fig. 10-23 List Editor

The List Editor is divided into 3 parts:

Part 1: Defaults with buttons, which relate to the complete list display for the display group in question. **Complete list display** means that **the list of all existing languages** for one display group is **saved**, **deleted** or left unchanged (with Cancel).

Part 2: Data entry section with edit buttons and input fields.

Part 3: Preview of list display based on default settings

Note

Changes to the **list display** currently in use **do not take effect until the next time you start the DNC** or **DNC Admin program**.

For the sake of clarity, not all available languages have been displayed in this dialog. It is also unlikely that all the languages supported by **DNC** would be used in one production plant.

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10.6.2 Description of part 1 of the List Editor

General

The defaults define the preview that can be viewed in part 3 of the Editor. The display group also determines the **complete list definition** (see above) that will be modified and saved currently.

You can choose between existing display groups in the **Display group** combo box. When you change display groups, you must also decide whether you wish to save the changes you have made.

You can choose between the available languages in the **Language** combo box. This field determines the language for your preview.

Create a display group

To create a new display group, **enter the name of the new display group** in the Display Group combo box. **Save** this group immediately.

Note

Before you create a new group, select one with a list display that is similar to the one you want to create. Use this list display as a basis for the new one so that you don't have to start right from the beginning.

A **new display group** must also have a **screen definition** before you can assign it to a user.

Delete a display group

When you select the **Delete** button, the **complete list display** is deleted in all languages for this display group.

Caution

Before you delete a display group, make sure that it is not current in use by another **user** or a **machine** (see Dialog function)!

The list definition of the **DELLIST** display group is **absolutely essential** for **DNC IFC SINUMERIK**. Do not delete the **DELLIST display group** if you want to use **DNC IFC SINUMERIK**.

The **GLOBAL** list definition is used for the cross-area filter function. If you delete this list definition, then the currently active list definition of the relevant user becomes operative.

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10.6.3 Description of part 2 of the List Editor

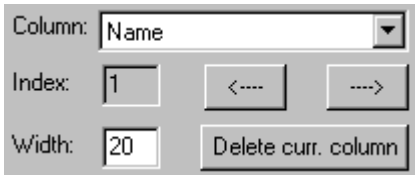

Fig. 10-245 Right-hand section of List Editor (part 2)

Select a column

In the **Column** combo box, you can select which of the existing management data for the NC data will be included in future in the list display and choose a column for editing.
You can also select the **Column** (management data) using the mouse in the preview.

Index

The **Number after index** indicates the position of this column in the list display.
You can use the **arrow keys** to change the position of the column.

Width

You can enter the column **width** directly as it must appear in the list **in all languages**. Alternatively, you can specify a width directly in the preview using the mouse. However, since you can set the width more accurately with the mouse, we recommend that you check the width setting. To do this, enter the width again and then select another field with the mouse, monitoring the relevant field as you do so.

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Delete a column

To delete the column currently selected in **Column**, select the **Delete current column** (see above) button. This will delete the column **in all languages**!

Add a column

To add a new column, you must select a management data in the **Column selected** combo box. Then **enter** the **column names** in the relevant language (see below). Click on one of the **Index** buttons (the **arrow keys**) to set the index and then set the column width. The new column will now be displayed in the preview.

Column name

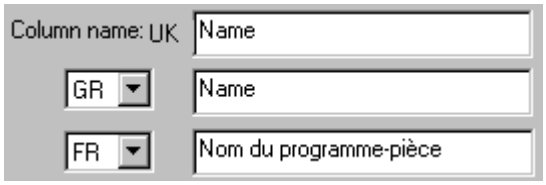

Fig. 10-256 Left-hand section of List Editor (part 2)

In the window shown above, you can enter the column name as it must appear in the list for the appropriate language. The fields for languages: **GR** for German, **UK** for English and **FR** for French can be viewed here (see also: Languages).

Here, you can transfer, extend, truncate or completely redefine the column name as it appears in the right-hand section (see screenshot above: Right-hand part of List Editor (part 2)).

Note

You can leave empty the input fields of languages that you do not know. However, it is recommended that you fill out these fields in your own language. In this way, no empty list headers result if the language is changed.

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10.7 Screen Editor

10.7.1 General

The appearance of the Properties screens for NC management data is also stored in the database, which means that you can adapt the screen display to suit your own requirements. You can create one screen display in several languages for each display group. Properties screens have a predefined resolution of 360x160 pixels.

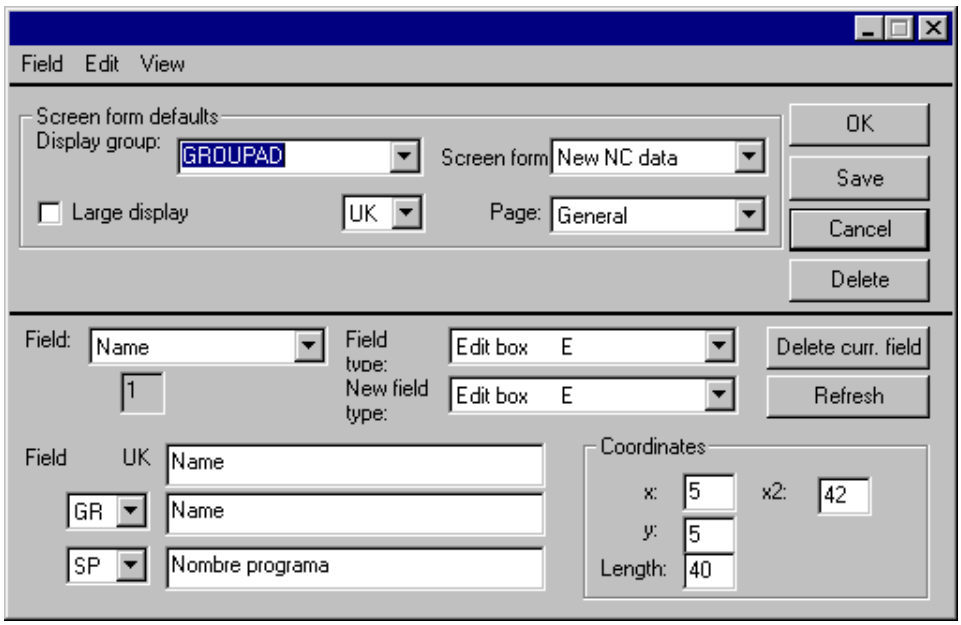

Fig. 10-26 Screen Editor

The Screen Editor is divided into 3 parts:

Part 1: Defaults with buttons, which relate to the complete screen display for the display group in question. These defaults also determine the preview.

Part 2: Data entry section with edit buttons and input fields for the displayed preview

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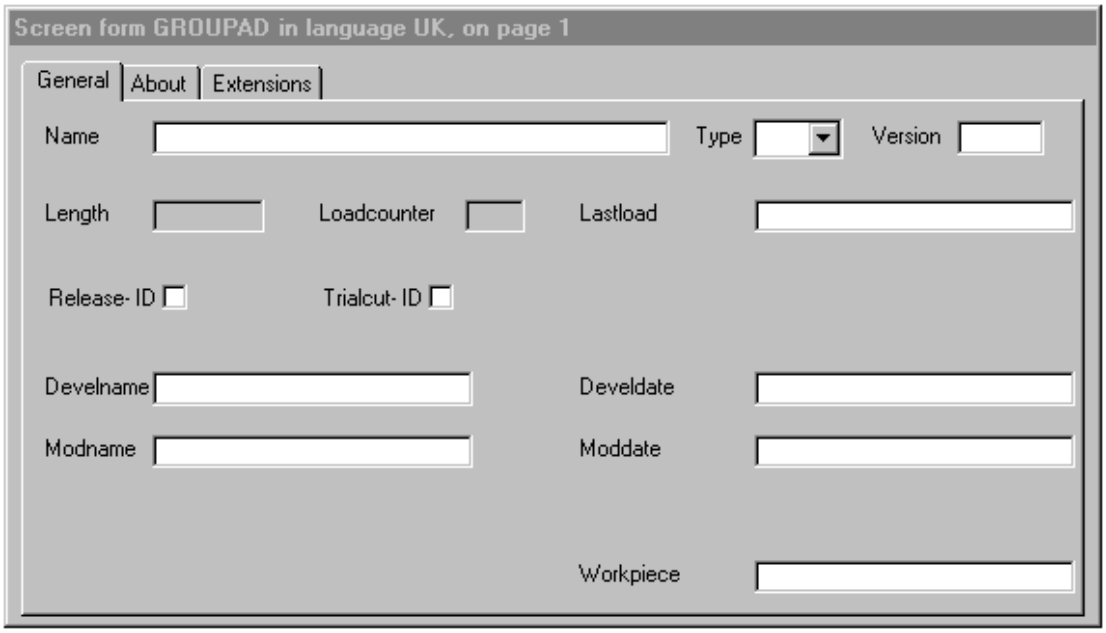

Fig. 10-278 Screen Editor - Preview

Part 3: Preview of screen display based on default settings

Note

Changes to the screen display do not take effect until you restart the **DNC** program. Changes take effect immediately in **DNC Admin**.

For the sake of clarity, not all languages available in the Screen Editor are displayed at the same time. It is also unlikely that all the languages supported by **DNC** would be used in one production plant.

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10.7.2 Description of part 1 of the Screen Editor

General

These defaults determine the displayed preview. The **display group** also determines the **complete screen definition** that will be modified and saved currently. Complete screen definition means that the definition is saved for all existing languages.

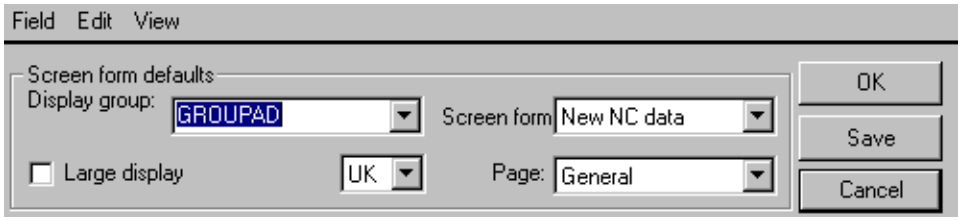

Fig. 10-289 Screen Editor – Part 1

You can choose between existing display groups and create new ones via the **Display group** combo box. When you change display groups, you must also decide whether you wish to save the changes you have made.

All other fields are used to set the preview.

You can select the type of screen you want to create and display in the preview via the **Screen type** combo box. Select **NC Data New** to create a screen for setting up a new NC management data set. Select **Display/Edit** to configure the screen in which you can view or edit existing NC management data.

Check the **Big view** box to display the preview in enlarged format rather than in the standard display format. If "Big view" is checked for the selected display group, you must check this box to ensure that screens are displayed and configured in the correct size.

You can toggle the displayed preview language via the **Language** combo box

You can toggle the tab sheet displayed in the preview via the **Tab Sheet** combo box.

The menu options under **View** provide you with the same functionality as the combo boxes.

Select **Edit→Tabulator Sequence** to display and edit the tab sequence of the displayed screen. The **Tabulator** field in part 2 of the Screen Editor can then be edited.

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Create a display group

To create a new display group, enter the name of the new display group in the Display group combo box. Save this group immediately.

Note

Before you create a new group, select one with a screen display that is similar to the one you want to create. Use this screen display as a basis for the new one so that you don't have to start right from the beginning.

A **new display group** must have a **list definition** before you can assign it to a user (see List Editor).

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10.7.3 Description of part 2 of the Screen Editor

General

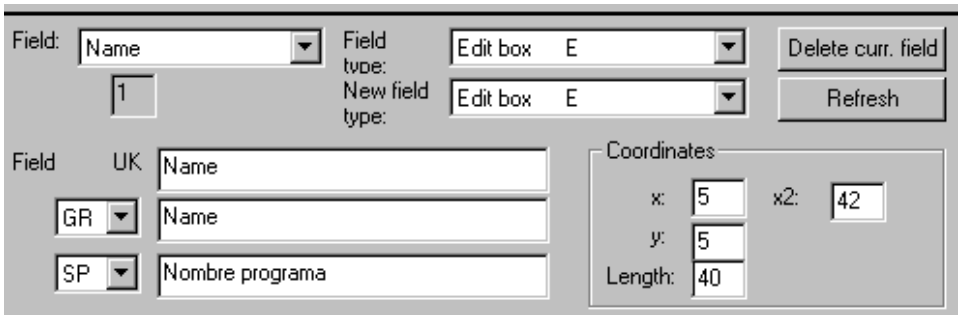

Fig. 10-29 Screen Editor – Part 2

In part 2 of the Screen Editor you can edit the screen display for the relevant display group.

Field

In the **Field** combo box you can select the management data to be included in future in the screen display and choose a field for editing.

Delete current field

This button deletes the field selecting in the **Field** combo box from the screen definition.

Refresh

This button refreshes the preview.

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Field type

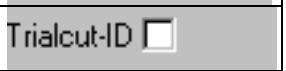
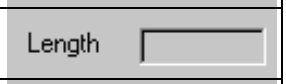
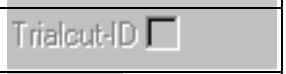
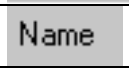
The Editor includes two combo boxes for the selection of **field types**.

The upper **Field type** combo box is provided for the **"Display/Edit" screen type**.

The lower **New field type** combo box is provided for the **"NC Data New" screen type**.

You can choose between the following field types:

Table 10-17 Field types

Field type	Function	Display example
Edit box	Input field	
Combo box	Combo box	
Checkbox	Checkbox	
Output field	Inactive input field	
Output field checkbox	Inactive checkbox	
Static text	Text field	

The **combo box** is intended for the **program type** only, as a data selection list is required. This is possible only for the program type in the current version.

Please note that **checkboxes** can display only **"0" or "1".**

The **Edit box** and **Output field** (**inactive input field**) field types can be used for every field.

The **Static text** (**text field**) cannot display a data value. It can be used for every field.

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Tabulator

This input field, which can be edited by selecting **Edit→Tabulator Sequence,** displays the tabulator index of the field selected in the **Field** combo box.

When you open the Properties screen, the field with the lowest tabulator index is automatically selected. As you move from field to field using the tabulator, the cursor always jumps to the field with the next-higher tabulator index, until the field with the highest index has been reached. The cursor then goes to the buttons in the screen. Finally, it will return to the field with the lowest tabulator index.

Note

Tabulator indices need not be arranged sequentially (1,2,3,4,....10) and the tabulator sequence can also contain gaps (1,3,5,6,7,10). The advantage of this is that you do not need to sort all the fields again if you change the tabulator sequence.

Field names

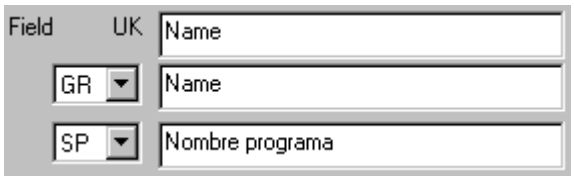

Fig. 10-301 Screen Editor - Field names

In the window shown above, you can enter the field name as it must appear in the screen for the appropriate language. The fields for languages (**GR** for German, **UK** for English and **FR** for French) can be viewed here (see also: Languages).
Here you can transfer, extend, truncate or completely redefine the name shown in the **Field** combo box.

Note

We recommend that you specify names of approximately the same length in the different languages as the coordinates apply to all languages in the field. This is not the case in the above screenshot and the French field name is truncated in the screen display.

You can leave the input fields of languages that you are not familiar with empty. However, we do recommend that you enter your own language in these fields, so that field names will be displayed in the Properties dialog when you switch languages.

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Coordinates

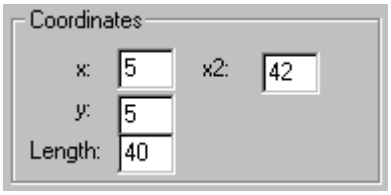

Fig. 10-31 Screen Editor - Coordinates

You can select the display position and size for every field selected in the Field combo box in the window shown above.

System of coordinates:
- **x** goes from **left to right** (**1** to **350** in pixels)
- **y** goes from **top to bottom** (**1** to **150** in pixels)
- Top left-hand corner of tab sheet is the origin (x = 1; y = 1)

x is the horizontal start position for the field name.

y is the vertical start position for the field name and input/output fields.

x2 (**1** to **350** in pixels) is the horizontal start position for the input and output fields. The field name comes before this (coordinate x). x2 is relevant only for edit boxes (input fields), output fields (inactive input fields) and combo boxes.

Fig. 10-323 Screen Editor - Positioning a screen field

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The **length** must be at least 1 (**1** to **80** letters wide in normal view). "Length" with respect to edit boxes (input fields), output fields (inactive input fields) and combo boxes refers to the length of the input field or combo box without the field name. Length is irrelevant for other field types (exception: Length = 0 → means field will not be displayed !!)

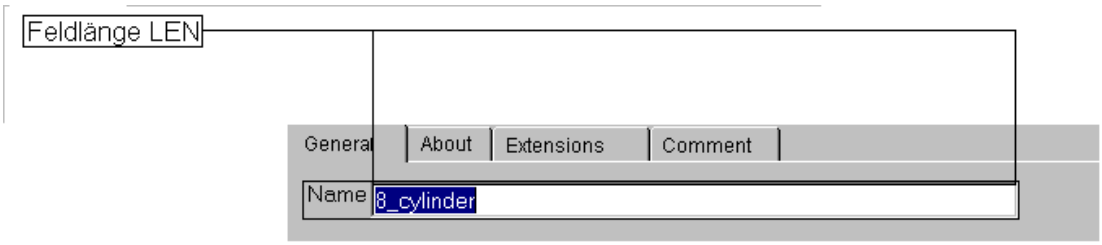

Fig. 10-334 Screen Editor - Length

Note

Fields positioned outside screen borders will be truncated!

With new fields it is useful to note the positions of the other fields so that you can structure the screen symmetrically.

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10.7.4 Saving the screen display in the database

General

Database table **DNCFORMDESCRIPTION** defines the screen display of the Properties screen for the NC data and import function. All other screen forms have a predefined layout.

Table 10-18 Screen definition table DNCFORMDESCRIPTION

DISPL. GROUP	COL. NAME	FIELD N._GR	...	DLG ORD.	PAGE	X	Y	X2	LEN	FIELD TYPE	...
GR_AD	NCDATA NAME	Name	...	1101	1	5	5	42	40	E	...
GR_AD	DNCDATA TYPE	Type	...	1102	3	5	25	42	3	COB	...
GR_AD	RELEASEID	Release ID	...	1103	1	5	80	42	1	CKB	...
...	...	...	...	...	...	...	...	...	...	...	...
Group1	VERSION	Version	...	2108	2	150	25	200	3	E	...
Group1	TRIALCUTID	Trial-cut ID	...	2109	1	150	80	200	1	CKB	...

Field *DISPLAYGROUP*

DISPLAYGROUP: The **display group** defines the user group to which the screen display will apply. The name of the *DISPLAYGROUP* can be freely defined.

Field *COLUMNNAME*

COLUMNNAME assigns the form field to the field with the same name in database table *DNCDATA*.

Note

COLUMNNAME evaluates only field names from DNCDATA.

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Field *FIELDNAME_<LANGUAGE>*

These database columns contain the language-specific field names.

FIELDNAME_GR contains the German field designation,
FIELDNAME_UK contains the English field designation, etc.

Field DLGORDER

DLGORDER defines the classification number of the fields in the form display. This number must be unique. We recommend that numbers are assigned on the following basis:

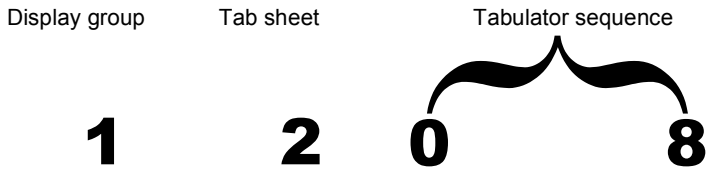

Fig. 10-345 Classification numbers for fields in screen display

1208 thus means:

- Display group 1 → GROUPAD
- Tab sheet 2 → About
- Tabulator sequence 0-8 → Field is reached on eighth actuation

Field *PAGE*

PAGE defines the tab sheet (page) on which the field is to be positioned. The assignments are as follows:

- 1→ **General** tab sheet
- 2→ **About** tab sheet
- 3→ **Extensions** tab sheet

Note

The tab labeled **Comment** is reserved for comments about NC data. It cannot be configured via the *DNCFORMDESCRIPTION* table.

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Fields *X*,*X2* and *Y*

The *X* and *Y* fields define the pixel coordinates at the top left-hand corner of the display field, along with the field designation.
The *X2* and *Y* fields define the pixel coordinates at the top left-hand corner of the display field, without the field designation.

Field *LEN*

LEN specifies the length of the field in characters.

Field *FIELDTYPE*

FIELDTYPE defines the type of screen field in the NC data Properties screen form.
The following field types can be defined in **DNC**:

- Output field → O
- Edit field → E
- Combo box → COB
- Checkbox → CKB
- Output checkbox → OCKB
- Static output field → STXT

Field *FIELDTYPE_NEW*

FIELDTYPE_NEW defines the field type for data acquisition (Import and New NC Data screen).
This special field type for data acquisition makes it possible to define input fields, which appear only as display fields in the normal Properties dialog, i.e., which cannot be altered by the operator following data acquisition.

- Output field → O
- Edit field → E
- Combo box → COB
- Checkbox → CKB
- Output checkbox → OCKB
- Static output field → STXT

■

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Notes

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11

11 Error Management

11.1 General FBDN1/11-212
11.1.1 Central log book FBDN1/11-212
11.1.2 Separate error/message file FBDN1/11-212

11.2 Functions of the central log book FBDN1/11-212
11.2.1 Display of messages FBDN1/11-213
11.2.2 Filtering log data FBDN1/11-214
11.2.3 Export errors/messages FBDN1/11-214
11.2.4 Delete errors/messages FBDN1/11-215

11.3 Separate message file FBDN1/11-216

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11.1 General

11.1.1 Central log book

DNC provides a central troubleshooting facility, which is operative across all applications.
Log messages (errors and messages; not traces) from all **DNC** applications (**DNC IFC SINUMERIK**, **DNC Cell**, **DNC Plant** plus Auto Archive and Auto Import) are recorded in a central database table. These applications exclude those such as SerIntSvr (machine server) or DNCConvSvr (code conversion server), which are not linked to the database.
All errors and messages generated in response to relevant events are stored.

11.1.2 Separate error/message file

If the database is not available when an error/message occurs, the error/message is saved in a separate error/message file.

11.2 Functions of the central log book

You can view the error/message entries in the database in **DNC** or **DNC Admin**. Call this function by selecting **Options → Log Book**. Filter definitions can be applied to control the data view. Errors/messages can be deleted from **DNC Admin** and exported to a text file.

The following processes are recorded in the log book:
- User login (system message)
- Create/delete users
- Create/delete NC data
- Import/export NC data
- Download/upload NC data
- Set/reset version ranges
- Result of automatic archiving
- Activate optional packages
- Etc.

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11.2.1 Display of messages

All messages and errors in the database are displayed in chronological order as shown below:

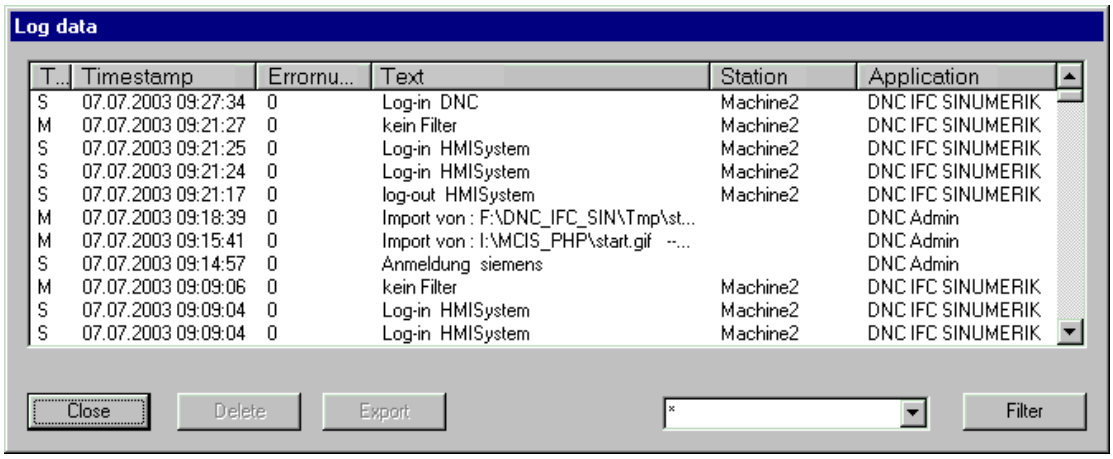

Fig. 11-1 Log file

Table 11-1 Log book display

Displays	**Meaning**
E/M/S	Error/Message/System message
DD.MM.YYYY HH:mm:ss	Time stamp
	Error code
Text	Error text/message text
	Station
DNC IFC SINUMERIK **DNC Cell** **DNC Plant** **DNC Station** Auto Archive Auto Import	Application

Note

By clicking once on the column header, you can sort messages in ascending or descending order based on these categories.

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11.2.2 Filtering log data

Click the **Filter** button to open the filter editor. All the functions of the filter editor are available for selection (see also Chapter 3.2). If you have activated a filter, only filtered data will be displayed.

11.2.3 Export errors/messages

In **DNC Admin**, you can export errors/messages from the central log book to an external text file for use elsewhere if necessary. The export file generated is stored in ...DNC\Export.

Note

If you apply the default settings, the Export directory is rerouted to the Import directory.

File name of export file

The file name of the exported error/message file is: LogyyyyMMdd_x.TXT (the index x is incremented by 1 for each file if several export files are created on the same day. The first file has the index 1).

Structure of export file

```
....
E|2002-09-25 10:36:43.183000000|-1|Error ReadFilterColumn|DNC Admin|Terminal1|
....
```

The columns in the error/message list are represented by the | character in the export file.

Caution

If you have applied a filter to the log file, only the data displayed (filtered) will be exported!

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11.2.4 Delete errors/messages

You can delete errors/messages from the central log book in **DNC Admin**.

Caution

The delete operation applies to all data displayed! To protect some log data against deletion, you must apply a filter beforehand. The delete operation always deletes all the log data displayed!

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11.3 Separate message file

If the database cannot be accessed when an error/message occurs, messages are saved to the *ProgramName*.log file, which is independent of the database.
The size of this separate message file is set to 10 KB. A new message file is created if the original file is not large enough to hold all the messages (while the database is inaccessible). The old data remain stored in file *ProgramName*.old until the current file is filled again.

You can view these alternative *ProgramName*.log and *ProgramName*.old log files by opening them in a text editor.

Note

Data from separate message files are **not** transferred to the database automatically.

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12

12 Auto Archiving

12.1 Functions performed by DNC Auto Archive FBDN1/12-218
12.1.1 General FBDN1/12-219
12.1.2 Auto Archive identifier FBDN1/12-219

12.2 Configuring Auto Archive FBDN1/12-220
12.2.1 General FBDN1/12-220
12.2.2 Configuration in DNC Admin FBDN1/12-221
12.2.3 Configuration in the machine configuration file FBDN1/12-224
12.2.4 Save control NC active data FBDN1/12-227
12.2.5 Auto Archive start parameters FBDN1/12-230
12.2.6 Starting Auto Archive automatically FBDN1/12-231

12.3 Comparison results FBDN1/12-232

12.4 Tracking the Auto Archive process FBDN1/12-232

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12.1 Functions performed by DNC Auto Archive

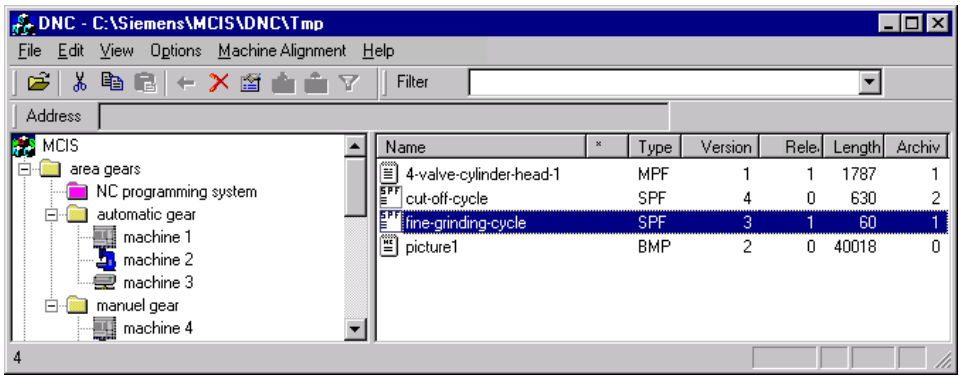

Fig. 12-1 List display with Auto Archive identifier

Note

Archiving can also be activated manually via the operator interface for a machine or machine group.
See also: Chapter 4.5 → Manual archiving

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12.1.1 General

The Auto Archive function compares the NC data on SINUMERIK 810D/840DI/840D machines with the data in the DNC system and transfers items automatically to the DNC system in the event of deviations.
The Auto Archive function requires **DNC IFC SINUMERIK** to be installed on the SINUMERIK 810D/840DI/840D control. Automatic archiving also includes NC data loaded in the NC data management system of the SINUMERIK 810D/840DI/840D. As well as main programs, subprograms and workpieces, all other data management server files and NC active data can also be archived.
The **Auto Archive** function downloads NC data and NC active data created or edited on the SINUMERIK to the DNC server automatically, where they are archived. This ensures that data created or edited on the SINUMERIK (e.g., following loss of data on the SINUMERIK) are available and up-to-date on the server.

Note

DNC Auto Archive is available for PCU 50/70, but not for MMC 103.

12.1.2 Auto Archive identifier

Archived files are assigned an identifier (the Auto Archive identifier). The Auto Archive identifier is shown in the DNC list display, in the **Archive** column (see Fig. 12-1).
The following Auto Archive identifiers are possible:

Table 12-1 Auto Archive identifier

Auto Archive identifier	Meaning
0	File has not been archived or archiving was set to 0 by current archiving operation.
1	File has been archived and is available on the SINUMERIK. This program is the most up-to-date version.
2	File has been archived previously, but is no longer available on the SINUMERIK.

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12.2 Configuring Auto Archive

12.2.1 General

In order to configure SINUMERIK 810D/840DI/840D machines for automatic comparison and archiving, it is necessary to activate the machine's **Auto Archive** checkbox in DNC Admin. The upload directory is always the machine directory.

Basis of comparison for Auto Archive

NC data from the machine directory in the DNC system, whose **Auto Archive identifier** is set to **1** or **2**, are compared with NC data from the machine directory on the relevant SINUMERIK 810D/840DI/840D. If no version is found with an **Auto Archive identifier**, enabled NC data from the search level in the DNC system are compared with NC data from the machine directory on the relevant SINUMERIK 810D/840DI/840D.

The comparison is performed on the basis of modification date and the length of the files to be compared.

For each individual machine, you must configure the DM directories for the machine and the file types from these DM directories to be compared or archived.

Time of Auto Archive

In order to specify the times at which automatic comparison and automatic archiving are performed, you must add DNC Auto Archive to the Windows task scheduler (2000, XP).

These configurations are explained in more detail in the following chapters.

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12.2.2 Configuration in DNC Admin

With DNC Admin in configuration mode, the properties of the machine must be configured for Auto Archive.

Note

These functions are available only if you have the appropriate authorization.
See: User administration

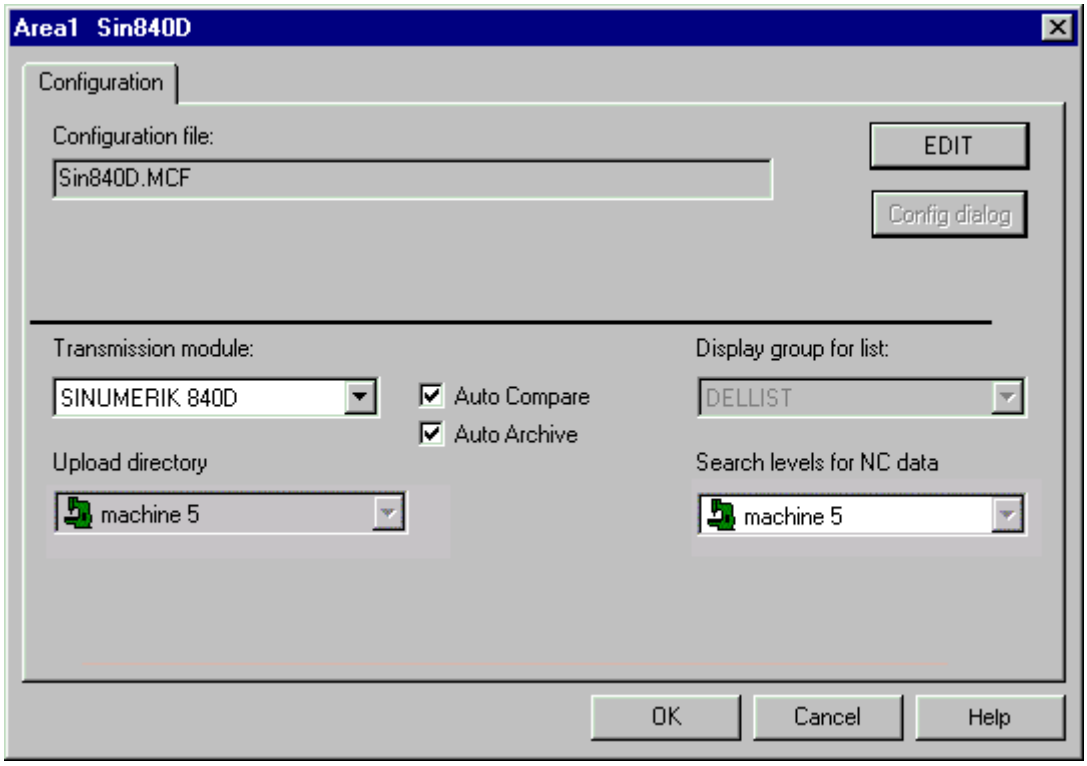

Fig. 12-2 Machine properties in configuration mode

You must first set the transmission module "**SINUMERIK 810D/840DI/840D**".

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Auto Compare/Auto Archive checkboxes

To use only the compare function, only check the **Auto Compare** box.

To archive NC data from the machine to the DNC system, check the **Auto Archive** box as well.

Note

Only one of the **Auto Compare** and **Auto Archive** boxes should be checked at once. If both are checked, the comparison will be performed twice before the archive operation is performed.

The **Upload directory** is set to **Machine** automatically when **Auto Archive** is selected and the **NC data search level** of the machine can be modified.

Points to be noted about the NC data search level

The configured search level is machine-specific. It determines the levels at which searches are performed for NC data for comparison purposes.

Note

The search for **Workpieces** is restricted to the machine directory. However, an entry is made in the **Log database** and the **Log trace file** if a workpiece of the same name is located within the search level. This is to prevent “half” workpieces being generated in the machine directory with separate program versions.

The search directory is configured in a combo box offering the following search areas:

- Machine
- Machine, group (search area is machine and higher-level group)

Note

The **upload directory** must be located **within** the **search level** or a new version of the same program will be set up every time it is archived.

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Points to be noted about Auto Archive

If **workpieces** are included in the Auto Archive run, then they are uploaded to the machine directory, even if workpieces of the same kind are located within the search level, but not in the machine directory. This is designed to prevent half workpieces being created in the upload directory.

Whether or not the archived NC data are **released** will depend on the **version strategy** (see Configuration). Their version is determined accordingly. The “Delete Version” dialog is not displayed, so that the archive operation is fully automatic without operator intervention. The version strategy is therefore changed automatically from 2 → 1; from 4 → 3 in DNC Auto Archive.

The search directory is configured in a combo box offering the following directories:
- Machine
- Group (upload directory: of the higher-level group of the machine)

Note

DNC creates management data for uploaded files. All automatic processes regarding data versions and release/trial-cut identifiers in DNC are applied.

The Auto Archive function also sets the auto-archive identifier to 1 for archived data. If the machine directory already contains NC data with the same name and type, their Auto Archive identifier may be reset to 0.

If the upload directory for the machine contains NC data that cannot be found on the machine, the Auto Archive identifier is set to 2 for NC data, which were previously either released or had Auto Archive identifier = 1.

The NC data **Auto Archive identifier** is only set or reset within the **machine directory**. Otherwise, it could be set/reset by several machines, rendering the assignment unclear.

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12.2.3 Configuration in the machine configuration file

General

A machine is to be configured with DNC Admin. To do this, start **DNC Admin configuration mode**, select the machine and open the **Machine Properties dialog**. Use the **Edit** button to open the correct **machine configuration file**. If no configuration file has yet been stored for this machine, a configuration file with the standard parameters for the SINUMERIK transmission module will be set up and opened.

The **[COMPARE]** section is reserved for Auto Archive. The DM directories to be matched as part of the archive process with the DNC system are listed in this section. Parameters are also set for each DH directory specifying whether files from the directory are to be archived to a pseudo workpiece with workpiece name *.DIR and which file types are involved in the archive process. Furthermore, it is also possible to exclude individual files in each DH directory from the comparison and archive runs.

The individual parameters of a DH directory are separated by "**;**".

Note

Automatic archiving is **station-dependent**. This means that only machines on the relevant station are compared and archived.

DHDIR...

You can set this parameter to define up to 30 DM directories for each machine (DHDIR1 ... DHDIR30).

The numbering determines the sequence in which DM directories are compared and archived.

Directories do not need to be numbered consecutively.

Extract from the machine configuration file:
DHDIR1 = MPF.DIR;0; MPF
DHDIR3 = SPF.DIR;0; SPF

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DH directory name

The first entry after the equality sign contains the name of the **DH directory** to be compared and archived.

Extract from the machine configuration file:
DHDIR1 = **MPF.DIR**;0; MPF

Note

If the DH directory contains another subdirectory, this **subdirectory** will **not** be included in the comparison or archive operation.

Pseudo workpiece

The next entry is the "yes/no" identifier, which determines whether this DH directory must be compared or archived in a **pseudo workpiece**. This will be necessary if the different DM directories to be archived contain files, which have the same name and type. Pseudo workpieces are clearly assigned to the source directory of the data. They also prevent a version explosion.

A pseudo workpiece can be identified by its name, which is the same as the DH directory (***.DIR workpiece identifier**).

Value range:
0 ; FALSE : Files are placed in an upload directory directly.

1 ; TRUE : Files are placed in a pseudo workpiece with the same name as the DH directory in the upload directory, and are also searched for there in the DNC system for comparison purposes.

Extract from the machine configuration file:
```
DHDIR5 = CST.DIR;TRUE; AWB;COM;SPF
```

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File types

The files types to be compared and/or archived in this DH directory must be defined after the pseudo workpiece "yes/no" identifier. File types are also separated by ";".

Note

Please note that only file types entered in the DNC database table DNCDATATYPE can be selected.

Extract from the machine configuration file:
DHDIR3 = WKS.DIR;0; **MPF;SPF;TOA;ZOA;RPA;WPL;JOB;BMP;ARC;INI**

Exclude specific files

Files to be excluded from the automatic comparison or archive operation can be specified for each DH directory. The syntax comprises the keyword: "**EXCLUDE_**" and the DH directory.

Extract from the machine configuration file:
DHDIR1 = MPF.DIR;0; MPF; CEC
EXCLUDE_MPF.DIR = Test; Test1

In this case, test.mpf, Test.cec; Test1.mpf and Test1.cec are excluded if such files are stored in the MPF.DIR directory.

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12.2.4 Save control NC active data

NC active data

In principle, Auto Archive can only archive data from the control, which can also be saved in a file in the operator interface's file system. The **Save NC active data** function can be used to partially cancel this restriction.
Data, which are only found in the NCU/NCK, are consolidated in a data archive, which is recreated by DNC for each archive operation, and saved there in ASCII format. These data, which cannot be recorded individually (e.g., drive data or GUD variables), are referred to in this document as **NC active data**.

As part of Auto Archive, a previously defined subset can be used to create a data archive using data from the NC, the PLC and the file system, before the actual archive run is performed. This archive is stored in the data management system archive directory (ARC.DIR), and is archived using the Auto Archive mechanism. Exactly one archive file, which is set up in the archive directory prior to the archive operation, can be defined for each machine. If a file already exists, it is overwritten. An input file is used to define the data be included in this archive file.

Settings for this function must be made on both the control and the DNC master computer.

This function supports the creation of standard archive files.
The subareas of the NC active data to be taken into account by DNC Cell/Plant via Auto Archive and to be read anew during every archive operation and stored in the archive file can be defined.

This function expands the Services server (ARServer.EXE) interface.

Note

It is not possible to create series startup archives or upgrade archives.

Important

The **Save control NC active data** function can only be implemented on the PCU50.

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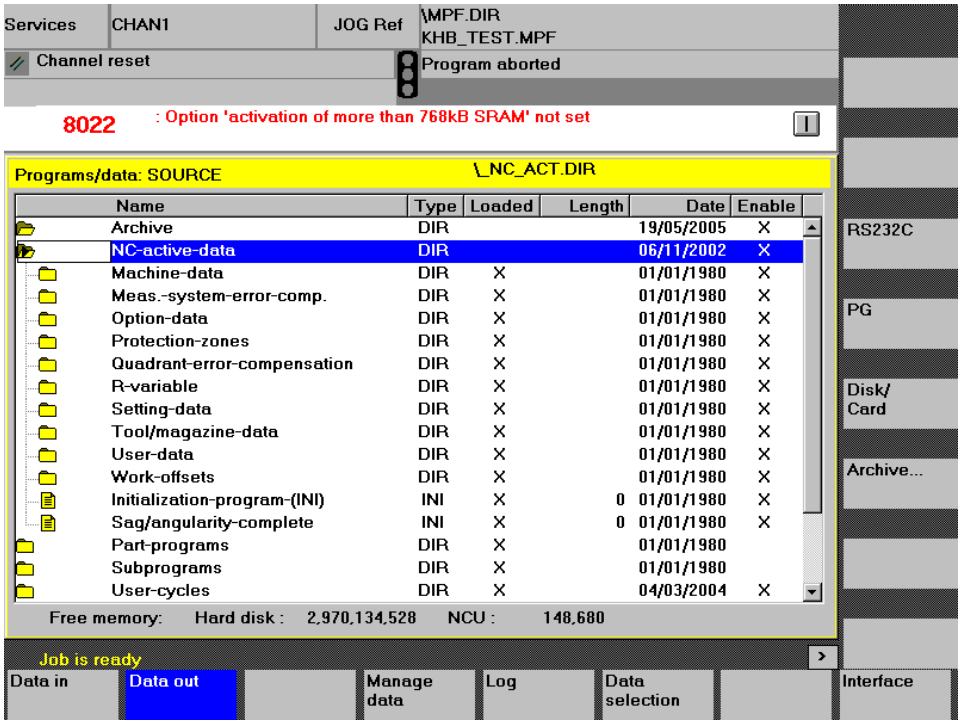
Creating the input file for Auto Archive from the derived data:

The PCU50 Services function can be used to generate the input file for creating an archive manually.
Use the Select key to select the desired data areas (e.g., “Machine Data - Channel1”, “Setting Data – Axis2” and “Tool Offsets”).
Next, generate an archive manually (Archive button).
Once an archive has been generated, the F:\tmp directory contains an input file named ARCHIVEXX.IN, in which the parameters used in generating this archive are entered.
This file can then be copied to the F:\add_on directory 1:1 and, if necessary, renamed as something more meaningful, e.g., NCACTDATA.IN. This name must be entered in the relevant machine configuration file under the ARCJOB parameter (see Chapter 10.4.5 Configuration dialog for interface type SINUMERIK 840D/840Di/810D).

Note

Please call our hotline if you have any further questions about the Services server.



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Settings on the master computer

Settings are made on the master computer via the **Archive Server Job** tab sheet (machine configuration SINUMERIK 840D/840Di/810D) in the configuration dialog for interface type SINUMERIK 840D/840Di/840D (see Chapter 10.4.5 Configuration dialog for interface type SINUMERIK 840D/840Di/810D).

Settings on the control

Data found only in the NCU or the PLC on the control system and not compatible for transfer to the hard disk unless an archive file has been created should also be saved using Auto Archive.

These data come from the following areas:

- GUD (Global User Data)
- TEA data (axis machine data)
- R parameters
- Work offsets
- Compensation data
- Option data
- Setting data

We do not recommend that you save all the data from the areas mentioned above. Only data, which could change during operation, should be saved in an archive file. Data generated automatically by setting devices or tool offsets are not relevant for the backup.

Data, which have a fixed directory on the control's hard disk and can also be transferred to the hard disk by the NC, if necessary, do not have to be saved in this way. This includes the following data and directories, for example:

MPF.DIR	(parts programs)
SPF.DIR	(subprograms)
WKS.DIR	(workpieces)
CUS.DIR	(user cycles)
CMA.DIR	(manufacturer cycles)
CST.DIR	(standard cycles)

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12.2.5 Auto Archive start parameters

The Auto Archive function uses two start parameters:

ONLYCOMP

This parameter determines whether the machine setting for archiving is valid, or whether it must be skipped so that only a comparison process is performed.

If this start parameter is not set, the archive function is performed according to the machine setting.

If the start parameter "**ONLYCOMP**" is set, comparison without archiving is carried out on all machines configured for “Auto Compare”, regardless of whether they are also configured for the “Auto Archive” function.

Call:
DNCAArch.exe **ONLYCOMP**

SHOW_FILESONDNC

This parameter determines whether NC data in the DNC system, but not in the SINUMERIK machines, must be displayed in the comparison result.

If this parameter is not set, these NC data are not displayed in the comparison result as they are generally of less interest in relation to Auto Archive.

These NC data are displayed when start parameter "**SHOW_FILESONDNC**" is set.

Call:
DNCAArch.exe **SHOW_FILESONDNC**
DNCAArch.exe ONLYCOMP **SHOW_FILESONDNC**

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12.2.6 Starting Auto Archive automatically

You can use the Windows Task Scheduler (Utility: Task Scheduler) (2000, XP) to start Auto Archive automatically at specific times.

To use the **Task Scheduler**, it must be running (in the background) and you must specify the start times for DNC Auto Archive using AT commands.

Example:

```
C:\>   AT 01:00 /every:M,T,W,Th,F,S,Su "C:\Siemens\MCIS\DNC\DNCAArch.exe"
```

Automatic archiving starts every day at 1 am.

```
C:\>   AT
```

The list of scheduled commands is displayed

```
Status ID  Day              Time       Command line
-------------------------------------------------------------------------------
  1   Every M T W Th F...01:00 AM   C:\Siemens\MCIS\DNC\DNCAArch.exe
```

Note

For more information about the task scheduler, in the Windows Help (Start→Help and Support Center), please refer to index entry: **Task scheduler – AT command** (scheduled tasks and AT command).

Automatic archiving can also be started via **Start/Settings/Control Panel/Scheduled Tasks/Add Scheduled Task**.

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12.3 Comparison results

Each time Auto Archive is launched, it creates or replaces a file with the comparison results for every archived machine. These files are stored in the DNC data directory in subdirectory: **CmpResult**, with the **machine name** and extension "**_AArch.txt**".

The files are in English.

The file content is as follows:

1. Group and machine name (listed in order)

2. The date (at beginning and end)

3. "**NC Data in machine only**", listing files that have been found on the machine only.

4. "**Different NC data**", listing machine files, which deviate from the corresponding files in the DNC system.

5. "**NC Data in DNC system only**", listing files that have been found in the DNC system only. This section is generated only when start parameter "**SHOW_FILESONDNC**" is set. The Auto Archive identifier is set to 2 for NC data included in this section and located in the upload directory.

6. On completion, the end result indicating whether any Auto Archive errors have occurred and the number of archived files is also displayed. If no errors have occurred, and if this machine is configured for archiving, then all the above files must be archived, which means that no further deviations will be found when DNC Auto Archive is next launched, provided that the data on the machine have not been edited again by that point.

12.4 Tracking the Auto Archive process

Since Auto Archive has no operator interface, the central log book is the only means of checking the Auto Archive sequence.

The **comparison results** can also be used to trace the Auto Archive history. However, these results are reset each time Auto Archive is launched, so that no history can be traced. They display only the last actions taken for each machine.

■

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I Index

I.1 Subject index

.

.DIR workpiece identifier FBDN1/12-225
.DIR FBDN1/12-225

A

Address bar FBDN1/3-32
ARC FBDN1/2-23
Auto Archive
File types..... FBDN1/12-226
Auto Archive identifier ..... FBDN1/12-220, ... 12-223
AWB FBDN1/2-23

B

Background color FBDN1/10-133
Base FBDN1/3-30
Big view .....FBDN1/3-34, ...5-95, 5-96, 10-200
BMP.....FBDN1/2-23

C

Card
configuration.....FBDN1/4-51
CEC FBDN1/2-23
Central log book
function..... FBDN1/11-212
Central log book FBDN1/11-212, 12-232
Checkbox..... FBDN1/10-203
Checkboxes..... 10-203
CmpResult..... FBDN1/12-232
Code conversion server .....FBDN1/9-129, ... 10-148
Code conversion table.....FBDN1/7-116, ... 7-118
Code conversion ..... FBDN1/4-58, ... 7-116
Codes
ASCII FBDN1/7-116
EIA FBDN1/7-116
ISO..... FBDN1/7-116
COM..... FBDN1/2-23
Combo box..... FBDN1/10-203
Communication error FBDN1/10-187
Compare
NC data
machine and DNC FBDN1/10-134
COMPARE..... FBDN1/12-224
Comparison results..... FBDN1/12-232
Config dialog ..... FBDN1/4-51, ...10-147
Configuration dialog..... FBDN1/10-147
Configuration file FBDN1/12-224
Configuration mode..... FBDN1/10-133, ...12-221
Configuration options..... FBDN1/1-16
Configure user FBDN1/10-133
Configure/Plan FBDN1/5-102
Consistency check
during start..... FBDN1/4-85
Consistency check and debugging FBDN1/10-133
Consistency check..... FBDN1/4-84, ...5-104
Control FBDN1/2-26
Create a display group..... FBDN1/10-195
Cross-area filters..... FBDN1/3-37

D

Data directory..... FBDN1/4-83
Database field
FIELDTYPE FBDN1/4-48
INTVAL *FBDN1/*10-188
NAME *FBDN1/*10-188
ORDERNUM..... *FBDN1/*4-79

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X FBDN1/ 10-209
X2 ..... FBDN1/10-209
Y *FBDN1/*10-209
DATABASE FIELD
COLUMNNAME *FBDN1/*10-207
DLGORDER FBDN1/10-208
FIELDTYPE_NEW *FBDN1/*10-209
LEN *FBDN1/*10-209
PAGE *FBDN1/*10-208
DATABASE FIELD
DISPLAYGROUP *FBDN1/*10-207
FIELDTYPE *FBDN1/*10-209
Database table
FILTERCOLUMN FBDN1/4-81
FILTERHEADER.....FBDN1/4-80
FORMDESCRIPTION .....FBDN1/ 4-48, 4-77, 10-207
GLOBALSETTINGS.....FBDN1/ 4-76, 10-188
LISTDESCRIPTION .....FBDN1/ 3-30, 4-77, 10-185
NCDATATYPE FBDN1/12-226
DATABASE TABLE
MACHINE.....FBDN1/4-78
NC DATA.....FBDN1/4-78
NCDATATYPE FBDN1/2-23
Delete version dialog.....FBDN1/4-57
Delete Version dialog FBDN1/12-223
Delete versiondialog.....FBDN1/4-67
DELLIST display group FBDN1/10-195
Determining the file name ... FBDN1/10-168
DH directory name FBDN1/12-225
DHDIR. FBDN1/12-224
Dialog function
command for list request.. FBDN1/10-165
command for request of NC data with release identifier..... FBDN1/10-164
command for request of NC data with trial cut identifier..... FBDN1/10-164
command for upload FBDN1/10-165
configuration..... FBDN1/10-184
dialog program
command program line FBDN1/6-109
examples.....FBDN1/6-110
file name program line FBDN1/6-109
file type program line.....FBDN1/6-109
program number FBDN1/6-109
dialog program responses
examples.....FBDN1/6-111
program end identifier.....FBDN1/6-111
program line.....FBDN1/6-111
program number FBDN1/6-111
dialog program responses...FBDN1/6-111
dialog program FBDN1/6-109
end identifier for response FBDN1/10-164
errors FBDN1/10-187
external dialog interpreter. FBDN1/10-165
file type identifier..... FBDN1/10-166
interpretation mode..... FBDN1/10-165
list display FBDN1/10-185
number of significant lines FBDN1/10-164
request identifier FBDN1/10-164
response identifier FBDN1/10-164
wildcard alternative..... FBDN1/10-166
workpiece identifier..... FBDN1/10-166
Dialog function FBDN1/1-19, 10-184
Dialog interpreter FBDN1/9-130
Differences between DNC-Admin and DNC FBDN1/10-132
DIR workpiece identifier..... FBDN1/12-225
DIR..... FBDN1/12-225
Display format..... FBDN1/3-34
Display group
DELLIST FBDN1/10-195
GLOBAL FBDN1/3-37, 10-195
Display group ..... FBDN1/ 10-185, 10-193, 10-195, 10-200, 10-207
DNC Auto Archive..... FBDN1/10-139
DNC Cell computer..... FBDN1/2-25
DNC Cell FBDN1/1-17
DNC Compare FBDN1/1-18, 4-71
DNC Explorer..... FBDN1/3-30
DNC File System FBDN1/1-19
DNC HMI computer..... FBDN1/2-25
DNC IFC Dialog FBDN1/1-19
DNC IFC Serial FBDN1/1-19
DNC IFC SINUMERIK
DELLIST PREVIEW FBDN1/10-195
DNC IFC SINUMERIK ..... FBDN1/ 10-195, 12-219
DNC Machine..... FBDN1/1-19
DNC Plant
software requirements FBDN1/8-125
DNC Plant computer..... FBDN1/2-25
DNC Plant..... FBDN1/1-15
DNC-Admin..... FBDN1/3-31
Dowload
abort active download..... FBDN1/4-60
Download
download requests FBDN1/4-60
download states..... FBDN1/4-60

E

Edit box FBDN1/10-203
Edit list description FBDN1/10-193
Edit list display FBDN1/10-193
EEC..... FBDN1/2-23
Error message

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export file
file name FBDN1/11-214
structure of content FBDN1/11-214
Error message file .. FBDN1/11-212, 11-216
Error messages
delete..... FBDN1/11-215
export FBDN1/11-214
Events..... FBDN1/11-212
EXCLUDE_..... FBDN1/.12-226
Explorer structure FBDN1/3-30

F

Fault correction
database NC management data
.....FBDN1/4-84
file structure.....FBDN1/4-84
workpieces FBDN1/4-89
Field types FBDN1/10-203
File
CODES.TXT.....FBDN1/7-116
File types FBDN1/12-226
Filter
configure.....FBDN1/5-104
create FBDN1/5-104
cross-area FBDN1/3-37, 5-105
dialog filter criteria FBDN1/3-38
edit.....FBDN1/5-105
examples.....FBDN1/3-42
filter criteria example FBDN1/3-42
filter criteria.....FBDN1/3-38
operands FBDN1/3-39
select..... FBDN1/3-40, 5-105
switch on/off FBDN1/5-105
workpiece - exception FBDN1/3-37
Filter assignment
add FBDN1/5-99
edit.....FBDN1/5-99
select table FBDN1/5-98
Filter bar FBDN1/3-32
Filter selection FBDN1/3-41
Filter.....FBDN1/3-36
FILTERCOLUMN database table.....
.....FBDN1/4-81
FILTERHEADER database table .....
.....FBDN1/4-80
Find certain NC data FBDN1/3-37

G

GLOBAL display groupFBDN1/3-37, 10-195
Global settings..... FBDN1/10-188
Group
create, delete FBDN1/10-133
Group FBDN1/
....2-22, 3-30, 4-83, 10-186, 12-222, 12-223

H

Hardware requirements
DNC Cell.....FBDN1/8-122
DNC HMI FBDN1/8-123
DNC Plant.....FBDN1/8-123
station PC FBDN1/8-123
Hardware FBDN1/8-122
Header data FBDN1/4-55

I

Import
via links FBDN1/4-55
with header data
automatic.....FBDN1/4-56
with header data FBDN1/4-55
without header data
manual.....FBDN1/4-55
Import.....FBDN1/4-53
INI.....FBDN1/2-23
Input field FBDN1/10-203
Interface
baud rate.....FBDN1/10-152
COM interface.....FBDN1/10-152
data bits FBDN1/10-152
flow control.....FBDN1/10-153
parity FBDN1/10-152
serial FBDN1/2-26
stop bits FBDN1/10-152
transmission mode FBDN1/10-153
XOFF control character FBDN1/10-153
XON control character FBDN1/10-153
Interpretation mode.....FBDN1/10-168

J

JOB FBDN1/2-23

K

Key
MaxNCVersions.....FBDN1/10-188
*NewVersionAfterEdit FBDN1/*10-190
VersionStrategy FBDN1/10-189

L

Language FBDN1/3-35, 10-194, 10-200

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Layout of DNC and DNC Admin Explorer FBDN1/3-30
Link FBDN1/2-24, 4-83, 10-186
Links
create, delete create, delete ...FBDN1/10-133
List definition
configure.....FBDN1/5-104
List description..... FBDN1/4-77, 10-201
List display of cross-area filter..FBDN1/3-37
List display..... FBDN1/10-185
List dsiplay.....FBDN1/4-77
List editor
create a display group..... FBDN1/10-195
List editor...FBDN1/10-133, 10-185, 10-193
List Editor.....FBDN1/4-48
Log book
display FBDN1/11-213
Log data
filtering..... FBDN1/11-214
Log database..... FBDN1/12-222
Log trace file..... FBDN1/12-222
LST FBDN1/2-23

M

Machine
configuration
tab sheet
machine server.....FBDN1/10-148
Machine
Config dialog
tab sheet
interface FBDN1/10-151
configuration
tab sheet
code conversion server ...FBDN1/10-150
dialog function FBDN1/10-163
general FBDN1/10-147
interpretation of data stream . FBDN1/10-167
receive FBDN1/10-160
send FBDN1/10-154
Machine configuration data FBDN1/4-51
Machine configuration file
config dialog FBDN1/4-51
DHDIR..... FBDN1/12-224
EXCLUDE_.. ..... FBDN1/.12-226
Machine configuration file.....
..... FBDN1/4-51, 10-136
Machine interfaces FBDN1/10-136
Machine server..... FBDN1/6-108, 9-129
Machine FBDN1/
....2-22, 3-30, 4-83, 10-186, 12-222, 12-223
Machines
create, delete FBDN1/10-133
Manage user FBDN1/5-93
Management data
create
NC data FBDN1/4-48
create..... FBDN1/4-48
edit
link FBDN1/4-52
NC data FBDN1/4-48
edit.....FBDN1/4-48, 5-102
Manual import FBDN1/4-54
Match machines for SINUMERIK FBDN1/4-71
Match machines..... FBDN1/10-134
MCIS database ..FBDN1/1-16, 8-124, 8-125
Menu bar
DNC and DNC-Admin..... FBDN1/3-31
Missing WP in WP Table FBDN1/4-89
MPF FBDN1/2-23
MSDE.....FBDN1/2-25, 4-75

N

NC data
compare..... FBDN1/5-103
copy/paste FBDN1/4-70
copy FBDN1/5-102
create..... FBDN1/5-102
cut/paste FBDN1/4-70
cut FBDN1/5-103
delete FBDN1/5-103
download to SINUMERIK 810D.....
.....FBDN1/4-61, 4-64
download to SINUMERIK 840D FBDN1/4-61, 4-64
download to SINUMERIK 840Di
.....FBDN1/4-61, 4-64
download FBDN1/4-60, 5-103
edit.....FBDN1/4-57, 4-68, 5-102
export..... FBDN1/5-102
import.....FBDN1/4-69, 5-102
master directory..... FBDN1/4-83
paste to link..... FBDN1/5-102
paste to management data. FBDN1/5-102
paste FBDN1/4-68, 4-70
upload FBDN1/4-62, 4-68, 4-69, 5-103
NC data management..... FBDN1/3-30
NC data master directory..... FBDN1/4-83
NC data search level..... FBDN1/12-222
NC data single comparison..... FBDN1/4-73
NC data types FBDN1/2-23
NC data.....FBDN1/2-23, 4-83
NC programming system FBDN1/2-26

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NCDATATYPE database table.FBDN1/4-79
NCDATATYPE FBDN1/12-226
Networking..... FBDN1/1-16, 1-17
Normal view.....FBDN1/3-34

O

ONLYCOMP..... FBDN1/12-230
Operating system..... FBDN1/8-124, 8-125
Oracle FBDN1/2-25, 4-75
Output field checkbox..... FBDN1/10-203
Output field FBDN1/10-203

P

Password.....FBDN1/5-95
Program start identifier/program end identifier FBDN1/10-169
Pseudo workpiece FBDN1/12-225

Q

QEC.....FBDN1/2-23
Quick consistency check.....FBDN1/4-85

R

Receive
  end of transmission character.FBDN1/10-161
  first valid character..... FBDN1/10-161
  ignore ZERO values..... FBDN1/10-162
  length of leader FBDN1/10-160
  length of trailer FBDN1/10-161
  program end character..... FBDN1/10-161
  program start character.... FBDN1/10-161
  receive end after last character FBDN1/10-162
  test mode..... FBDN1/10-162
Receive end after last characters.FBDN1/4-63
Release identifier..... ..... FBDN1/4-69, 10-189, 12-223
Release identifiers
  reset FBDN1/5-103
Root.....FBDN1/3-30
RPA FBDN1/2-23

S

Scheduler FBDN1/12-231
Screen definition
  configure..... FBDN1/5-104
Screen definition FBDN1/10-195
Screen description FBDN1/4-77
Screen display FBDN1/10-198
Screen editor.....FBDN1/10-133, 10-198
Screen Editor FBDN1/4-48
Screen type.....FBDN1/10-200, 10-203
Search for certain NC data FBDN1/3-37
Section
  [COM] FBDN1/10-151
  [COMPARE]..... FBDN1/12-224
  [DIALOGFUNCTION] FBDN1/6-112, 9-130, 10-163
  [DNCConv]..... FBDN1/10-150
  [GLOBAL] FBDN1/10-147
  [RECEIVE] FBDN1/10-160, 10-167
  [SEND]..... FBDN1/10-154
  [SERINTSVR] FBDN1/10-148
Send
  comment
    end..... FBDN1/10-155
    start..... FBDN1/10-155
    suppress..... FBDN1/10-155
  end of line character FBDN1/10-159
  leader
    character..... FBDN1/10-156
    length..... FBDN1/10-156
  program identifier
    end..... FBDN1/10-155
    start..... FBDN1/10-155
  send baud rate..... FBDN1/10-159
  send delay FBDN1/10-159
  send timeout FBDN1/10-159
  spacer
    character..... FBDN1/10-158
    length..... FBDN1/10-157
    program end identifier ... FBDN1/10-158
    program start identifier .. FBDN1/10-158
  spacer FBDN1/10-157
  trailer
    character..... FBDN1/10-156
    length..... FBDN1/10-156
Send delay FBDN1/4-60
SerIntSvr FBDN1/9-129
Sheet..... FBDN1/10-200
SHOW_FILESONDNC..... FBDN1/12-230
SINUMERIK 810D FBDN1/2-26, 4-71, 12-221
SINUMERIK 840D/840Di..... FBDN1/4-71
SINUMERIK 840D FBDN1/2-26, 12-221
SINUMERIK 840Di.....FBDN1/2-26, 12-221
Software requirements
  DNC Cell..... FBDN1/8-124
  station PCs FBDN1/8-125
Software structure..... FBDN1/9-128

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Software FBDN1/8-124
SPF.....FBDN1/2-23
SQL server FBDN1/2-25, 4-75
Start parameter
ONLYCOMP..... FBDN1/12-230
SHOW_FILESONDNC..... FBDN1/12-230
Start parameters of Auto Archive function
..... FBDN1/12-230
Static text..... FBDN1/10-203
Station PC FBDN1/2-26
Status bar FBDN1/3-33
Store strategy FBDN1/10-190
Subdirectory
CmpResult..... FBDN1/12-232

T

Task Scheduler..... FBDN1/12-231
Text field FBDN1/10-203
the Auto Archive identifier ... FBDN1/12-232
Timeout..... FBDN1/10-161
TOA FBDN1/2-23
Tool setting station FBDN1/2-27
Toolbar FBDN1/3-32
Tools
change settings FBDN1/5-104
TOP FBDN1/2-23
Transmission
symbols FBDN1/4-58
Transmission module
SINUMERIK810D..... FBDN1/12-221
SINUMERIK840D..... FBDN1/12-221
SINUMERIK840Di..... FBDN1/12-221
Tree hierarchy
Base FBDN1/3-30
Group FBDN1/3-30
Link.....FBDN1/3-30
Machine.....FBDN1/3-30
Root.....FBDN1/3-30
Tree hierarchy FBDN1/3-30
Tree structure FBDN1/3-37
Trial cut identifier FBDN1/4-69, 10-189

U

Upgrading a 2.x database to a 3.0 database
.....FBDN1/4-89
Upload
download states..... FBDN1/4-62
upload request..... FBDN1/4-62
version strategy FBDN1/10-189
Upload directory.....FBDN1/10-186, 12-223
User
configure FBDN1/5-104
User administration FBDN1/5-92
User Administration..... FBDN1/10-133
User name FBDN1/5-94, 5-95
User rights
DNC FBDN1/5-102
DNC-Admin..... FBDN1/5-102
User FBDN1/5-92

V

Version management..... FBDN1/4-66
Version maximum FBDN1/10-188
Version strategy..... FBDN1/12-223
Version..... FBDN1/10-189
Versions strategy FBDN1/10-189
View
big FBDN1/10-200
view/filter all NC data..... FBDN1/3-37
View filter FBDN1/3-36

W

Wildcards SQL..... FBDN1/3-39
Wildcards FBDN1/3-39
Workpiece
pseudo workpiece..... FBDN1/12-225
Workpiece .....
..... FBDN1/2-22, 4-83, 12-222, 12-223
Workpieces
create..... FBDN1/5-102
WPL FBDN1/2-23

Z

ZOA..... FBDN1/2-23

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Motion Control Information Systems

SINUMERIK 840D/840Di/810D
NC Program Management DNC

DNC IFC SINUMERIK - Downloading NC Data via a Network (FBDN2)

1 Introduction FBDN2/1-5

2 System Requirements on SINUMERIK FBDN2/2-7

2.1 Hardware FBDN2/2-8

2.2 Software FBDN2/2-8

3 Operator Interface FBDN2/3-9

3.1 DNC IFC SINUMERIK operator interface on the SINUMERIK system FBDN2/3-10

3.2 Structure of the operator interface FBDN2/3-11
3.2.1 General FBDN2/3-11
3.2.2 Refreshing the displayed NC data FBDN2/3-13

3.3 Online help FBDN2/3-13

3.4 Languages FBDN2/3-13

4 Functions FBDN2/4-15

4.1 Interface with DNC Cell/Plant FBDN2/4-16

4.2 Downloading NC data from DNC Cell/Plant to the SINUMERIK control FBDN2/4-16
4.2.1 View of the DNC Cell/Plant data management system FBDN2/4-16
4.2.2 NC data download (default) FBDN2/4-18
4.2.3 NC data download (with change in target, name and type) FBDN2/4-19
4.2.4 Delete FBDN2/4-20

4.3 Uploading NC data from the SINUMERIK to DNC Cell/Plant FBDN2/4-21
4.3.1 View of PCU/MMC data management system FBDN2/4-21

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4.3.2 NC data upload (default) FBDN2/4-22
4.3.3 NC data upload (with change in target, name and type) FBDN2/4-23

4.4 NC data detail view FBDN2/4-24

4.5 Filter function FBDN2/4-26

4.6 Logbook FBDN2/4-29

4.7 Job interface FBDN2/4-30

4.8 Login FBDN2/4-32

5 Configuration File FBDN2/5-33

5.1 General FBDN2/5-34

5.2 Configuration program FBDN2/5-37
5.2.1 Basic setting FBDN2/5-39
5.2.2 DNC FBDN2/5-43
5.2.3 FTP interface FBDN2/5-46
5.2.4 Graphics FBDN2/5-48
5.2.5 Login FBDN2/5-49
5.2.6 Job interface FBDN2/5-51

5.3 Other configuration options via DNC_IFC.INI FBDN2/5-53

I Index FBDN2/I-55

I.1 Subject index FBDN2/I-55

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Tables

Table 4-1 Assignment of NC data in DNC system topology.....FBDN2/17
Table 4-2 Symbols used in DNC data management in DNC IFC SINUMERIK.....FBDN2/17
Table 4-3 Correlation between NC data type in DNC and the target path on PCU/MMC or NCK.....FBDN2/18

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Figures

Fig. 1-1 SINUMERIK with DNC IFC SINUMERIK link to DNC on an Ethernet network. FBDN2/5
Fig. 3-1 DNC IFC SINUMERIK operator interface FBDN2/11
Fig. 4-1 DNC management FBDN2/16
Fig. 4-2 Downloading NC data to a selectable target on the SINUMERIK (in this example, a workpiece directory) FBDN2/19
Fig. 4-3 Delete NC data FBDN2/20
Fig. 4-4 PCU/MMC data management system FBDN2/21
Fig. 4-5 Uploading NC data to a selectable target in the DNC (in this example: target workpiece MOTOR) FBDN2/23
Fig. 4-6 Detail dialog FBDN2/24
Fig. 4-7 Display of a graphic in the detail view FBDN2/25
Fig. 4-8 Filter settings FBDN2/26
Fig. 4-9 Dialog for editing a filter FBDN2/27
Fig. 4-10 Filter Selection dialog FBDN2/28
Fig. 4-11 Logbook FBDN2/29
Fig. 4-12 Job interface: Selecting NC data to be downloaded (interactive mode) FBDN2/31
Fig. 5-1 Configuration interface Login screen FBDN2/37
Fig. 5-2 Configuration interface/Basic settings FBDN2/39
Fig. 5-3 Configuration interface/DNC FBDN2/43
Fig. 5-4 Configuration interface/FTP interface FBDN2/46
Fig. 5-5 Configuration interface/Graphics FBDN2/48
Fig. 5-6 Configuration interface/Login FBDN2/49
Fig. 5-7 Configuration interface/Job interface FBDN2/51

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1

1 Introduction

SINUMERIK DNC IFC SINUMERIK software is used to interface (via an Ethernet network) CNC machines running SINUMERIK 810D/840D/840Di (PCU50/70 (or MMC103, only available on a project-specific basis and on request)) with the DNC Plant or DNC Cell NC program management system.

DNC IFC SINUMERIK provides operator interfaces on the SINUMERIK operator panel, via which you can request NC data such as NC programs, workpiece data (e.g., in graphical format) from the **DNC Cell/Plant** archive. You can also upload NC data, e.g., optimized NC programs, to the DNC archive.

This software, therefore, gives you speedy electronic access to the up-to-date NC data and information (including graphics) you need on your **SINUMERIK** system.

Fig. 1-1 SINUMERIK with **DNC IFC SINUMERIK** link to DNC on an Ethernet network.

■

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Notes

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2

2 System Requirements on SINUMERIK

2.1 Hardware FBDN2/2-8

2.2 Software FBDN2/2-8

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2.1 Hardware

DNC IFC SINUMERIK is compatible with **SINUMERIK** 810D/840D/840Di with the following hardware:

- **PCU 50/70 with OP 010/012/015**
- **MMC103 with OP 031/032 (only possible on a project-specific basis, on request)**
  also:
  - PCI/ISA adapter
  - Ethernet network interface

2.2 Software

The following **SINUMERIK** software is required for **DNC IFC SINUMERIK**:

- **HMI software version 6 or higher** on **Windows NT/XP** on PCU 50/70
- **MMC software version 4.04.17 or higher**
  (only possible on a project-specific basis, on request)
  on **Windows 95** on MMC 103

Note

Only possible on a project-specific basis, on request
Functionality is restricted when using MMC 103 (e.g., no archiving).

■

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3

3 Operator Interface

3.1 DNC IFC SINUMERIK operator interface
on the SINUMERIK system FBDN2/3-10

3.2 Structure of the operator interface FBDN2/3-11
3.2.1 General FBDN2/3-11
3.2.2 Refreshing the displayed NC data FBDN2/3-13

3.3 Online help FBDN2/3-13

3.4 Languages FBDN2/3-13

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DNC IFC SINUMERIK is integrated into **SINUMERIK HMI** and can be started via the **DNC IFC** function key.

3.1 DNC IFC SINUMERIK operator interface on the SINUMERIK system

The basic user interface comprises the following elements:

- **DNC management**
  for displaying the NC programs stored in the **DNC Cell/Plant DNC** archive and for transferring NC data to the **SINUMERIK**
- **MMC/PCU data management**
  for displaying NC programs stored in the **SINUMERIK** data management system and for uploading these data to the **DNC Cell/Plant DNC** archive
- **Log book**
  for displaying NC program downloads and various system messages, for example
- **Filter**
  for selecting and editing NC data filters in the **DNC Cell/Plant DNC** archive

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3.2 Structure of the operator interface

3.2.1 General

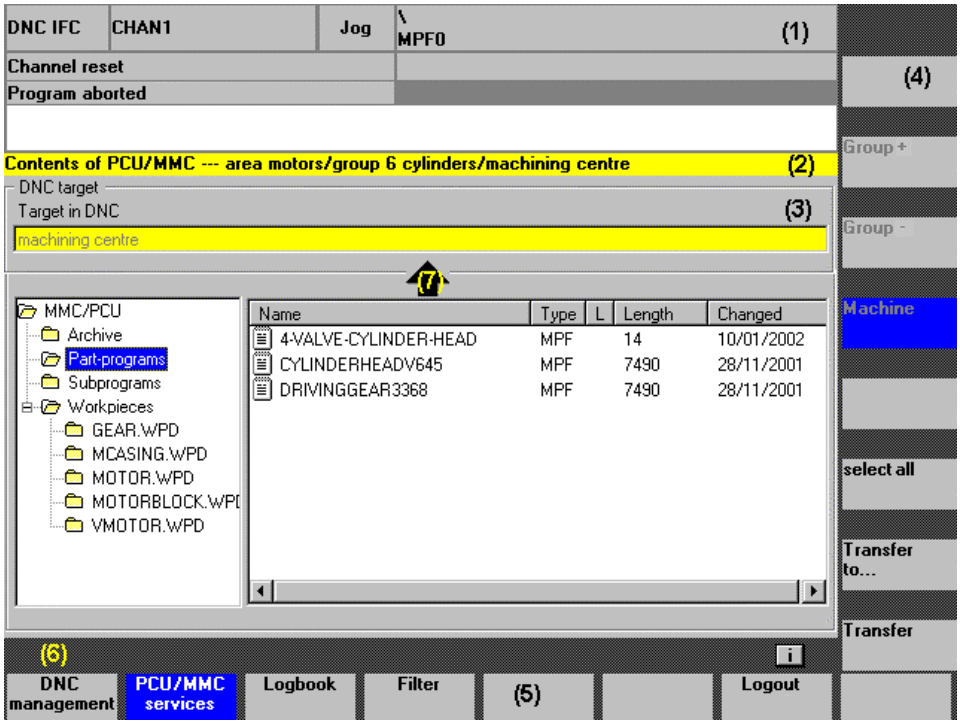

Fig. 3-1 **DNC IFC SINUMERIK** operator interface

Structure

The **DNC management** screen is divided into the following areas:
(1) **SINUMERIK HMI** header
(2) Title bar
(3) **DNC IFC SINUMERIK** screen content
(4) Vertical softkeys
(5) Horizontal softkeys
(6) Message line
(7) Direction of transfer

Header (1)

The header is an integral component of **SINUMERIK HMI**. The most important machine states, the numerical control status and the alarms of the alarm server are displayed here.

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Title bar (2)

The title of the relevant screen window is output in the title line. It also shows the NC data archive structure of the machine in the **DNC** archive. In the above example, we are managing the machine data in the **DNC** archive in the **area motors** group, the **group 6 cylinders** subgroup and the **machining centre** machine.

Note

The NC data archive structure of the machine is implemented in the configuration program (DNC_IFC.INI) on the PCU50/70 or MMC 103.

Screen content of DNC IFC SINUMERIK (3)

The screen always comprises a source area and a destination area. The **DNC** data management is always displayed in the upper part of the screen; depending on the screen, this will either be the destination or the source.
DNC IFC SINUMERIK offers two views of the NC data stored in the system:

- DNC management
- MMC/PCU data management system

Selected NC programs can be downloaded via softkeys.

Other functions can also be activated via softkeys:

- Log book
- Filter
- Detail view of NC data

Message line (6)

Error and operational messages (e.g., for downloading) are displayed in the message line.
The “i” symbol, used to call up online help, is located on the right-hand side.

Transfer arrow (7)

A directional arrow appears where the upper and lower areas of the screen meet to indicate the direction of transfer for the transmission of NC data.

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3.2.2 Refreshing the displayed NC data

In active system operation, the NC programmer can add NC programs to the **DNC** archive and release or delete NC programs, etc. So that these changes in the **DNC** archive are displayed in **DNC IFC SINUMERIK**, the screen is refreshed:

- Automatically when **DNC IFC SINUMERIK** is switched to the foreground
- Cyclically if configured in the configuration interface. The time between the last operator action to the first refresh and the time between two refresh cycles can also be set.

3.3 Online help

Operator support for **DNC IFC SINUMERIK** software is available via the Info key, which opens the online help. This help provides information about the active screen as well as about how to use the system.

3.4 Languages

If the language is changed on the control system, **DNC IFC SINUMERIK** is automatically adapted to the new language, provided that it is available for **DNC IFC SINUMERIK**.
DNC IFC SINUMERIK is supplied in German, English, French, Spanish, Italian, Chinese and Russian. Online help is available in German, English (for the English, Chinese and Russian DNC IFC SINUMERIK), French, Spanish and Italian.

■

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Notes

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4

4 Functions

4.1 Interface with DNC Cell/Plant FBDN2/4-16

4.2 Downloading NC data from DNC Cell/Plant
to the SINUMERIK control FBDN2/4-16
4.2.1 View of the DNC Cell/Plant data management system ... FBDN2/4-16
4.2.2 NC data download (default) FBDN2/4-18
4.2.3 NC data download
(with change in target, name and type) FBDN2/4-19
4.2.4 Delete FBDN2/4-20

4.3 Uploading NC data from the SINUMERIK to
DNC Cell/Plant FBDN2/4-21
4.3.1 View of PCU/MMC data management system FBDN2/4-21
4.3.2 NC data upload (default) FBDN2/4-222
4.3.3 NC data upload
(with change in target, name and type) FBDN2/4-23

4.4 NC data detail view FBDN2/4-24

4.5 Filter function FBDN2/4-26

4.6 Logbook FBDN2/4-29

4.7 Job interface FBDN2/4-30

4.8 Login FBDN2/4-32

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4.1 Interface with DNC Cell/Plant

DNC IFC SINUMERIK is used to access NC data are archived and managed in **DNC Cell/Plant**. **DNC IFC SINUMERIK** enables the user to upload or download NC data from the control system via an Ethernet network.

4.2 Downloading NC data from DNC Cell/Plant to the SINUMERIK control

4.2.1 View of the DNC Cell/Plant data management system

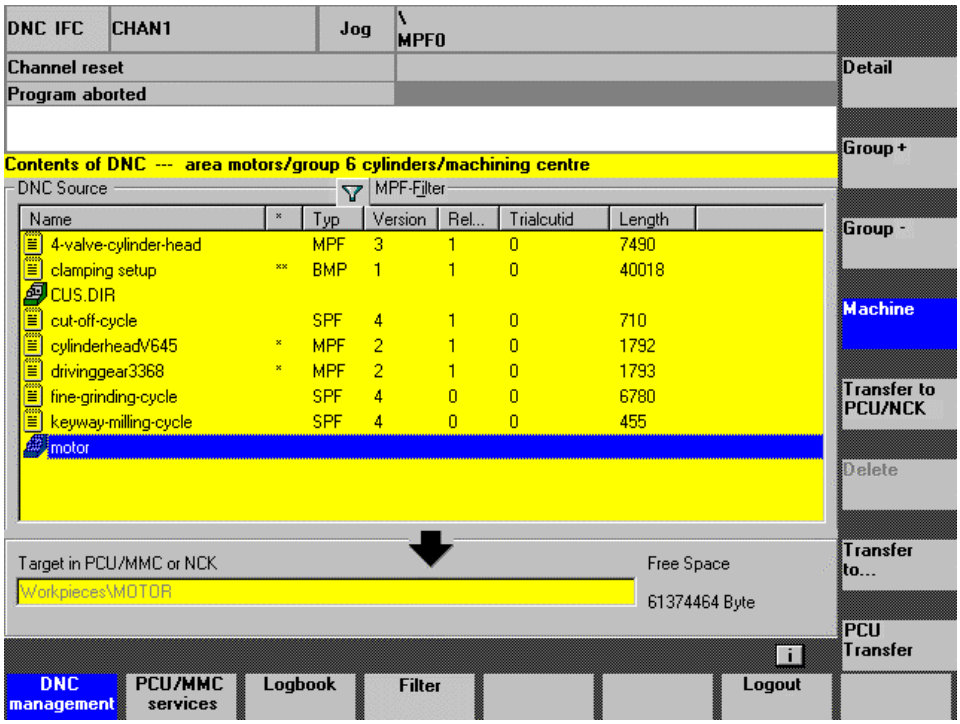

Fig. 4-1 DNC management

General

The DNC management screen provides the machine user with a user interface for viewing the available NC programs and for downloading NC data.

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Selecting the system topology hierarchy level in DNC

Depending on the system topology, NC data can be stored on several hierarchy levels (group, subgroup, etc., machine) in the **DNC Cell/Plant** archive. Using the appropriate vertical softkeys, you can navigate these hierarchy levels in order to view the NC data on these and higher levels.
The hierarchy assignment of the NC data in the **DNC Cell/Plant** system topology is recorded in the * column. The assignment is as follows:

Table 4-1 Assignment of NC data in DNC system topology

* Column	Meaning
	Machine
* **	Group Higher-level group

Source

NC data, which are available for the SINUMERIK in the higher-level **DNC Cell/Plant** archive, are displayed as a tabulated list towards the top of the screen. The list shows all the available NC data and workpiece directories of **DNC** in alphabetical order.

Table 4-2 Symbols used in DNC data management in **DNC IFC SINUMERIK**

Identification	Meaning
	Symbol for NC data
	Symbol for workpieces/pseudo workpieces

Target

The standard target for the transfer is displayed towards the bottom of the screen. Depending on how **DNC IFC SINUMERIK** is configured, the NC data are transferred:

- to the PCU/MMC (Transfer to PCU/MMC)

or

- directly to the NCK (Transfer to NCK).

The target path is determined by the NC data type, except in the case of workpieces and pseudo workpieces.

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4.2.2 NC data download (default)

NC data can be selected in the source area and downloaded to the **SINUMERIK**. In this case, the NC data can be:

- stored on the operator panel with integrated PC (PCU or MMC) (PCU Transfer softkey)

or

- loaded directly to the NC area (NCK = NC kernel) (NCK Transfer softkey).

You can switch between download targets PCU/MMC or NCK if the **Transfer to PCU/NCK** Select key (configurable in the configuration interface) has been configured.

Individual NC data files from the **DNC** source are downloaded to the relevant PCU/MMC type directory or to the NCK. In the control, NC data associated with a workpiece is also transferred to the relevant workpiece directory, whatever its file type. Ongoing copy operations are shown in the message line.

Table 4-3 Correlation between NC data type in DNC and the target path on PCU/MMC or NCK

NC data file type in DNC	**Target directory in PCU/MMC or in NCK)***
.MPF	Parts programs
.SPF	Subroutines
.ARC	Archives
NC data in workpieces	Workpieces

)* If no pseudo workpiece is defined. Files from pseudo workpieces are downloaded in each case to data management directories of the same name.

If a type conversion is configured in the configuration interface of **DNC IFC SINUMERIK**, file types are converted according to the conversion tables when they are downloaded to the PCU/MMC or the NCK.
NC data downloads from **DNC** to the control system are independent of the system topology in **DNC**.

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4.2.3 NC data download (with change in target, name and type)

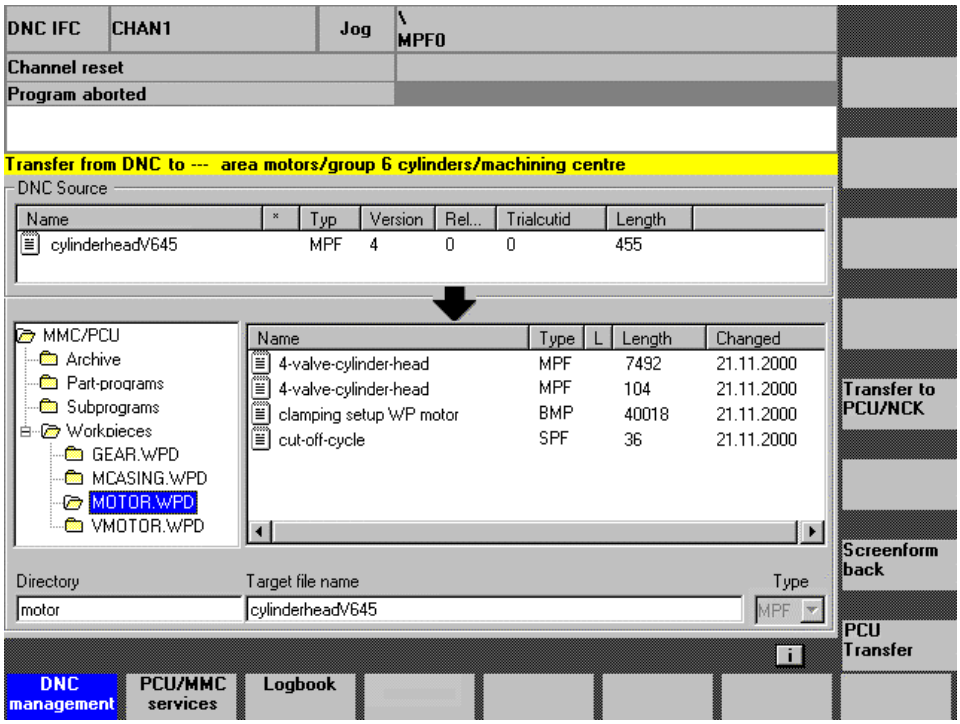

Fig. 4-2 Downloading NC data to a selectable target on the SINUMERIK (in this example, a workpiece directory)

General

Using this function (*Transfer to* softkey), when downloading NC data, you can:

- Change the name of the target file
- Change the type of target file and target directory
- Save the NC file to a workpiece directory
- Change the workpiece name in the target system

You can also download the NC data to the PCU/MMC, or load them directly to the NCK, as described above for the default download.

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4.2.4 Delete

Click the **Delete** softkey to delete unreleased NC data files from the **DNC Cell/Plant** archive (if you have the appropriate user rights).

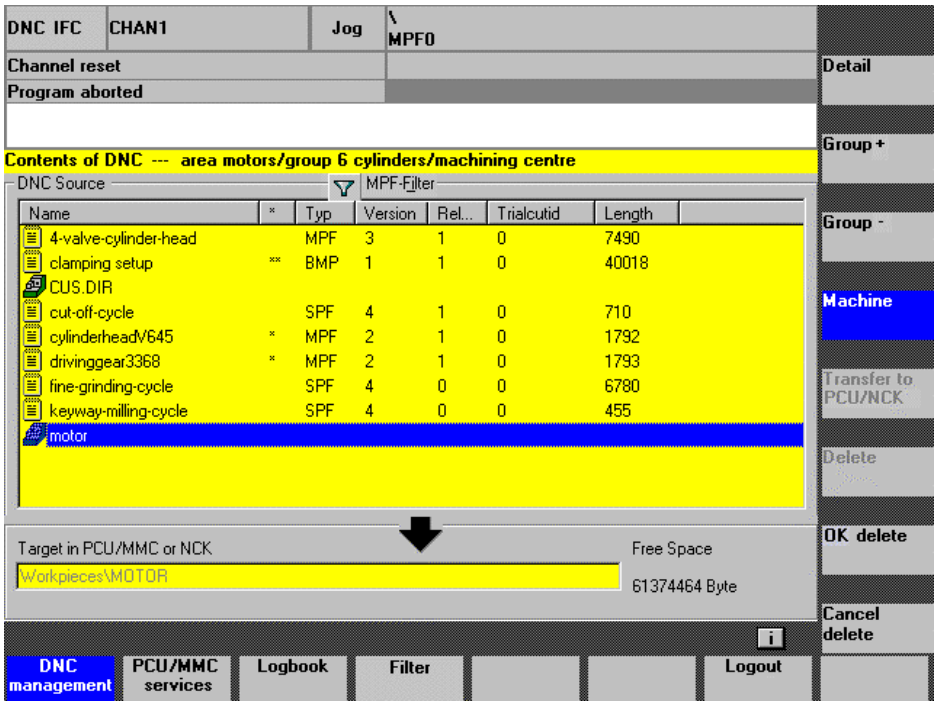

Fig. 4-3 Delete NC data

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4.3 Uploading NC data from the SINUMERIK to DNC Cell/Plant

4.3.1 View of PCU/MMC data management system

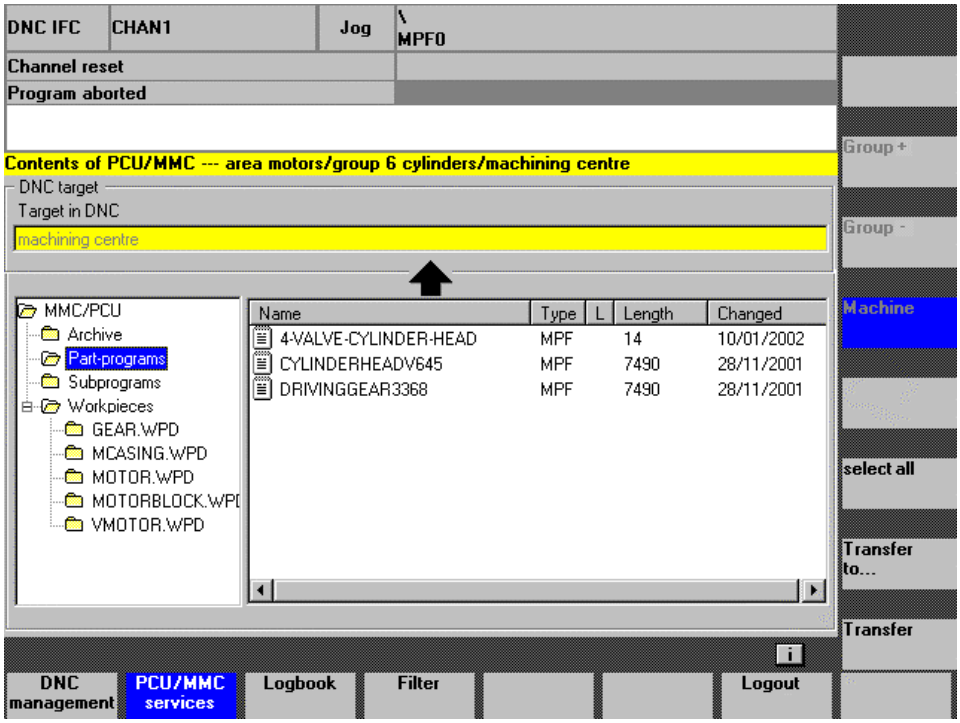

Fig. 4-4 PCU/MMC data management system

General

The PCU/MMC data management screen provides the machine user with a user interface for viewing the NC programs available on the **SINUMERIK** control and for uploading NC data.

Target

The upper section of the screen displays the target in the **DNC Cell/Plant** archive. This target area (group, machine) is set in the configuration interface.

Source

The lower area of the screen displays the PCU/MMC data management structure in a hierarchical tree and list view.

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4.3.2 NC data upload (default)

You can select NC data (e.g., optimized NC programs) in the source area and upload them to a target area on the **DNC Cell/Plant** archive.
This target area (group, machine) is set in the configuration interface.
The NC data belonging to a workpiece are transferred (irrespective of their NC data type) to the relevant workpiece directory on the configured hierarchy level (group, machine) in the **DNC** archive.
NC data from data management directories, for which a pseudo workpiece is configured in **DNC**, are uploaded to the appropriate pseudo workpiece.

If a type conversion is configured in the configuration file, file types are changed according to the conversion tables when they are uploaded to the **DNC** system.

The message line indicates copy operations in progress.

Before an NC data file is uploaded, a check is made to determine whether the maximum number of versions of these NC data is already stored in the **DNC** archive. If this is the case, depending on the version strategy selected, data are either deleted automatically prior to the upload or the "**Delete Version**" dialog appears to prompt the user to delete one of the existing older versions. Following deletion, the user can choose whether to resume or abort the transfer initiated.

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4.3.3 NC data upload (with change in target, name and type)

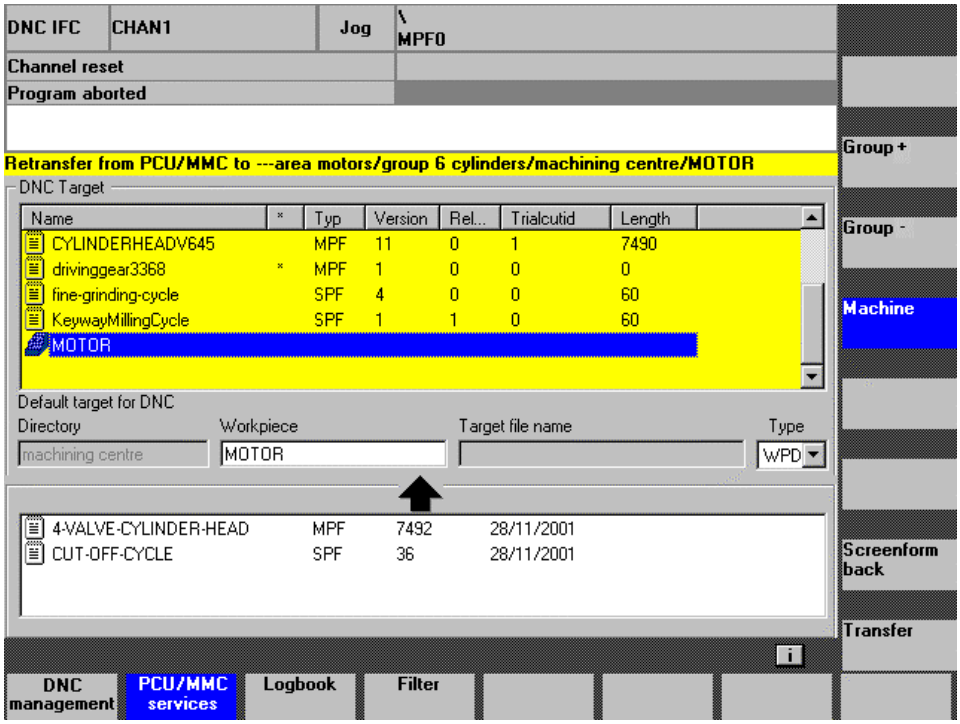

Fig. 4-5 Uploading NC data to a selectable target in the DNC (in this example: target workpiece MOTOR)

General

Using this function (*Transfer to* softkey), when downloading NC data, you can:

- Change the name of the target file
- Change the type of target file and target directory
- Save the NC file to a workpiece directory

NC data can be uploaded to any selected location in the system topology (group, machine).

Change the workpiece directory via the input field in the target directory

When the workpieces are new, this does not exist in the **DNC** archive and is not displayed in the list view. You have to enter the name of the new workpiece.

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4.4 NC data detail view

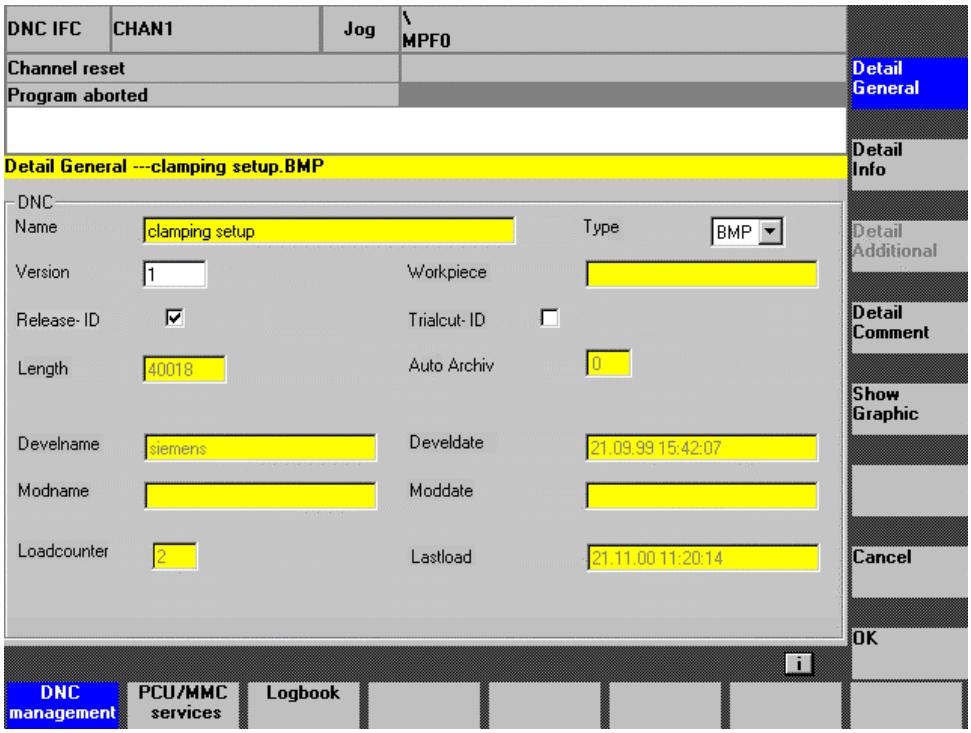

Fig. 4-6 Detail dialog

General

Apart from the program name, further management/detail information is recorded about every NC program and can be viewed in **DNC IFC SINUMERIK**.

As with **DNC Cell/Plant**, the screen layout is user-dependent. The screen description is managed by **DNC Cell/Plant**.
The Detail dialog box can contain up to four detail screens, each of which is called up using the vertical softkeys.

Management data released for editing can be changed.

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Show Graphic

Graphics such as graphical information about workpiece machining can be called via the **Show Graphic** softkey.

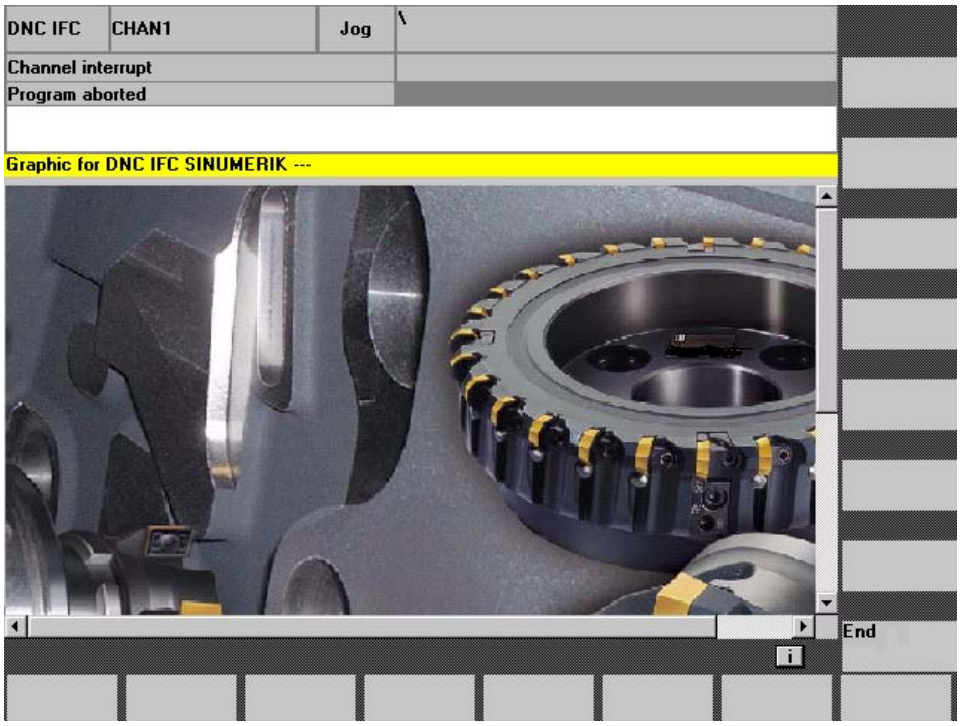

Fig. 4-7 Display of a graphic in the detail view

Note

Graphics can only be displayed with the PCU and access via network drives (not in conjunction with FTP protocol).
You can display all types of graphic supported by Internet Explorer (e.g., BMP, JPG, GIF). To display other types of graphic, you must install the relevant plug-ins. The types of graphic must be entered in the configuration interface.

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4.5 Filter function

The filter function allows you to filter the view of the **DNC Cell/Plant** archive. When the filter is activated, only data meeting the filter conditions are displayed.

Note

Filters for **DNC IFC SINUMERIK** are created and assigned in **DNC Cell/Plant**.

You can access the following filter functions via the **Filter** softkey in the DNC management and PCU/MMC data management screens:

- Filter ON/OFF
- Edit current filter
- Filter selection

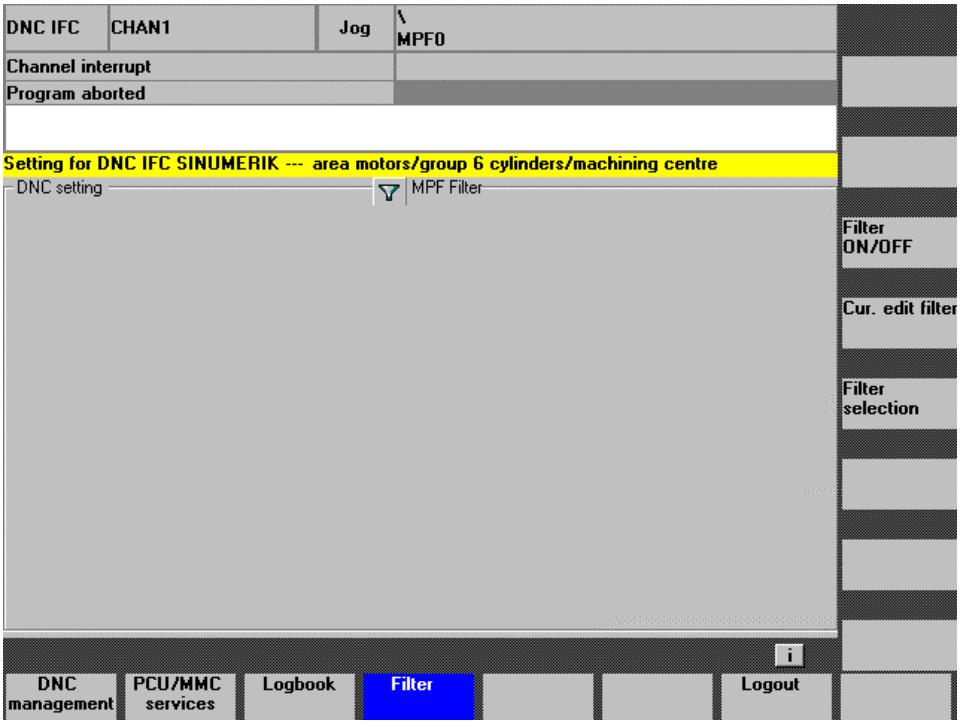

Fig. 4-8 Filter settings

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Switch filter on/off

The name of the current filter is specified under the title line in the Filter screen.

The filter symbol indicates whether or not the filter is activated.

Filter activated	Filter deactivated

You can click a softkey (F3) to activate or deactivate the current filter.

Edit current filter

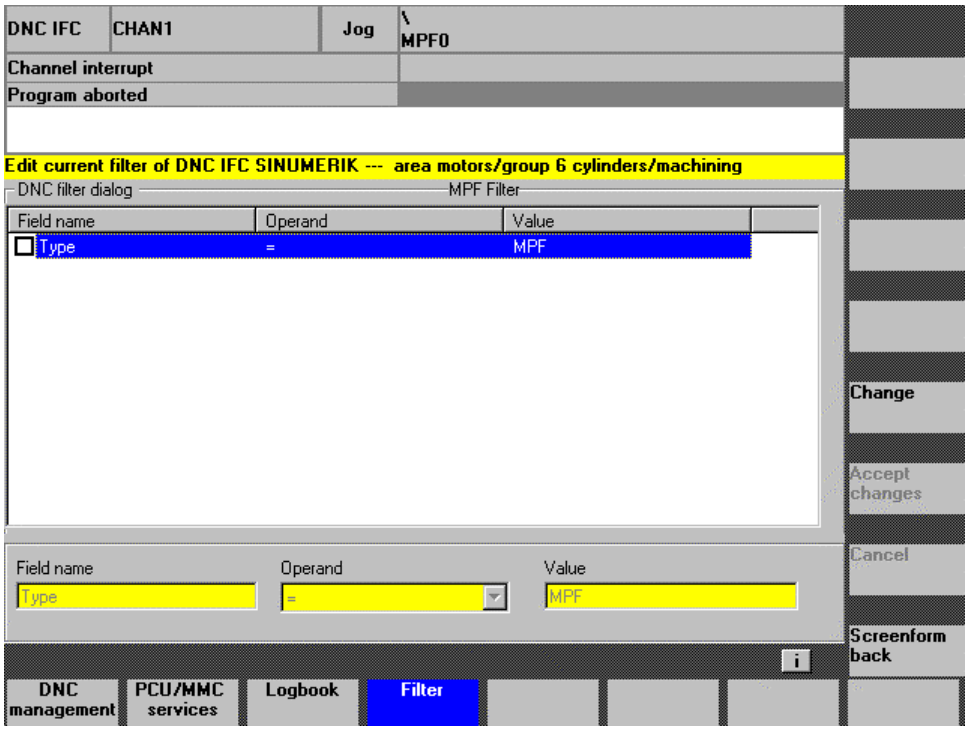

Fig. 4-9 Dialog for editing a filter

The Filter dialog shows all filter criteria applicable to the current filter. Active criteria are indicated by a tick in the checkbox in front of the filter criteria.
The checkbox in front of each filter criterion can be used to activate or deactivate that criterion. The operand and value of the filter criterion in question can also be changed.

Note

Filter criteria are expanded or deleted in **DNC Cell/Plant**, not in **DNC IFC SINUMERIK**.

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Select filter

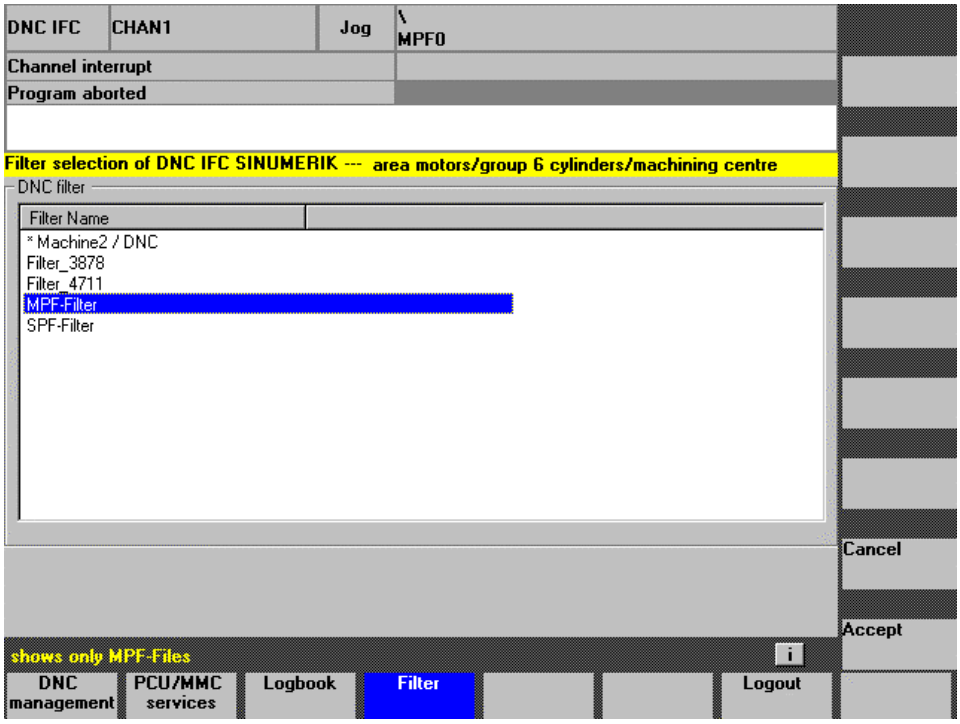

Fig. 4-10 Filter Selection dialog

The Filter Selection dialog lists all the filters available for the machine and the user. The comment stored for the currently selected filter is displayed in the message line.

Note

A filter marked with the * symbol is specific to a machine or user. The filter name contains the machine or user name for which the filter is valid.

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4.6 Logbook

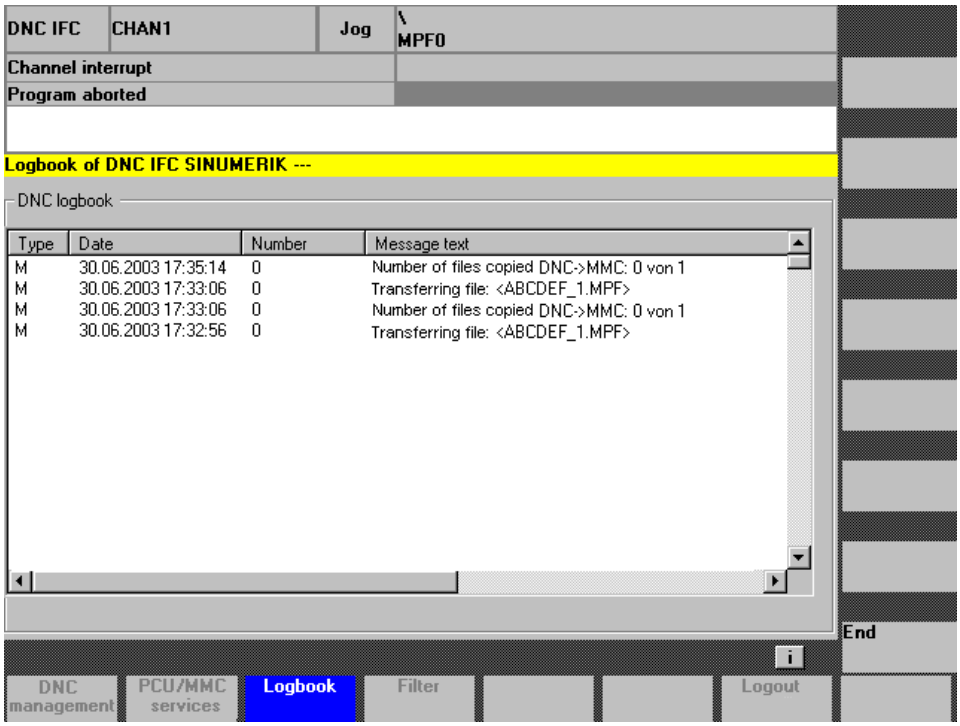

Fig. 4-11 Logbook

General

The log book contains all errors and messages that have been displayed in the message line with their dates and times. That way, you can trace events, such as downloads, uploads, deletions, user logins and logouts, etc., and errors that have occurred.
The log book can be displayed from any screen form by pressing the **Logbook** softkey.

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4.7 Job interface

General

NC program transfer from another software application (e.g., project-specific applications of machine manufacturers) can be started via the job interface. The interface is open and is supplied with the data required for the transmission by the relevant job program.

You can download NC data automatically or in interactive mode.

Note

Whether data are downloaded interactively or automatically via the job interface is determined by a parameter setting in the configuration file (DNC_IFC.INI).

Automatic download

NC data are downloaded to the PCU/MMC or NCK automatically; no inputs need to be made on the **DNC IFC SINUMERIK** user interface. A prerequisite for automatic download is that the NC program to be downloaded is clearly identifiable when transferred to the job interface. If the program cannot be identified unambiguously, interactive mode is called.
The message line indicates copy operations and active messages in progress.

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Interactive download

In interactive mode, **DNC IFC SINUMERIK** lists all NC programs and workpieces meeting the selection criteria passed to the job interface.
Select the program to be downloaded in interactive mode and start the download operation.
The message line indicates copy operations and active messages in progress.

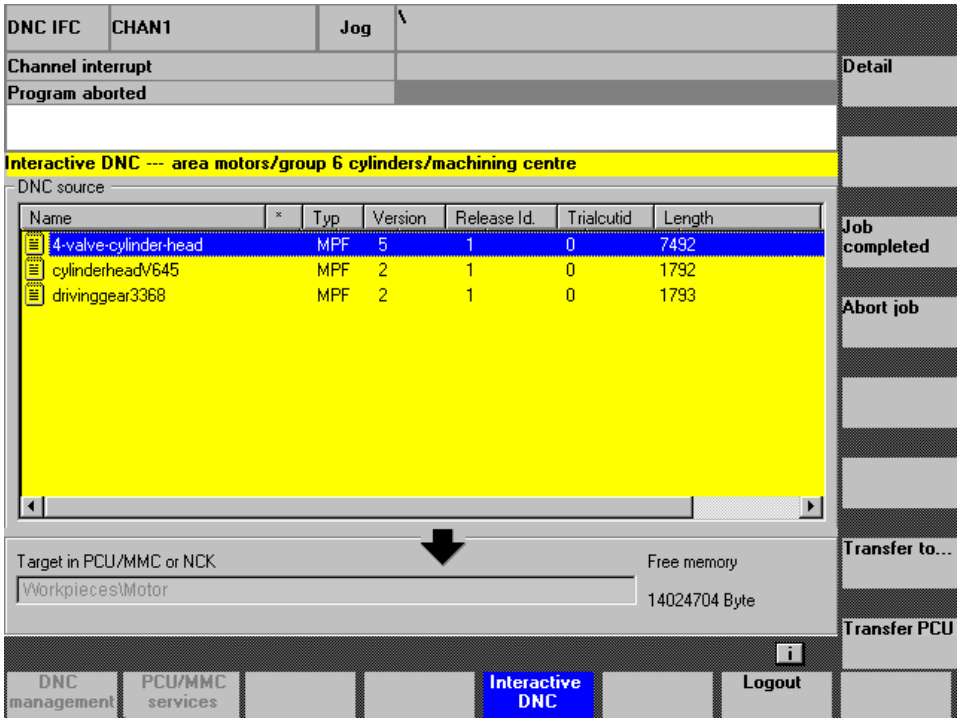

Fig. 4-12 Job interface: Selecting NC data to be downloaded (interactive mode)

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4.8 Login

General

In the default setting, **DNC IFC SINUMERIK** starts with an automatic login, i.e., it applies the user and his/her rights as they are entered in the configuration file. However, you can select other login procedures.

- If you want different users with varying levels of authorization to be able to log in, you can use a login dialog with manual settings.
- You can also choose the option based on user rights corresponding to the current protection level on the **SINUMERIK** or the keyswitch position.

The login procedure (automatic or manual) can be selected in the DNC_IFC.INI configuration file.

■

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5

5 Configuration File

5.1 General FBDN2/5-34

5.2 Configuration program FBDN2/5-37
5.2.1 Basic setting..... FBDN2/5-39
5.2.2 DNC FBDN2/5-43
5.2.3 FTP interface FBDN2/5-46
5.2.4 Graphics..... FBDN2/5-48
5.2.5 Login FBDN2/5-49
5.2.6 Job interface FBDN2/5-51

5.3 Other configuration options via DNC_IFC.INI..... FBDN2/5-53

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5.1 General

DNC IFC SINUMERIK settings are configured via the configuration program. This is started by double-clicking on the DNC_IFCCFG.exe file, which is found in ...\Add_on\DNC_IFC. The configuration settings made using this program are stored in the DNC_IFC.INI configuration file.

Example of a DNC_IFC.INI configuration file

```
; MCIS DNC IFC SINUMERIK V2 - Initialization file
; "DNC_IFC.INI"
;
; This file can be customized with "DNC_IFCcfg.EXE"
;
[GLOBAL]
   ; Higher-level database type
   ; (0 = MSDE/SQL Server/1 = Oracle)
DataBaseType =0

   ; TRACE 1-3 can activate detailed recording.
   ; Only change temporarily when troubleshooting!
TRACE =1

   ; IP address or DNC name of the higher-level DNC server
DNC-HOST =MCISDNC2

   ; Use FTP protocol
   ; (0=No/1=Yes with local DNC_IFCDB/2=Yes with remote DNC_IFCDB)
FTP protocol = 0

   ; File type change
   ; (Y=activated/N=deactivated)
   ; Note: DriveInternPath cannot be set to 1 or 2.
   ; DataTypeChange=Y
DataTypeChange =N
HWSystem =32

   ; Default transfer destination can be switched via Select softkey
   ;(Y=Softkey configured/N=Softkey not configured)
ToggleSK =Y

   ;Default transfer destination
   ; (MMC=Transfer to MMC/NCK=Transfer to NCK)
   ; Can be switched using softkeys (MMC_NCK=Transfer to MMC or NCK ->
ToggleSK=Y set)
DefaultTransfer =MMC_NCK

   ; Default directory when DNC IFC is started:
   ; (0=Machine/1=Group/2=Higher-level group)
StartupLayer =0

   ; Job interface mode
   ; (0=interactive/1=automatic)
AuToDownLoad =0

   ; Period in minutes, after which an uncompleted job is deleted
DeleteTime =60

AutoResolution =Y
SwitchLanguage =
   ; FontName =Arial Unicode MS -> only relevant for languages with special
characters (such as Russian or Chinese)
FontName=

[FTP]
   ;FTP parameter (only for FTP protocol = 1/2) relevant.
FTP-HOST =DAISY
FTP-User =A99399958D9895928F
FTP-PW =A98CA48E93A092C79EA8A18E8FD59A96A1A696
```

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```
   ; Transfer mode ( 1=ASCII/2=binary)
FTP mode =2

[DCOM]
   ; DCOM configuration: log-on
DOMAIN =DNC_DOM
USER = John Do
PASSWORD = A98CA48E93A092C79EA8A18E8FD59A96A1A696

[PATHS]
   ;Path names without trailing backslash
MMCIniDrive =F:

   ; MCIS DNC data directory for access to NC data
   ; The drive must be specified from the DNC IFC viewpoint
   ; It is possible to specify either mapped network drives (1.) or
   ; computer and path in UNC Notation (2.) When using
   ; FTP (3.), the path must be specified according to the notation required
by the
   ; FTP server
   ; (1.) N: linked to DNC\Data on the MCIS DNC server
   ;WorkPathDNC =N:
   ; (2.) UNC notation
   ;WorkPathDNC =\\DAISY\DNC$\Data
   ; (3.) Path name for FTP server
   ;WorkPathDNC =/DNC/Data
WorkPathDNC =\\DAISY\DNC\Data

   ; DHSTempPath for temporary storage of files when
   ; downloading for DHS-Server and FTP. If DHSTempPath is empty, the
content of the Windows
   ; environment variable %TEMP% is used.
DhsTempPath =

   ; DriveInternPath for DHS-Open
   ; (Values: 0=Do not evaluate file header/1=Evaluate 1st header/2=Evaluate
all headers)
   ;Notice: If DataTypeChange=Y, DriveInternPath cannot be set to 1 or 2!
DriveInternPath =0

[FILES]
LogFile =DNC_IFC.log
ErrLogLen =10

[MACHINE]
   ; Station name in MCIS DNC
MACHINE = PCU50_840D

   ; Path for uploading
   ; 0= Machine/1= Group/2= Main group
DefUpload =0

[USER]
   ; Define login method:
   ; 0= no dialog, Name= and Password= is used
   ; 1= user and password have to be specified
   ;2 = Login with user assigned via ACCESSLEVEL parameter
   ; 3= Login with user or dialog assigned via ACCESSLEVEL parameter
Login =0

   ; User name should be specified device-specifically for the same user,
due to the display group assignment via MCIS DNC, which is dependent on the
   ; screen resolution
Name =DNC
Password =DNC

   ; Access levels according to Sinumerik HMI Advanced startup interface
ACCESSLEVEL0 =HMISystem
ACCESSLEVEL1 =HMIManufacturer
ACCESSLEVEL2 =HMIService
ACCESSLEVEL3 =HMIUser
ACCESSLEVEL4 =HMIKeyPosition3
ACCESSLEVEL5 =HMIKeyPosition2
ACCESSLEVEL6 =HMIKeyPosition1
ACCESSLEVEL7 =HMIKeyPosition0
```

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```
[TIME]
   ;The wait time affects the display period of time-controlled messages
MessageTime =1000

   ; Wait time for VB functions
SysTime =500

   ; Timer setting controls the delay of the list view display when
scrolling through the tree view
DelayTime =700

   ; Period, during which transmission of a program can be aborted
BreakTime =500

[REFRESH]
   ; Update list view regularly (Y=activated/N=deactivated)
Refresh =N

   ; Values in seconds
   ; Period between last operation and 1st refresh
RefreshDelay =10

   ;Interval between refreshes
RefreshInterval =60

[GRAPHICTYPE]
   ; Permissible graphic types (in capital letters)
TYPE1 =GIF
TYPE2 =JPG
TYPE3 =PDF

[DHDIR]
   ;Selectable view of DH directories (in capital letters)

   ; xxx.DIR = DH directory name
   ; ;0= Do not create pseudo workpiece
   ; ;1= Pseudo workpiece is created
DHDIR1 =MPF.DIR;0
DHDIR2 =SPF.DIR;0
DHDIR3 =WKS.DIR;0
DHDIR4 =ARC.DIR;1
DHDIR5 =CST.DIR;1
DHDIR6 =CUS.DIR;1
DHDIR7 =CMA.DIR;1
DHDIR8 =MB.DIR;1

[MachineReference]
   ; MCIS MachineID
MaschineID1 =Main group\Group\PCU50_840D

[NCDataDescription_1]
D1 =NCDATANAME
D2 =NCDATATYPE
D3 =RELEASEID

[NCDataDefaultvalue_1]
D1 = SPF
D2 =1

[DNCMMCTypeTab]
   ; MCIS DNC data types are converted to MMC/PCU data types
   ;Number of types for conversion
DNCMMCTypeCount=2

   ;Conversion types (e.g., converting TXT to MPF)
DNCMMCType1 =TXT MPF
DNCMMCType2 =DOC INI

[MMCDNCTypeTab]
   ; MMC/PCU data types are converted to data types on the DNC
   ;Number of types for conversion
MMCDNCTypeCount =2

   ; Conversion types (e.g., converting MPF to TXT)
MMCDNCType1 =MPF TXT
MMCDNCType2 =INI DOC
; Copyright (c) SIEMENS A&D, ALL RIGHTS RESERVED
```

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5.2 Configuration program

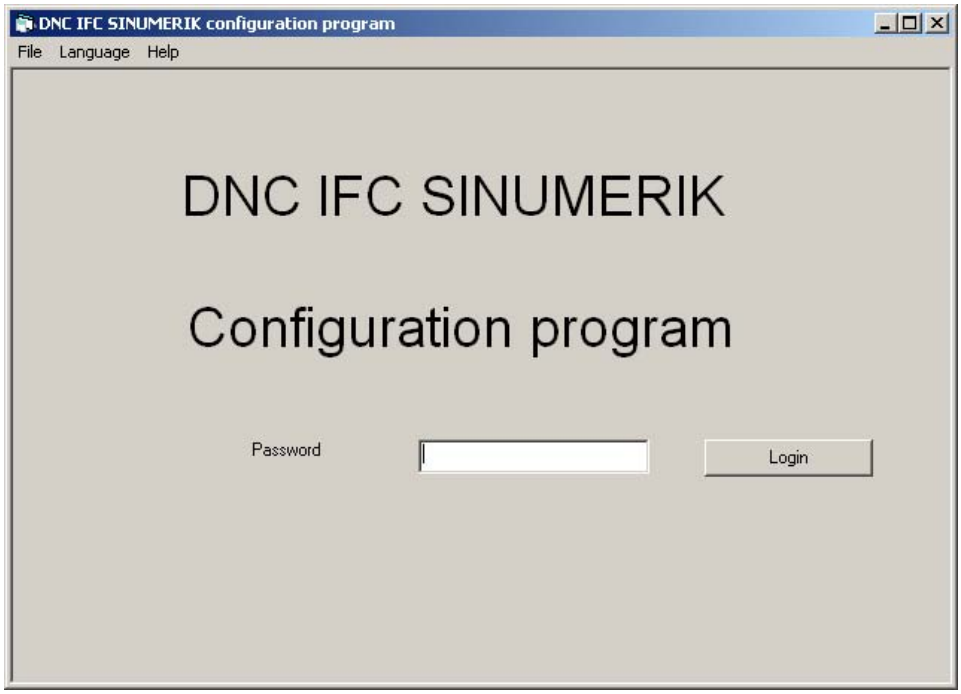

Fig. 5-1 Configuration interface Login screen

You log on to the configuration program by entering a password and clicking the **Login** button.

The following menus are available in the configuration program:

- File
  - Save
  - Exit
- Languages
  - German
  - English
- Help
  - Help Topics
  - About

The configuration program is closed using by selecting **File > Exit**.

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After the user has logged on, a configuration dialog with 6 tabs appears:

- Basic setting
- DNC
- FTP Interface
- Graphic
- Login
- Job Interface

You can exit this configuration dialog either by clicking **Cancel** with the mouse or pressing **Esc** on the keyboard and **CANCEL** on the operator panel. You then return to the configuration interface login screen.
You can save configured data either by clicking **OK** with the mouse or pressing **Ctrl+S** on the keyboard and **CTRL+S** on the operator panel.

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5.2.1 Basic setting

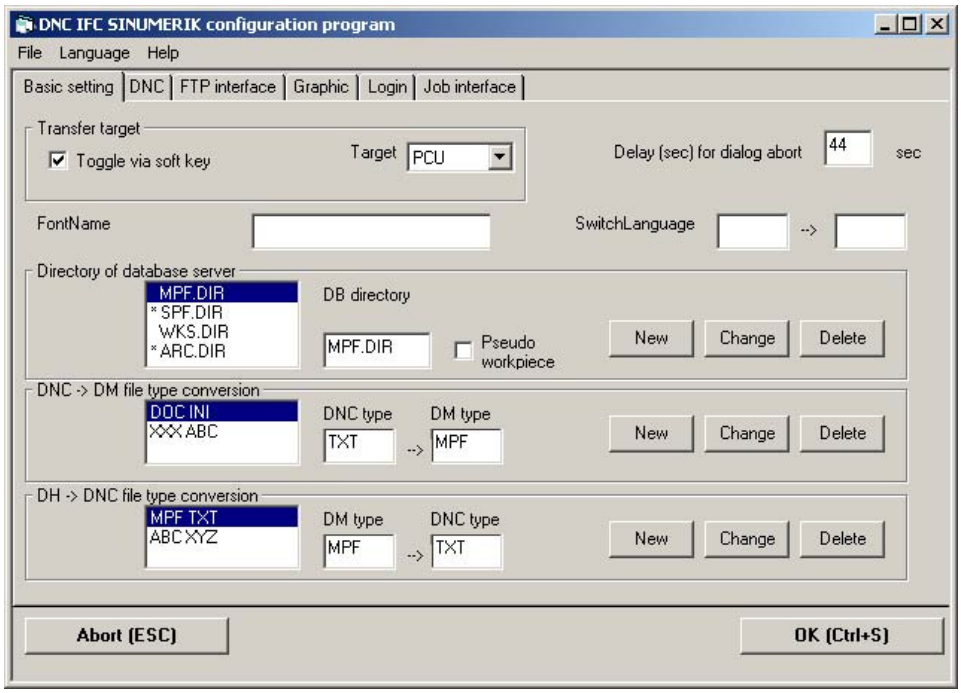

Fig. 5-2 Configuration interface/Basic settings

The default settings for downloading to/uploading from and operating the PCU are defined on the **Basic Setting** tab.

Transfer target can be switched via softkey

This parameter determines whether the default transfer destination for transfer from **DNC** can be switched over via a Select softkey:
Checkbox activated = Select softkey available → `(Y)`
Checkbox deactivated = Select softkey no available → `(N)`

Extract from the configuration file:

```
Section [GLOBAL]
ToggleSK = Y
```

Target

This parameter defines the default transfer destination for transmission from **DNC**:
PCU = NC data are transferred to the MMC/PCU
NCK = NC data are transferred to the NC

Extract from the configuration file:

```
Section [GLOBAL]
DefaultTransfer = PCU
```

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Delay for dialog abort

This key parameter defines the period in seconds during which you can cancel the transfer of a program.

Extract from the configuration file:
The entry in the configuration file is in ms.

```
Section [TIME]
BreakTime = 5000
```

FontName

This parameter defines the font for **DNC IFC SINUMERIK**.
If no font is specified, the default system font is used.
The appropriate font **must** be specified for foreign languages, which require a particular font to display special characters correctly.

Extract from the configuration file:

```
Section [GLOBAL]
FontName  =Arial Unicode MS
```

SwitchLanguage

This parameter defines the internal language selection for **DNC IFC SINUMERIK**, primarily for the English area.
The system language is entered in the first input field.
The language used internally is entered in the second input field.
Example:
UK → US
The system language of the computer is UK.
The US language is selected from the list of DNC IFC SINUMERIK internal languages, as American English should be displayed.

Extract from the configuration file:

```
Section [GLOBAL]
SwitchLanguage  =UK,US
```

Directory of data base server

New directories for the data management server can be set up and existing directories can be deleted or renamed under **Directory of data base server**.

Note

You must enter the directory name in capital letters.

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Pseudo workpiece

Check or uncheck the **Pseudo workpiece** box to define whether NC data are stored in a pseudo workpiece in **DNC**.

Important

The **Pseudo workpiece** box must not be checked for WKS.DIR.

Extract from the configuration file:

```
Section [DHDIR]
DHDIR1 =MPF.DIR;0
DHDIR2 =SPF.DIR;0
...
```

Note on configuration file DNC_IFC.INI

In the configuration file, the digit (0 or 1) after the directory name specifies whether the NC data must be stored in a pseudo workpiece.
0 = No pseudo workpiece
1 = Store NC data in pseudo workpiece
0 is the only permissible setting for WKS.DIR.

DNC → DM file type conversion

The conversion of file types from **DNC system** to **PCU/MMC data management server** can be defined, or existing conversions can be deleted or changed, under **DNC → DM file type conversion**. Conversion is performed when the data is downloaded from the DNC system to the data management server.

Important

Conversion is only performed if **Evaluation of internal MMC path** is not selected on the **DNC** tab. Selection: **No evaluation**

Only file types declared in the **DNC** system (DNCDATATYPE table) can be specified as the **DNC** type.

Extract from the configuration file:

```
Section [DNCMMCTypeTab]
DNCMMCTypeCount = 2
DNCMMCType1=TXT MPF
DNCMMCType2=DOC INI
```

Note

Conversion is only active for `DriveInternPath=0`.
`DNCMMCTypeCount`= contains the number of file types to be converted.

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DM→ DNC file type conversion

The conversion of file types from **PCU/MMC data management server** to **DNC system** can be defined, or existing conversions can be deleted or changed, under **DM → DNC file type conversion**. Conversion is performed when the data is downloaded from the data management server to the DNC system.

! **Important**

Conversion is only performed if **Evaluation of internal MMC path** is not selected on the **DNC** tab. Selection: **No evaluation**

You can specify only file types, which are known in the **DNC** system (DNCDATATYPE table), as the **DNC** type.

Extract from the configuration file:

```
[DNCMMCTypeTab] section
MMCDNCTypeCount = 2
MMCDNCType1=MPF TXT
MMCDNCType2=INI DOC
```

Note

Conversion is only active for `DriveInternPath=0`.
`DNCMMCTypeCount`= contains the number of file types to be converted.

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5.2.2 DNC

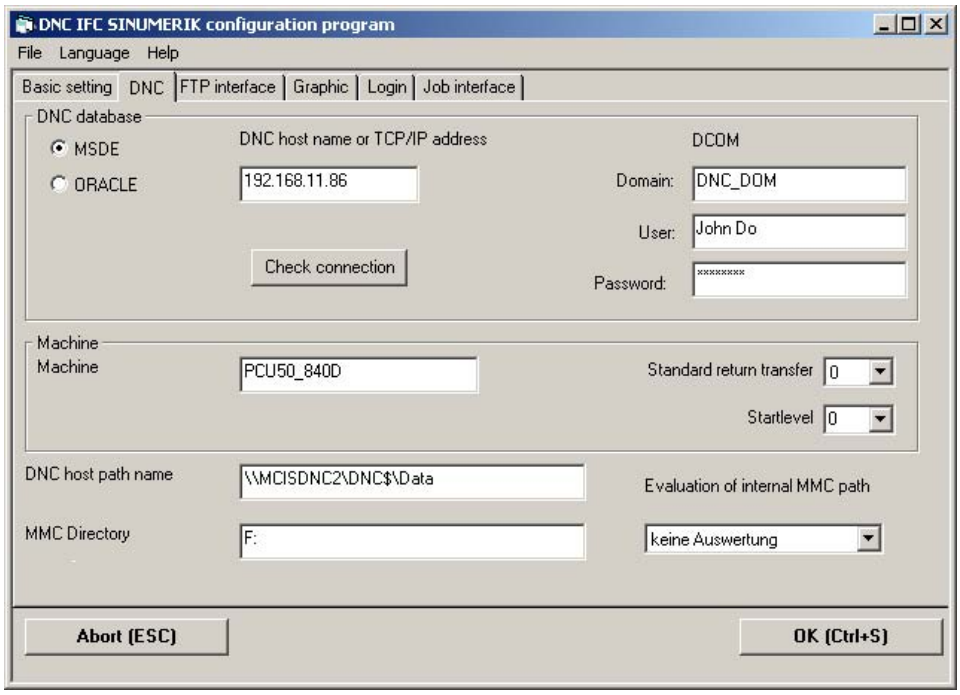

Fig. 5-3 Configuration interface/DNC

The connection to the higher-level DNC system and the identification of the PCU in the DNC system are defined in the **DNC** tab.

DNC database

The database to be used in the higher-level DNC system is selected via the Options button:

- MSDE/SQL server (DNC_IFC.INI: 0)
- Oracle (DNC_IFC.INI: 1)

Extract from the configuration file:

```
Section [GLOBAL]
DataBaseType =0
```

DNC host name or TCP/IP address

The TCP/IP address or computer name of the DNC host (**DNC Cell** or **DNC PLANT**) is entered in the input field. A connection test can be performed by pressing the **Check Connection** button.

Extract from the configuration file:

```
Section [GLOBAL]
DNC-HOST =192.168.1.100
```

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DCOM

The domain, user name and password on the DNC server are defined for the DCOM connection in the input fields on the top right.

Extract from the configuration file:

```
Section[DCOM]
DOMAIN =DNC_Dom
USER = John Do
PASSWORD =******
```

Machine

Machine is used for assignment to a machine (control) configured in DNC. The name of the machine assigned in DNC is specified in the **Machine** input field.

Extract from the configuration file:

```
Section[MACHINE]
Machine = PCU50_840D
```

Standard return transfer

This defines the hierarchy level to which the NC data will be transferred during uploads to DNC.

0 = Download to the machine directory by default
1 = Download to the group directory on a higher level than the machine directory (father) by default
2 = Downloaded to the group directory (grandfather) on a higher level than the higher-level machine directory's group directory by default

Extract from the configuration file:

```
Section[MACHINE]
DefUpload = 0
```

Startlevel

This parameter specifies the default directory when DNC IFC is started:
0=Machine
1=Group
2=Higher-level group

Extract from the configuration file:

```
Section[GLOBAL]
StartupLayer =0
```

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DNC host path name

The drive path for **DNC host path name** must be specified from the point of view of **DNC IFC SINUMERIK**.
This is the specification of the directory in which NC data are stored on the networked computer.

Note

The path for Windows or UNIX/LINUX computers with Samba is:\\DNC computer name\directory of DNC data directory.
Option when swapping out NC data to a UNIX system:
The path for UNIX/LINUX computers with FTP is, for example: /DNC computer name/directory of DNC data directory.

Extract from the configuration file:

```
Section[PATHS]
WorkPathDNC=\\MCISDNC2\DNC$\Data
```

MMC directory

The key parameter defines the drive or the path of the SINUMERIK software.

Important

F: is the PCU 50/70 drive.
C: is the MMC 103 drive.

The drives are prescribed and can only differ for installation on a PC, in which case the path to the intended location of the SINUMERIK software must be specified.

Extract from the configuration file:

```
Section[PATHS]
MMCIniDrive = F:
```

Evaluation of internal MMC path

The parameter controls the evaluation or generation of a leader with an internal path (Siemens program header) in the NC data file.

- No evaluation (0)
- Evaluation of one path (1)
- Evaluation of several paths (2)

Extract from the configuration file:

```
Section[PATHS]
DriveInternPath = 2
```

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5.2.3 FTP interface

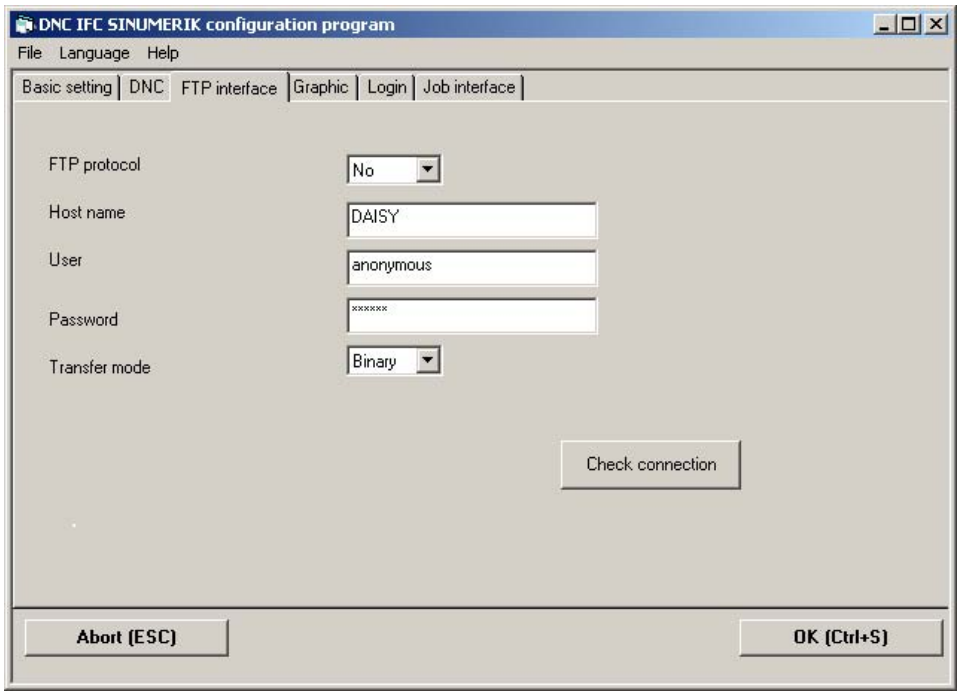

Fig. 5-4 Configuration interface/FTP interface

The FTP interface to the higher-level DNC system is defined in the **FTP Interface** tab. This configuration is only required if the transfer between the machine and the higher-level DNC system is to be performed via FTP.
A connection test can be performed by pressing the **Check Connection** button.

Note

The default setting is one download per FTP.

FTP protocol

- **No (0):**
  Operation without FTP:
  Data are transferred via the Microsoft network. For this reason, **DNC host path name** on the **DNC** tab must point to a released network drive with the DNC data directory.
- **Yes (1):**
  Operation with FTP:
  DNC_IFC.EXE and DNC_IFCDB.EXE access NC program files via FTP. The **DNC host path name** in the **DNC** tab must include the path to switch over to the DNC data directory once the FTP connection has been established.

Extract from the configuration file:

```
Section[GLOBAL]
FTP protocol =0
```

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Host name

The parameter identifies the host name or the IP address of the FTP server:
e.g., DAISY
e.g., 180.212.26.200

Extract from the configuration file:

```
Section[FTP]
FTP HOST =DAISY
```

User

This parameter identifies the user on the FTP server,
e.g., anonymous

Note

The entry in the DNC_IFC.INI configuration file is encoded.

Extract from the configuration file:

```
Section[FTP]
FTP-User =A99399958D9895928F
```

Password

This parameter indicates the password of user on the FTP server,
e.g., *********

Note

The entry in the DNC_IFC.INI configuration file is encoded.

Extract from the configuration file:

```
Section[FTP]
FTP-PW =A98CA48E93A092C79EA8A18E8FD59A96A1A696
```

Transfer mode

Two modes can be parameterized:

- ASCII (1)
- Binary (2)

Important

For the FTP link between DNC and the **DNC IFC SINUMERIK**, we recommend that you use **binary mode** as the transfer mode!

Extract from the configuration file:

```
Section[FTP]
FTP mode = 2
```

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5.2.4 Graphics

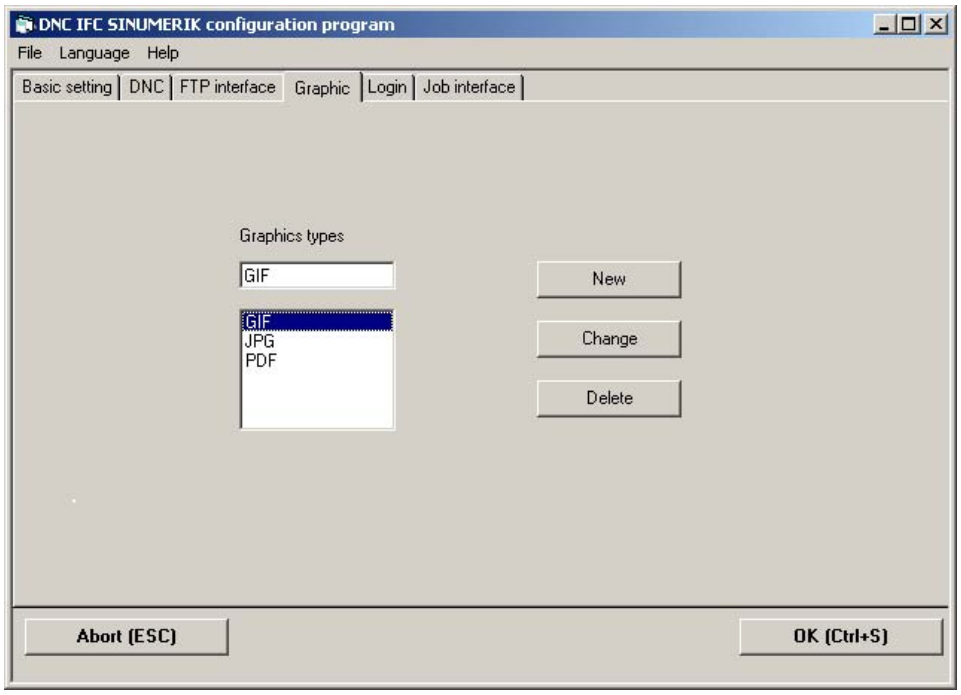

Fig. 5-5 Configuration interface/Graphics

The types of graphic permissible for display on the **Detail Dialog > Show Graphic** screen are defined on the **Graphic** tab.

Types of graphic

All types of graphic supported by Internet Explorer can be displayed (e.g., BMP, JPG, GIF). If you wish to display other types of graphic, you must install the relevant plug-ins.

Note

Graphics can be displayed only with PCU and in operation without FTP protocol. The type must be entered in capital letters.

Extract from the configuration file:

```
Section[GRAPHICTYPE]
TYPE1 =GIF
TYPE2 =JPG
TYPE3 =PDF
```

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5.2.5 Login

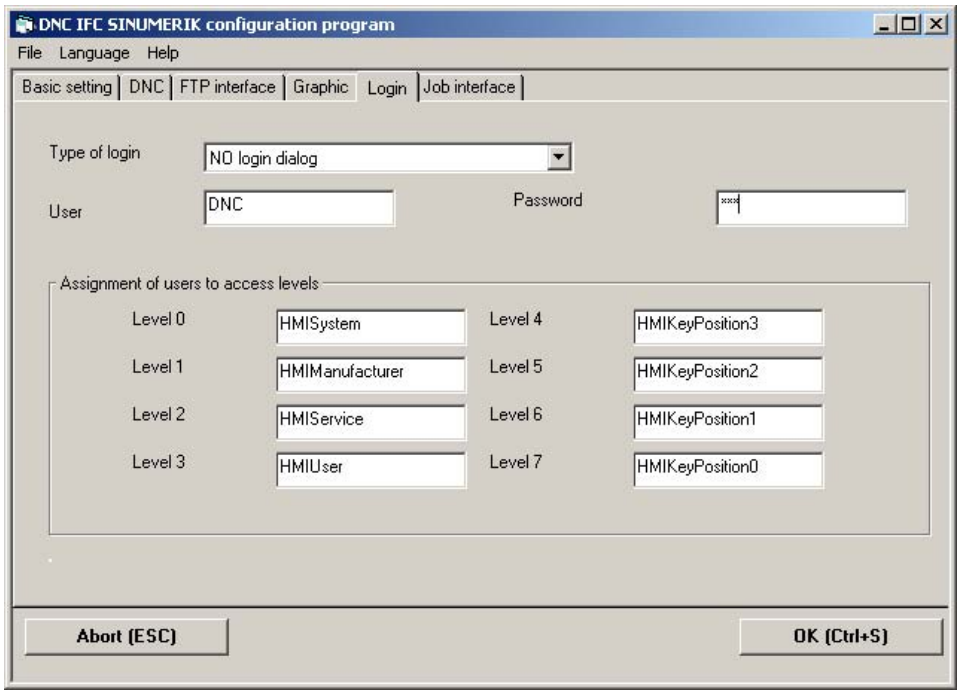

Fig. 5-6 Configuration interface/Login

The login procedure when starting DNC IFC SINUMERIK is configured on the **Login** tab.

Login method

This parameter defines the procedure for starting **DNC IFC SINUMERIK**:

- **No Login dialog** (default setting) (0):
  DNC IFC SINUMERIK is started with the access entered in **User** and **Password**.
- **Login dialog** (1):
  When starting DNC IFC SINUMERIK, users must log on in the Login dialog by entering their name and password.
- **Login via access level** (2):
  DNC IFC SINUMERIK starts up with the user defined via the **assignment of users to access levels** on the current **SINUMERIK** protection level.
- **Login via access level or via login dialog** (3)
  Login to DNC IFC SINUMERIK is performed as for **login via protection levels** (2), although a Login dialog appears if no users have been assigned or if the user cannot be found in the
  DNC user administration. Also, following successful login, a **Logout** softkey appears, so that the user can be changed.

Extract from the configuration file:

```
Section[USER]
Login = 0
```

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User/Password

These two parameters correspond to the user name and associated password for automatic login (login method: no login dialog).

Note

The user *DNC* with password *DNC* is defined as the default in **DNC IFC SINUMERIK**. Once DNC has been installed, the default user should be deleted and replaced by a personal user identifier because the user *DNC* always has administrator rights. In **DNC IFC SINUMERIK**, the default user should also be replaced by a user configured in DNC.

Extract from the configuration file:

```
Section[USER]
Name = DNC
Password =DNC
```

Assigning users to access levels

A user can be assigned here to the 8 protection levels (0-7) of the **SINUMERIK HMI Advanced startup interface**. It is, therefore, possible to start **DNC IFC SINUMERIK** with the rights of one of the entered users, depending on the current login method.

Extract from the configuration file:

```
Section[USER]
ACCESSLEVEL0 =HMISystem
ACCESSLEVEL1 =HMIManufacturer
ACCESSLEVEL2 =HMIService
ACCESSLEVEL3 =HMIUser
ACCESSLEVEL4 =HMIKeyPosition3
ACCESSLEVEL5 =HMIKeyPosition2
ACCESSLEVEL6 =HMIKeyPosition1
ACCESSLEVEL7 =HMIKeyPosition0
```

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5.2.6 Job interface

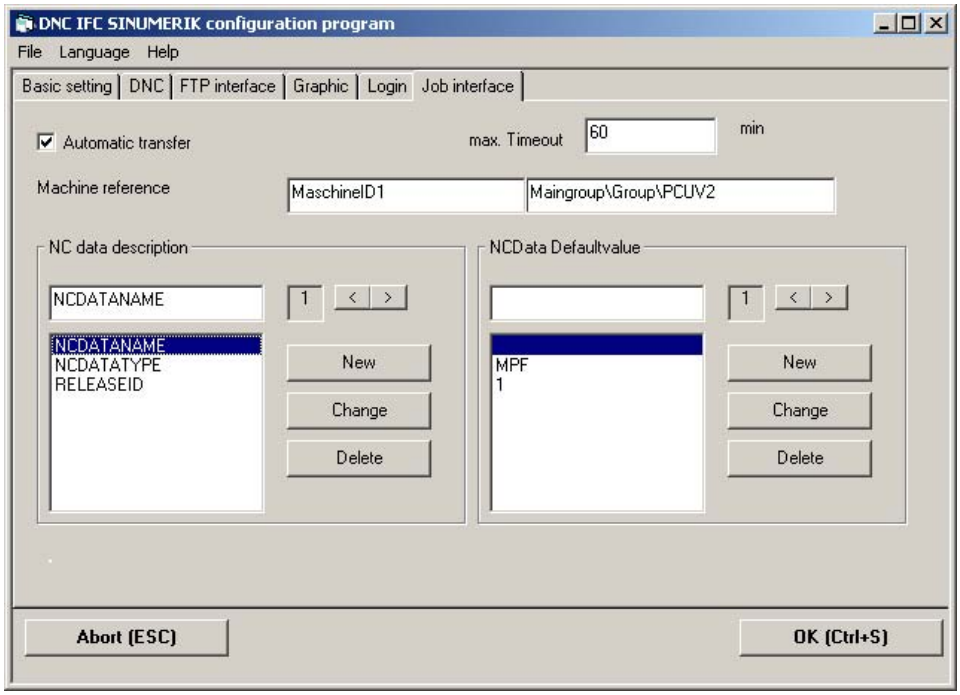

Fig. 5-7 Configuration interface/Job interface

The interface between DNC IFC SINUMERIK and other applications, such as MRP systems or MCIS MDA, is defined in the **Job Interface** tab.

Automatic transfer

This parameter defines the transmission mode for the job interface:

- Interactive (0)
- Automatic (1)

Extract from the configuration file:

```
Section[GLOBAL]
AuToDownLoad = 1
```

Maximum timeout

This parameter defines the time in minutes at the end of which an uncompleted task transferred via the job interface will be canceled.

Extract from the configuration file:

```
Section[GLOBAL]
DeleteTime =60
```

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Machine reference

This deals with assigning the machine name of the authorizing system to the machine name in DNC. The machine name of the authorizing system is entered in the left-hand input field. The machine name within DNC is entered in the right-hand input field. This must correspond to the machine name on the **DNC** tab.

Extract from the configuration file:

```
Section [MachineReference]
MachineID1 =Main group\Group\PCUV2
```

NC data description

The NC data description defines the sequence of values when performing a download job from an MRP system. The specified parameters are used in downloading the corresponding NC data file to the SINUMERIK data management system. At least the NC data file name and the NC data type must be specified. Parameters without an assigned value are assigned the default value from the section [NCDataDefaultvalue_1].
Other NC data descriptions (2, 3, etc.) can be configured, e.g., in order to control normal NC data and workpieces in parallel.

Note

All specified values must correspond to the DNC management parameters.

Extract from the configuration file:

```
Section[NCDataDescription_1]
D1=NCDATANAME
D2=NCDATATYPE
D3=RELEASEID
```

NCData Defaultvalue

The NCData Defaultvalue contain the default values for parameters specified in the NC data description. If a parameter is not assigned by the MRP system, the default value from section [NCDataDefaultvalue_1] is used instead.
Other NC data defaults (2, 3, etc.) can be configured, e.g., in order to control normal NC data and workpieces in parallel.

Note

With the exception of the NC data file names, all parameters from the NC data description must also have an assigned value in the NC data defaults.

Extract from the configuration file:

```
Section[NCDataDefaultvalue_1]
D2=SPF
D3=1
```

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5.3 Other configuration options via DNC_IFC.INI

The following parameters must be configured directly in the DNC_IFC.INI configuration file:

Section [GLOBAL]

`DataTypeChange =`

N = During transfer to a selectable destination (Download to), it is illegal to change the file type.

Y = During transfer to a selectable destination (Download to), the user can change the file type. This is also active if conversion tables are configured in the sections [DNCMMCTypeTab] and [MMCDNCTypeTab]. The **DriveInternPath** parameter may not be set to 1 or 2.

Section [PATHS]

`DhsTempPath =`

DhsTempPath describes the directory for temporary files. If the parameter is not set, the Windows temporary directory (temp) will be used.

Section [TIME]

`MessageTime =`

This key parameter controls the dwell time (in ms) of the messages displayed for **DNC IFC SINUMERIK**.

`SysTime =`

Warning

The parameter must only be modified during commissioning or in consultation with the hotline!

`DelayTime =`

This key parameter controls the delay (in ms) of the list display of directories when you scroll through the tree view of **DNC IFC SINUMERIK**.

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Section [REFRESH]

`Refresh =`

N = Deactivate automatic refresh of the screen content
Y = Activate automatic refresh of the screen content

`RefreshDelay =`

Duration in seconds between last operator action and first refresh

`RefreshInterval =`

Duration in seconds between refresh cycles

■

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I Index

I.1 Subject index

C

Change
  workpiece directory FBDN2/4-23
Configuration interface FBDN2/5-37

D

DCOM.....FBDN2/5-44
Delay for dialog abort FBDN2/5-40
Delete
  NC data FBDN2/4-20
Detail view FBDN2/4-24
Directory of data base server ...FBDN2/5-40
DNC → DM file type conversion
.....FBDN2/5-41
DM → DNC file type conversion
.....FBDN2/5-42
DNC database.....FBDN2/5-43
DNC host name.....FBDN2/5-43
DNC host path name.....FBDN2/5-45
DNC IFC operator interface.....FBDN2/3-10
DNC source.....FBDN2/4-17
DNC target.....FBDN2/4-21
DNC_IFC.INI configuration file.FBDN2/5-34
DNC.....FBDN2/5-43
Download
  change in target, name and type
    .....FBDN2/4-19
  default.....FBDN2/4-18

E

Edit current filter FBDN2/4-27
Evaluation of internal MMC path
.....FBDN2/5-45

F

Filter
  change.....FBDN2/4-27
  select FBDN2/4-28
  switch on/off.....FBDN2/4-27
Filter function FBDN2/4-26
Filter.....FBDN2/4-26
Font.....FBDN2/5-40
FTP interface FBDN2/5-46
FTP protocol FBDN2/5-46

H

Hardware FBDN2/2-8
Header FBDN2/3-11
HMI software.....FBDN2/2-8
Host name.....FBDN2/5-47

I

Interface with DNC Cell/Plant ..FBDN2/4-16

J

Job interface
  automatic downloading.....FBDN2/4-30
  interactive download.....FBDN2/4-31
Job interface FBDN2/4-30

K

Key parameter
  AuToDownLoad.....FBDN2/5-51
  BreakTime FBDN2/5-40
  DataBaseType.....FBDN2/5-43
  DataTypeChange FBDN2/5-53

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DefaultTransfer FBDN2/5-39
DefUpload FBDN2/5-44
DelayTime FBDN2/5-53
DHDIR.....FBDN2/5-41
DhsTempPath FBDN2/5-53
DNCMMCType1.....FBDN2/5-41, ... FBDN2/5-42
DNCMMCTypeCount .....FBDN2/5-41, ... FBDN2/5-42
DriveInternPath FBDN2/5-45
FontName.....FBDN2/5-40
FTP mode.....FBDN2/5-47
FTP protocol.....FBDN2/5-46
FTP user.....FBDN2/5-47
FTP-HOST FBDN2/5-47
FTP-PW.....FBDN2/5-47
Login..... FBDN2/5-49, FBDN2/5-50
Machine.....FBDN2/5-44
MessageTime.....FBDN2/5-53
MMCIniDrive FBDN2/5-45
Refresh.....FBDN2/5-54
RefreshDelay FBDN2/5-54
RefreshInterval.....FBDN2/5-54
SwitchLanguage.....FBDN2/5-40
SysTime FBDN2/5-53
ToggleSK.....FBDN2/5-39
WorkPathDNC.....FBDN2/5-45

L

Languages.....FBDN2/3-13
Logbook.....FBDN2/4-29
Login.....FBDN2/4-32

M

Machine FBDN2/5-44
MMC directory FBDN2/5-45
MMC software FBDN2/2-8

N

NC data detail view FBDN2/4-24

O

Online help FBDN2/3-13
Operation with FTP FBDN2/5-46
Operation without FTP FBDN2/5-46

P

Password FBDN2/5-47
PCU/MMC content..... FBDN2/4-21
Pseudo workpiece..... FBDN2/5-41

R

Refreshing the display FBDN2/3-13

S

Screen content..... FBDN2/3-12
Section
[DHDIR] FBDN2/5-41
[DNCMMCTypeTab] FBDN2/5-41
[GLOBAL] ..... FBDN2/5-39, ... FBDN2/5-40, FBDN2/5-43, 5-53
[MachineReference] FBDN2/5-52
[NCDataDescription_1]..... FBDN2/5-52
[PATHS]..... FBDN2/5-53
[REFRESH]..... FBDN2/5-54
[TIME] FBDN2/5-40, FBDN2/5-53
Show graphic FBDN2/4-25
Software..... FBDN2/2-8
Standard return transfer..... FBDN2/5-44
Startlevel FBDN2/5-44
Structure of the operator interface FBDN2/3-11
Structure FBDN2/3-11
SwitchLanguage FBDN2/5-40
System topology hierarchy level FBDN2/4-17

T

Target in
NCK FBDN2/4-17
PCU/MMC bzw. NCK FBDN2/4-17
PCU/MMC..... FBDN2/4-17
Target..... FBDN2/5-39
TCP/IP address..... FBDN2/5-43
Title bar FBDN2/3-12
Transfer arrow..... FBDN2/3-12
Transfer destination FBDN2/5-39
Transfer mode..... FBDN2/5-47,FBDN2/5-48

U

Upload
change in target, name and type FBDN2/4-23

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default.....FBDN2/4-22
User.....FBDN2/5-47
Using DNC IFC SINUMERIK.....FBDN2/1-5

W

Windows 95 ..... FBDN2/2-8
Windows NT..... FBDN2/2-8

■

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Notes

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A

A Appendix

A.1 DNC Glossary

Abbreviation	Meaning
ASCII code	**American Standard Code for Information** 7-bit code
BMP	**BitMaP** Graphics file for clamping diagrams, etc.
CNC	**Computerized Numeric Control** Numerical control with microprocessors
DNC	**Direct Numeric Control** System where several CNC machines are linked with a central computer by bidirectional data exchange.
DNC IFC SINUMERIK	**Direct Numeric Control InterFace Client** System where several CNC machines are linked with a central computer by bidirectional data exchange. Transfer is over a network to SINUMERIK 840D.
FTP	**File Transfer Protocol**
EIA code	**Electronic Industries Association** 8-track punched-tape code corresponding to the ISO code, but with an even number of holes per character.
HMI	**Human Machine Interface**
ISO code	**International Organization for Standardization** 8-track punched-tape code
ISQL	**Interactive Structured Query Language** Interactive database access option
MDA Machine SINUMERIK	**Machine Data Acquisition** Stand alone for SINUMERIK/PC incl. evaluation Machine data acquisition/production data acquisition
MDA	**Machine Data Acquisition** Production data acquisition and evaluation on SINUMERIK 840D
MPF	**MainProgramFile** NC main program
MMC	**Man Machine Communication**
OCX	**OLE custom controls**
OLE DB	**Object Linking and Embedding DataBase** Database access functions over OLE/COM

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OLE/COM	**Object Linking and Embedding/Component Object Model** Object-oriented program model for defining object behavior, also using process limits
PCU	**PC Unit**
SPF	**SubProgramFile** NC subprogram
SQL	**Structured Query Language** Database query language
SQL-net	**Structured Query Language-net** Interface for network access to database
TCP/IP	**Transmission Control Protocol/Internet Protocol** Transmission protocol
TDI Machine	**Tool Data Information Machine** Information about the availability and handling of tools
TOA	**ToolOffsetActiv** Tool offsets
WPL	**WorkPLan** ASCII file for tool diagrams
ZOA	**ZeroOffsetActiv** Zero offset

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