Motion Control Information System

SINUMERIK 840D/840Di/810D/PCU50 on Windows and SINUMERIK 840D sl NC Program Management DNC

Function Manual · 04/2010

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DNC Plant / DNC Cell 1
Book 1

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Motion Control Information System

SINUMERIK 840D/840Di/810D/PCU50 on Windows and SINUMERIK 840D sl NC Program Management DNC

Function Manual

Valid for

Controller
SINUMERIK 840D powerline
SINUMERIK 840Di
SINUMERIK 840D sl
SINUMERIK 810D powerline

Software		*Version*
Motion Control Information System	DNC	2.3

Appendix A

04/10 Edition

SINUMERIK® documentation

Printing history

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

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

Status codes in the "Remarks" columns:

A .... New documentation.
B .... Unrevised reprint with new order number.
C .... Revised edition with new status.

Release	Order No.	Remark
03/03	6FC5297-1AE80-0BP0	**A**
04/05	6FC5297-2AE80-0BP0	**C**
05/07	6FC5297-2AE80-0BP1	**C**
04/10	6FC5297-2AE80-0BP2	**B**

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Preface

SINUMERIK documentation

The SINUMERIK documentation is organized in three parts:

- General documentation
- User documentation
- Manufacturer/service documentation

Information on the following topics is available at
http://www.siemens.com/motioncontrol/docu

- Ordering documentation

Here you can find an up-to-date overview of publications.

- Downloading documentation

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- Searching documentation online

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  My Documentation Manager provides you with a range of features for generating your own machine documentation.

- Training and FAQs

Information on our range of training courses and FAQs (frequently asked questions) is available via the page navigation.

Target group

Project engineers, technologists (of the machine manufacturers), commissioning engineers (for systems/machines), programmers.

Benefits

The Function Manual describes the functions so that the target group is familiar with and can select them. It provides the target group with the information required to implement the functions.

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Standard scope

This Programming Guide describes the functionality afforded by standard functions. Extensions or changes made by the machine tool manufacturer are documented by the machine tool manufacturer.
Other functions not described in this documentation might be executable in the control. However, no claim can be made regarding the availability of these functions when the equipment is first supplied or in the event of servicing.

For the sake of simplicity, this documentation does not contain all detailed information about all types of the product and cannot cover every conceivable case of installation, operation, or maintenance.

Technical support

If you have any technical questions, please contact our hotline:

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Phone: +49 180 / 5050 - 222
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0.14 €/min. from German landlines, max. 0.42 €/min for calls from a mobile phone
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SINUMERIK Internet address

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EC Declaration of Conformity

The EC Declaration of Conformity for the EMC Directive can be viewed/downloaded from the Internet at: http://support.automation.siemens.com under the Product Order No. 15257461, or at the relevant branch office of I DT MC Division of Siemens AG.

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These Operating Instructions contain information which you should observe to ensure your own personal safety as well as to protect the product and connected equipment. Notices referring to your personal safety are highlighted in the manual by a safety alert symbol; notices referring to property damage do not have a safety alert symbol. Depending on the hazard level, warnings are indicated in a descending order as follows:

DANGER

Indicates that death or severe personal injury will result if proper precautions are not taken.

Warning

indicates that death or severe personal injury may result if proper precautions are not taken.

Caution

(With warning triangle) Indicates that minor personal injury may result if proper precautions are not taken.

Caution

(Without warning triangle) Indicates that property damage may result if proper precautions are not taken.

Attention

Indicates that an unwanted result or situation may result if the appropriate advice is not taken into account.

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Note

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We have checked the contents of this document for agreement with the hardware and software described. However, since deviations cannot be precluded entirely, we cannot guarantee full consistency. The information given in this publication is reviewed at regular intervals and any corrections that might be necessary are made in the subsequent editions.

■

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Motion Control Information System

SINUMERIK 840D/840Di/810D/PCU50 on Windows and SINUMERIK 840D sl
NC Program Management DNC

DNC Plant/DNC Cell (FBDN1)

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1.1 Product description

DNC is a software module in the Motion Control Information System (MCIS) from SIEMENS.
MCIS comprises modular software solutions for the integration of CNC and machine tools in the production system. This means that both state-of-the-art SINUMERIK controllers* and older (CNC) machine tools, which do not support an open network interface, can be integrated in an automation network. MCIS is, therefore, the key to boosting productivity in your production processes.

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1.1.1 MCIS for machine tools

MCIS comprises a number of function modules, which, with the exception of RCS and RPC, access the joint MCIS database **MCISDB**. The MCIS database is made up of shared components such as user administration and machine nodes, as well as module-specific components that are assigned to the 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 greater manufacturing transparency and more efficient production processes.

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

   For cutting the costs of NC data organization through easier management, archiving and supply of NC programs for CNC systems
   and faster supply of NC programs to SINUMERIK* systems via Ethernet.

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

   For reducing the tools in circulation and minimizing machine downtimes.

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

   For support of the machine operator with maintenance activities on machines and plants.

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

   Remote diagnostics for reducing machine downtimes through prompt notification of faults and very simple online diagnostics via modem, ISDN, intranet, Internet and DSL.

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

   Computer link software for the communication between SINUMERIK* and an external master computer.

7. Data management system for control components
   ADDM (A&**D D**ata **M**anagement)

   Management of the data and programs of the components used via a uniform user interface.

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1.1.2 DNC NC program management

General

DNC manages and archives NC data and transfers it to CNC machine tools. **DNC** is the interface between production planning and production and offers a wide range of functions for NC data management and version management.

Operating system

DNC runs on standard PCs with Windows.

Database

The NC data is managed in a database.

Controller connection

Controllers are connected to **DNC** via a machine server. A special machine server is required for each connection type.

- **DNC** provides a machine server (**DNC IFC Serial**) for connecting any required controllers via a serial interface that do not support a special protocol.
- **DNC IFC SINUMERIK** runs on SINUMERIK* controllers and integrates them in the network.
- The **file system** machine type can be used to transfer NC data from and to any network drives that have been released. Any network-capable NFS (with additional software, such as Microsoft SFU), SMB or CIFS controller that runs on Windows can be connected to the **DNC** system. A **DNC IFC file system** license is required for this connection type.
- Any of the machine servers can also be used to establish connections with controllers with different interfaces (e.g. OLE/COM, or special serial protocols).

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1.2 Fields of application and system variants

DNC is deployed in all industry sectors with CNC production and allows local solutions to be scaled as required with **DNC Cell** through to plant-wide solutions with **DNC Plant**.

1.2.1 DNC Plant

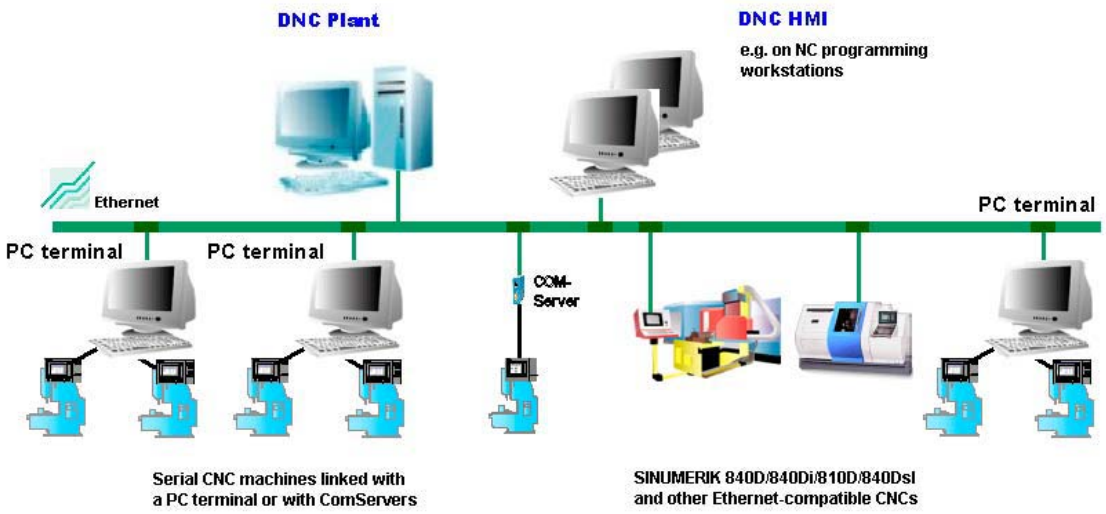

Fig. 1-1: Configuration example of **DNC Plant**

DNC Plant is a powerful, central NC data archive that allows you to manage your NC data easily on a server.
Several hundred CNC machines can be connected to **DNC Plant** either directly or via station PCs. **DNC Plant** contains a user interface.
With **DNC HMI**, you can extend **DNC Plant** to include additional operator stations, for example, for the foreman's office or for NC programmers.

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

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Station PCs

The machine servers and a user interface for transferring the NC data run on the station PCs.

Networking

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

- Any number of serial CNC machine tools
  - via station PCs (up to 16 connected to one station PC)
  - via a serial/Ethernet interface converter (so-called COM server) with **DNC IFC Serial**
- Programming systems
- Tool setting devices
- Any number of SINUMERIK* controllers with **DNC IFC SINUMERIK** (transmission protocol: TCP/IP) via direct connection.
- PCs with **DNC HM**I as operator stations of **DNC Plant**.
- Any Ethernet-capable CNC machine tools that can be supplied with NC data via a Windows file system

Additional expansion options

MCIS DNC can be combined and expanded with additional MCIS modules.
The shared database is extended here to include module-specific components. Existing, shared components, such as user administration and the machine nodes, are detected when additional modules are added.

1.2.2 DNC HMI

With **DNC HMI**, you can extend **DNC Plant** to include additional operator stations for managing NC programs. **DNC HMI** is used on Windows PCs, for example, in production planning and production. Serial machines cannot be connected to these PCs, however.

1.2.3 DNC on terminal server

DNC Plant can also be installed on a Windows terminal server instead on "real" installations on Windows PCs. All the PCs connected then access the server via a terminal server session and activate their respective **DNC** instances assigned for their terminal server client (e.g. **DNC HMI**, **DNC** station or **DNC** tool setting device).

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1.2.4 DNC Cell

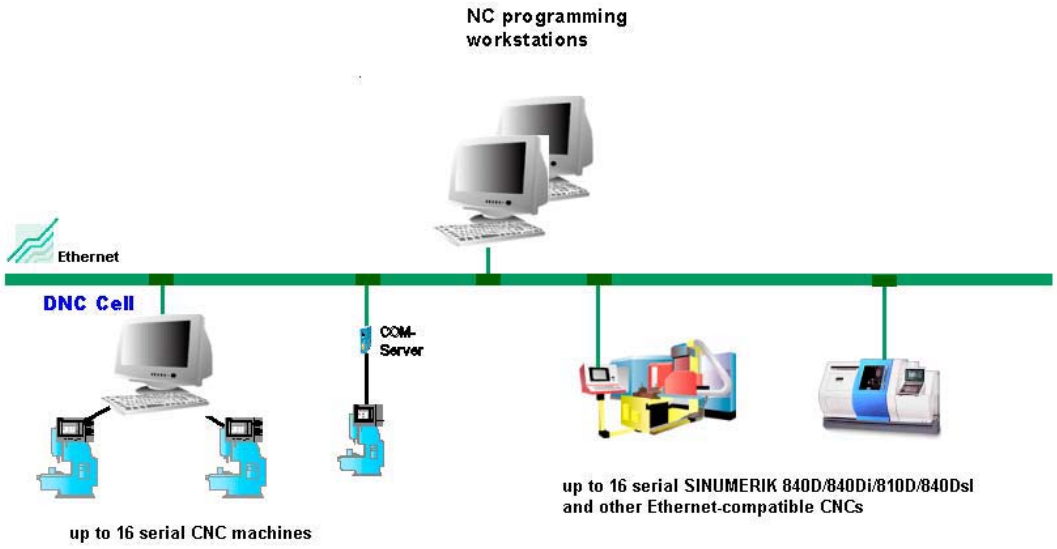

Fig. 1-2: Configuration example of a local **DNC** concept (**DNC Cell**)

DNC Cell is a single-user NC data archive solution that facilitates NC data management.

Interfaces

- Up to 16 CNC machines / tool setting devices can be connected to different controllers by means of a serial interface.
- Over the network (transmission protocol: TCP/IP), up to 16 Ethernet-capable CNC machine tools can also be connected directly.
  - SINUMERIK* controllers via **DNC IFC SINUMERIK**
  - Any Ethernet-capable CNC machine tools that can be supplied with NC data via a Windows file system (**DNC IFC file system**).

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1.2.5 DNC IFC SINUMERIK

DNC IFC SINUMERIK is used to connect Ethernet-capable CNC machines with SINUMERIK* to **DNC Plant** or **DNC Cell**.
See also: Manual 2 **DNC IFC SINUMERIK**

1.2.6 DNC Compare

DNC Compare is an option package. With **DNC Compare**, **DNC Plant** and **DNC Cell** can be extended to include the following functions:

- **NC program comparison**
  Different NC program versions are compared.
  Differences are highlighted in color.

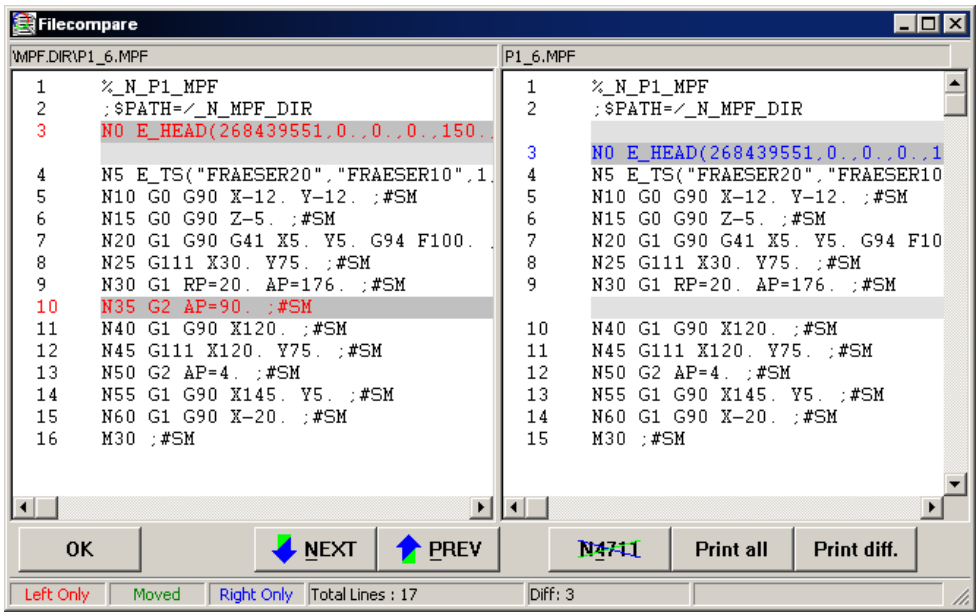

Fig. 1-3: Result of an NC program comparison

- **Machine comparisons**:**
  The system checks whether the NC programs in the SINUMERIK* controller are identical in terms of name, number and content to the programs that are already managed by **DNC Plant/Cell**.

** This function is only available for connections to SINUMERIK* controllers with PCU50/70. **DNC IFC SINUMERIK** must also be installed on the SINUMERIK controller.

Note

The **DNC Compare** option package can be released in **DNC Admin** by entering an 8-digit ID at **Tools →Options**. The ID is included in the scope of delivery of the option package.

DNC Compare is only required once per **DNC Plant/Cell**.

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1.2.7 DNC IFC Serial

With **DNC IFC Serial**, you can connect CNC machines via a serial interface to **DNC Cell** or **DNC Plant** or to the station PC.

Note

DNC IFC Serial is required for each serial CNC machine.

1.2.8 DNC IFC Dialog (dialog function)

DNC IFC Serial can be expanded with **DNC IFC Dialog**.
It enables the operator input for the download or upload of machining programs directly on the CNC.
Dialog programs for requests (created via an editor) and responses are exchanged between **DNC** and the machine server. These contain the data relevant for the download or upload.

Note

DNC IFC Dialog is optional for each serial CNC machine.

1.2.9 DNC IFC file system

DNC IFC file system can be used to connect any CNC machine tools that can be supplied with NC data by means of an NFS (with additional software, e.g. Microsoft SFU), SMB or CIFS file system via an Ethernet network.
Programs are transferred via the **DNC** or HMI computer, or via a station PC.
In addition, a SINUMERIK with PCU20, for example, can be integrated via the **DNC IFC file system**.

1.2.10 DNC Machine

DNC Machine is a basic Ethernet solution for networking SINUMERIK* controllers.
DNC Machine provides a user interface on the SINUMERIK controller via which NC programs can be transferred between the file system and SINUMERIK controller without the need for additional software components.

Note

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

SINUMERIK*: SINUMERIK 810D
SINUMERIK 840D
SINUMERIK 840Di
PCU50 under Windows with SINUMERIK 840D sl

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Notes

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2

2 Plant structure

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2.1 Plant topology

The plant topology shows the physical circumstances and conditions of the machines with the NC data storage system and their hierarchical structures in **MCIS DNC**. **DNC** offers the following hierarchical levels for mapping production:

- Groups
- Machine

DNC contains the "workpiece" folder for bundling the NC data for a workpiece.

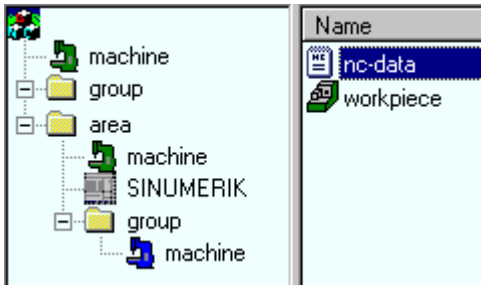

Fig. 2-1: Possible plant structure configuration

Group

NC data management allows basic and detailed hierarchical levels to be created by means of the group hierarchical level. For example, you can combine several machines of the same type into one group. You can then subdivide these groups further into subgroups. You can also manage individual items of NC data and workpieces within each group.
Machines can also be created without a higher-level group.

Note

You can insert groups by choosing **File → New → Group**. Depending on the selections you made in the tree view, you can insert groups before or after the current hierarchy level. To insert groups one hierarchy level lower, choose **File → New → Subgroup**.

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Machine

Machines are the lowest administrative unit. Each logical machine represents a physical CNC machine and functions as a container for NC data and workpieces that belong to this machine only.

Workpiece

The workpiece administrative unit is used to manage related NC data together. All of the NC data required for performing an operation on a CNC machine can be stored in this management unit, for example.
You can also bundle NC data for a workpiece and send it to the CNC machine. The SINUMERIK* controller itself can manage workpieces, which means that workpiece-related NC data from **DNC** can be stored on the controller in the same form.

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NC data

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

• MPF (Main Program File)	Main NC program
• SPF (SubProgram File)	NC subprogram
• TOA (Tool Offset Active)	Tool offsets / actual tool data
• ZOA (Zero Offset Active)	Zero offset
• BMP (BitMaP)	Graphics file for clamping sketches etc.
• WPL (WorkPLan)	ASCII file for tool plans
• RPA (R-Parameter Active)	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 (display LiST)	Display list
• TOP (TOol Plan)	Tool plan
• CEC	Sag/angularity
• EEC	Measuring system error compensation
• QEC (Quadrant Error Compensation)	Quadrant error compensation
• PDF (Portable Document Format)	Text and graphics in PDF format
• JPG (Joint Photographic Experts Group)	Graphics file
• TIF (Tagged Image File)	Graphics file
• WPD (WorkPiece Directory)	Workpiece directory
• TTD (Tool Target Data)	Tool target data

The above data types are predefined in the **MCIS** database. The editor assigned in Microsoft Explorer is used for each NC data type.
In addition to conventional NC data (main NC program and subprograms, tool offsets and zero offsets), special NC data (e.g. graphics files and tool lists) can also be processed. These data types are available in the SINUMERIK* controller.

Note

New NC data types must be made known to the system by means of the appropriate entries in the database table DNCDATATYPE.
If a special editor is required for the new data types, it must be assigned via Microsoft Explorer or via the registry entries in MCIS **DNC**. See also: Microsoft Windows help (Start → Help) under the index: "File types".

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Link

A link allows you to view any directory in a file system. You can display all the files of any data type or just a specific file type. This provides you with a direct view of the NC data of other networked systems (e.g. NC programming systems). **DNC** does not maintain any administrative data for these files; you can only display the information in the file system.
Links can be integrated at any level of the hierarchical NC data structure.

Note

Links only allow you to view the objects directly underneath. Subdirectories cannot be displayed.

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2.2 DNC functions on hardware components

2.2.1 DNC Cell computer

With the **local** variant **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
- Import
- Export
- Data transfer to and from the CNC machine tools
- User administration
- Data filter management
- Logbook filter management
- Comparison of NC programs
- Automatic archiving of NC data on the SINUMERIK* controller (optional)

2.2.2 DNC Plant computer

With the **DNC Plant** variant, 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
- Import
- Data filter management
- Logbook filter management
- Comparison of NC programs
- Automatic archiving of NC data on the SINUMERIK* controller (optional)

The DNC user interfaces can run on terminal servers/clients.

2.2.3 DNC HMI computer

With the **DNC HMI** computer, the **DNC Plant** variant can be extended to include additional user interfaces.

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2.2.4 Station PC

With the **DNC Plant** variant, the following activities are carried out on the station PCs:

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

2.2.5 NC programming system

NC programming systems can be integrated in the **DNC** network to transfer NC data. NC data can be imported into the management structure of **DNC** by NC programming systems integrated in the network. No MCIS software needs to be installed on the programming system computer for this purpose. The **DNC HMI** software can, however, be installed on an NC programming system in order to operate the **DNC** system. If the **DNC HMI** workstations are configured accordingly, the controllers can be accessed directly.

2.2.6 Tool setting device terminal

If you want to integrate a tool setting device in the **DNC** system, an additional **DNC** workstation is required (currently only possible with **DNC Plant**).
The setting device is a separate **DNC** installation on a PC.

Tool setting devices can be connected to **DNC** as follows:

- Via the serial interface
- Via the file system

The tool offset data is transferred from the tool setting device to **DNC** by means of an upload on the tool setting device terminal. The appropriate file must then be transferred from **DNC** (not from the tool setting device terminal) to the CNC machine tool.

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2.2.7 Controller

SINUMERIK*

In addition to the active memory containing the NC data to be processed on the machines, SINUMERIK* controllers also feature a passive memory on the PCU50 or MMC. NC data in the form of NC programs, tool data or zero offset data, for example, can be stored here. This allows NC data to be made available before production starts. **DNC IFC SINUMERIK** connects the controllers to **DNC** via the network. NC data can be downloaded and uploaded to the controller on the SINUMERIK operator panel.

Controllers with serial interface

Controllers with a serial interface can be connected to **DNC Cell/Plant** or station PCs directly or via interface converters (COM server). For this purpose, the serial interface (machine server) must be configured for each CNC machine tool. NC data is transferred to the controller via the interface of the associated station.

SINUMERIK*: SINUMERIK 810D
SINUMERIK 840D
SINUMERIK 840Di
PCU50 under Windows with SINUMERIK 840D sl

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3

3 Operator interface

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3.1 Explorer layout for DNC and DNC Admin

The **DNC** user interface is based on Windows with regard to its functionality and how it is handled. You can work through the dialogs using the mouse or keyboard. In addition to the menus, the interface includes a toolbar containing all the key functions and a status bar for messages.
Operators must log on. Operators are authorized to use different functions depending on the user rights assigned to them.

There are two user interfaces:
- User interface for NC data management (**DNC Explorer**)
- User interface for administration (**DNC Admin** Explorer)

3.1.1 Explorer layout

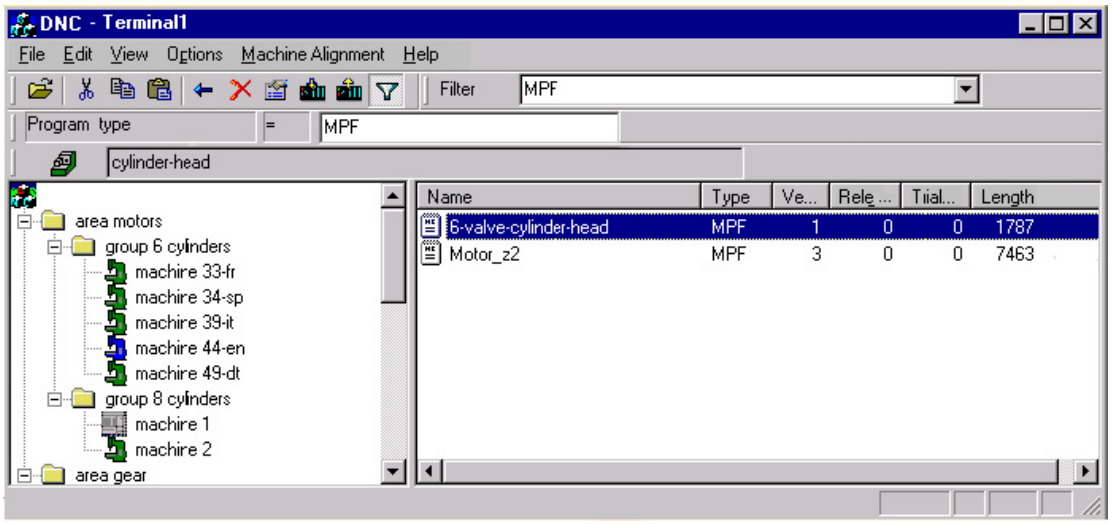

Fig. 3-1: **DNC** user interface

The user interfaces for **DNC Admin** and **DNC** differ only very slightly. Each of the programs does, however, have a number of additional, **different functions**. See also: Chapter 10 Configuration.

The screen is divided into two sections.
- As in Windows Explorer, the left side of the screen shows the tree structure for all the **DNC** administrative units in the plant configuration, starting with the root to the groups (subgroups), links and individual machine. Selected units are highlighted in color.
- The right side of the screen contains a list of all the subordinate elements (NC data, etc.) for the unit selected on the left. In addition to the file name, the size, type, creation date, etc. of the units are displayed. You can configure the list display using the list editor.

The area above these two panes contains the address field, the filter field as well as the toolbar and menu bar. The status bar is displayed at the bottom of the screen.

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Menu bar

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

** Available in **DNC** only

*** Available in **DNC** only and only under machines with the option "**DNC Compare**".

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

File	Edit	View	Tools	Machine Comparison***	Help
New ▶	Cut CTRL+X	Configuration *	Settings…	Compare ***	Help Topics
Open… CTRL+O	Copy CTRL+C	Show NC Data **	Logbook…	Display Result ***	About…
Print Preview	Paste CTRL+V	Filter Editor	User Administration *	Individual NC Data Comparison ***	
Print... CTRL+P	Delete Del	Filter On/Off F7	Consistency Check *	Archive	
Import…	Properties F3	Toolbar	List Editor *	Display Archive Result ***	
Export CTRL+P	Reset Release ID	Status Bar	Screen Editor *		
Transfer ** F3		Split	Options... *		
Upload ** F4		Refresh List F5	Config. Tables		
Compare…			User for Editor		
Logout…			Display All My Machines		
Exit					

Table 3-2: **DNC** and **DNC Admin** file→ New context menu

File	
New	NC Data… CTRL+P
	Workpiece…
	Group… *
	Subgroup… *
	Machine… *
	Setting Device
	Link… *

Table 3-3: **DNC Admin** Tools → Config. Tables context menu

Tools	
Config. Tables *	DNCGLOBALSETTINGS *
	DNCMACFG *

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Toolbar

Fig. 3-2: Toolbar on the user interface

The toolbar contains icons for the following functions:

- Open
- Cut
- Copy
- Paste
- Back (for workpieces)
- Delete
- Properties
- Download
- Upload
- Filter (on/off)
- NC Package Viewer (only available in conjunction with Siemens PLM Team Center)

Filter bar

Fig. 3-3: Filter bar on the user interface

The filter bar indicates which filter is currently selected. It can also be used to select other predefined filters. The switch position of the filter icon in the toolbar indicates whether the filter is currently activated or deactivated.

When you choose **Filter**, a dialog is displayed in which you can add or change filters in the filter editor (**View → Filter Editor**).

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Quick filter bar

Fig. 3-4: Quick filter bar on the user interface

The quick filter function allows you to change a filter value without having to call up the filter editor.
Once you have selected a filter, the first filter condition of the current filter is displayed in three fields in the toolbar area. The first two fields contain the field name and operand, while the third field, which can be edited, contains the current filter condition value (see also Section 3.2. View filter).

Note

The value of the filter condition is treated in the same way as a value with a wildcard, although the wildcards are not displayed in this field.

Example:
Program name = A
means that the system filters according to program names that contain "A"
(e.g. Program1, Appl_1, 135_A_xzy).

Program name = A*
means that the system searches for program names that begin with "A"
(e.g. Appl_1, 135_A_xzy ("Program1" will not be found in this search because it does not begin with "A")).

Address bar

The address bar contains the following information:

- The name of the workpiece when the workpiece directory is open
- The link path when the link directory is open

Fig. 3-5: Address bar when the workpiece directory is open

Fig. 3-6: Address bar when the link is open

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Status bar

The status bar contains explanations of the menu items and icons. Message and error texts are also displayed here.
As well as the number of entries in the list display.

Note

Important error messages are output 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 that occur at unforeseeable times.
- All messages that occur as a result of actions carried out within the dialog function, i.e. if there is no guarantee that an operator can acknowledge the messages on the computer.
- Information that does not require immediate action on the part of the operator.

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

- Messages that are a direct response to user actions and require a response from the operator.
- Fatal system errors that prevent the operator from continuing to work properly.

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3.1.2 Display formats

DNC and **DNC Admin** feature two display formats. The normal display is designed for use on PCs in areas outside the workshop. The large display is designed for use in the workshop.

Normal display

The user interface is displayed in the standard Windows dimensions.

Large display

The icons in the large display are twice as big as those in the normal display, and the text is enlarged.
The large display is designed for use in workshops so that the interface can be read from a distance.

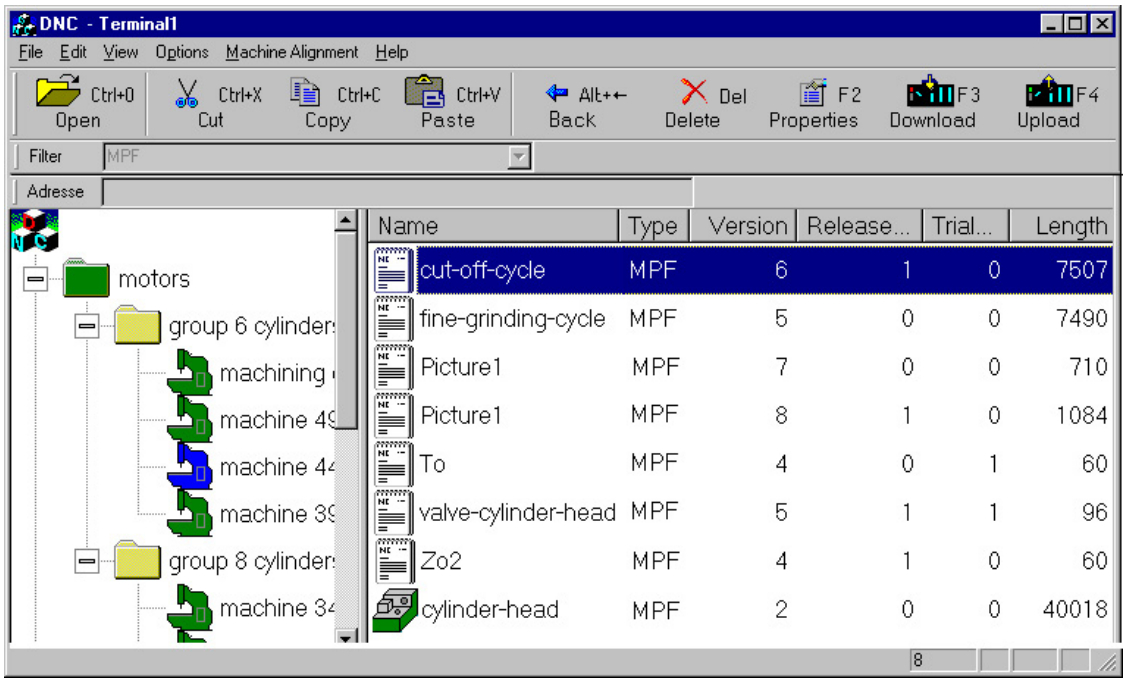

Fig. 3-7: Large display of the user interface

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3.1.3 Operation

You can work with the **DNC** and **DNC Admin** explorer in the same way as other Windows applications using the mouse and keyboard.
The most important functions can be called up via the function keys:

- Properties F2
- Download F3
- Upload F4
- Refresh List F5
- Switch Screen F6
- Use Filter F7

3.1.4 Languages

The languages of the **DNC** and **DNC Admin** user interfaces can be switched in line with the language of the user.
The language can be switched under **Tools → Settings** while the system is running. The following languages are available:

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

Note

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

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3.2 View filter

General

To display a filtered view of the files on the right of the interface, choose **View** → **Filter On/Off**. When the filter is activated, **DNC** displays only a selection of the NC data that is relevant to the user.

DNC can filter the NC data using the administrative data. The only exceptions here are the comments. Texts within the NC data comments cannot be filtered.

The filter icons in the toolbar indicate whether the filter function is activated or deactivated.

Filter activated

Filter deactivated

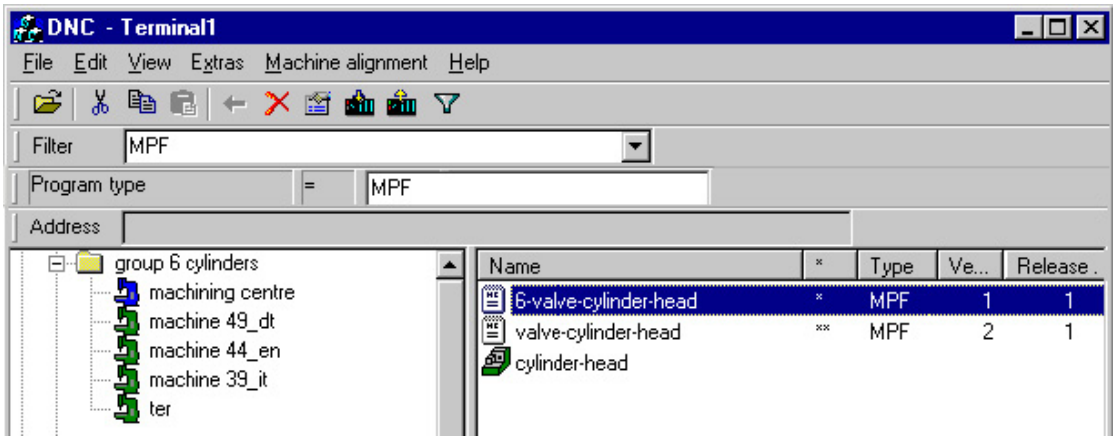

Fig. 3-8: Example of unfiltered view

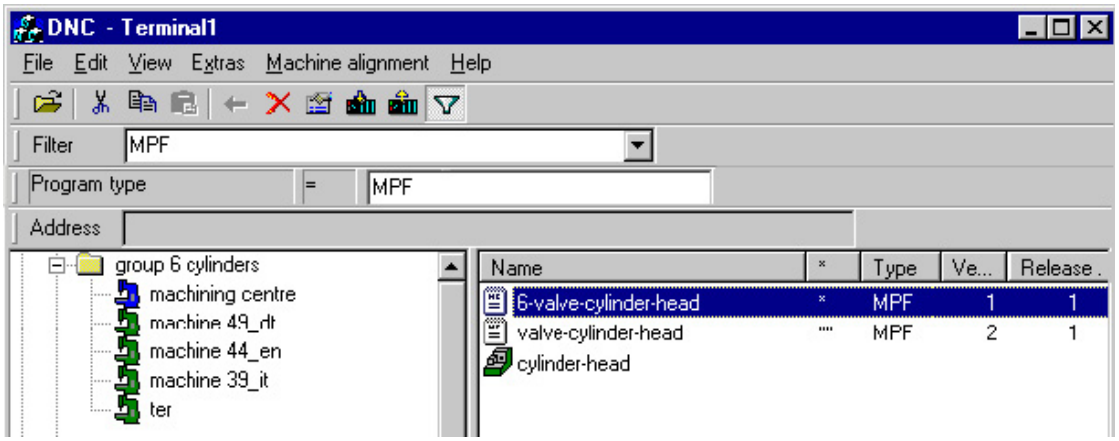

Fig. 3-9: Example of filtered view (in this case "MPF")

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Generic filtering

You can use the generic filter to search for specific files in the tree display on the left.

All NC data recorded in **DNC** and which fulfills the filter conditions is displayed when the filter is activated.

To create a filter, click the root of the tree display on the left and then activate your filter.
Files in links are not displayed!

Note

In the case of large plants, a maximum of 1000 items of NC data can be displayed to prevent the user from having to wait too long. For this reason, choose a suitable filter so that only the relevant NC data is displayed.

The **Workpiece** administrative data is only relevant with the generic filter. Under normal circumstances, no NC data is displayed if "**Workpiece**" has been defined as a criterion for the filter.

The list display of the generic filter is defined in the "**GLOBAL**" display group. If this display group does not exist, the standard list display is used (for more information, see "List editor").

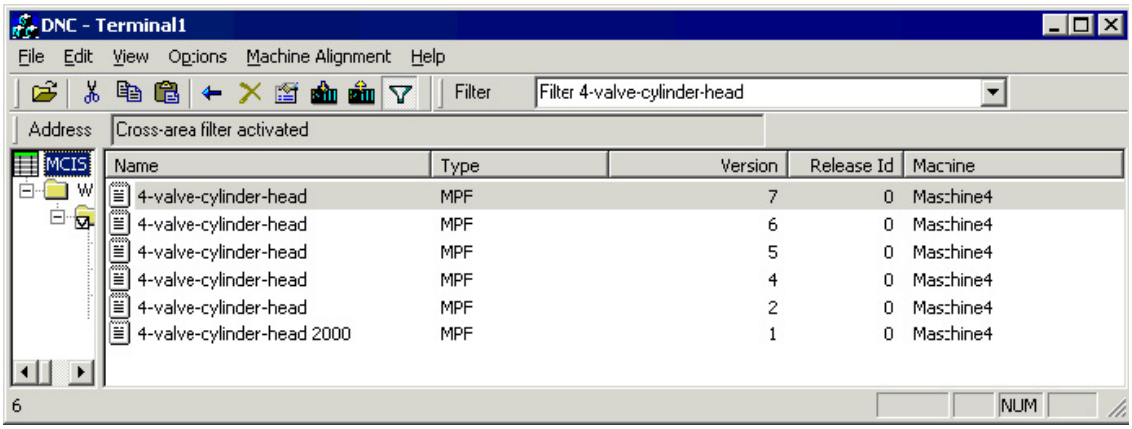

Fig. 3-10: Generic filtering

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3.2.1 Creating or changing filters

Adding or changing filter criteria

To call up the filter criteria dialog, choose **View** → **Filter Editor...** (see below).

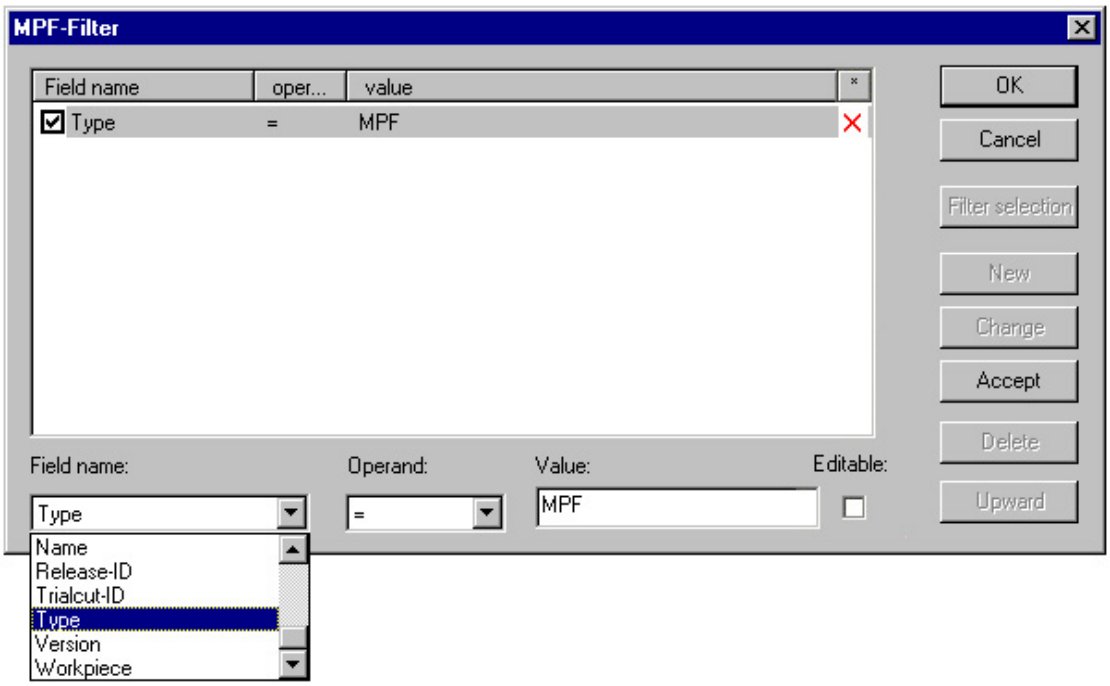

Fig. 3-11: Filter criteria dialog – new criterion

Note

If a filter has not yet been defined, the Edit Filter dialog is displayed so that you can create a new filter (see also the next section but one).

Using the **Change** and **New** buttons, you can activate the three fields at the bottom, after which you enter or change the filter criterion.

To select the active filter whose filter criteria are to be changed, choose **Select Filter**.

If several criteria apply for the filter, you can sort these using the **Up** button. This only provides a better overview and does not have any functional significance. Since all of the criteria are ANDed, all of them must always be fulfilled.

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In **Field Name**, you can choose one of the items of administrative data of the respective NC data.

In **Operand**, you can decide how you want to filter your NC data with the field name you have chosen. The following options are available:

Table 3-4: Filter operands

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

Caution

Before you change a filter, make sure that you have selected the correct filter in the Select Filter dialog. You can check this in the title of the dialog for the filter criteria (see above).

You can also use wildcards in the **Value** field. The following wildcards are supported:

Table 3-5: Wildcards

DOS wildcards	SQL wildcards	Description	Examples	
*	%	Several arbitrary characters	**c***	**c**ylinder_head, **c**oil_plunger
			%**A**	TO**A**, ZO**A**, RP**A**
?		One arbitrary character	?**PF**	M**PF**, S**PF**
			_O_	T**O**A, Z**O**A, J**O**B

Note

The meaning of the DOS wildcards is the same as that of the SQL wildcards.

Wildcards are sent to the database as "like" queries. This means that the same filter can have a different effect on different databases (MSDE, ORACLE, etc.) depending on how these are configured. One example of this is the use of upper and lower-case letters. The filter can also react differently depending on how the wildcards or data fields are used.

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Once you have entered your criterion, choose **Accept**.
The checkmark in the checkbox in front of the filter criterion indicates that this criterion has been activated. If this checkmark is not displayed, this criterion does not affect the filter.

Important

All the filter criteria are linked by means of an **AND** operation. This means that criterion 1 **AND** criterion 2 **AND** criterion x must be fulfilled for the NC data so that this can be displayed. A plausibility check is not performed.

Editing the filter criteria directly

When the **Editable** checkbox is activated, the value can be edited directly in the selected filter criterion without needing to make the necessary changes via **Change** and **Accept**.

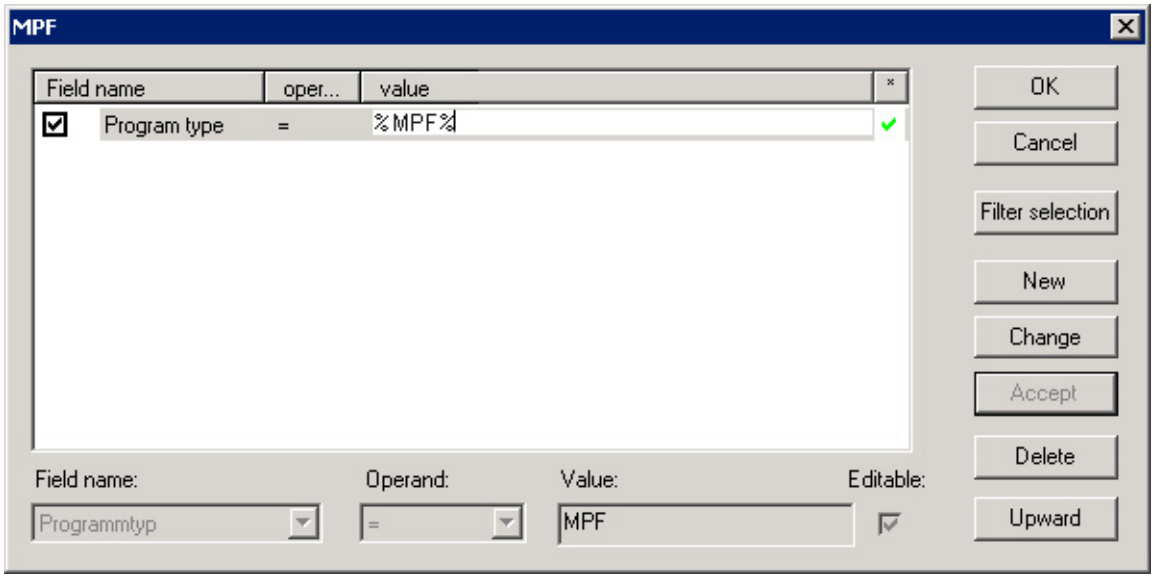

Fig. 3-12: Editing the filter criteria directly

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3.2.2 Saving the filter criteria

When you choose **OK**, a message window containing various options for saving the filter criteria is displayed. The following options are available:

- **Save criteria:**
  The filter criteria are saved and are provided in this form in subsequent sessions.
- **Do not save criteria:**
  The filter criteria are changed online, but the values are not saved. They will not be available in this form in subsequent sessions.

Selecting the filter

You can call up the Select Filter dialog by choosing **View → Filter Editor... → Select Filter** (see below).

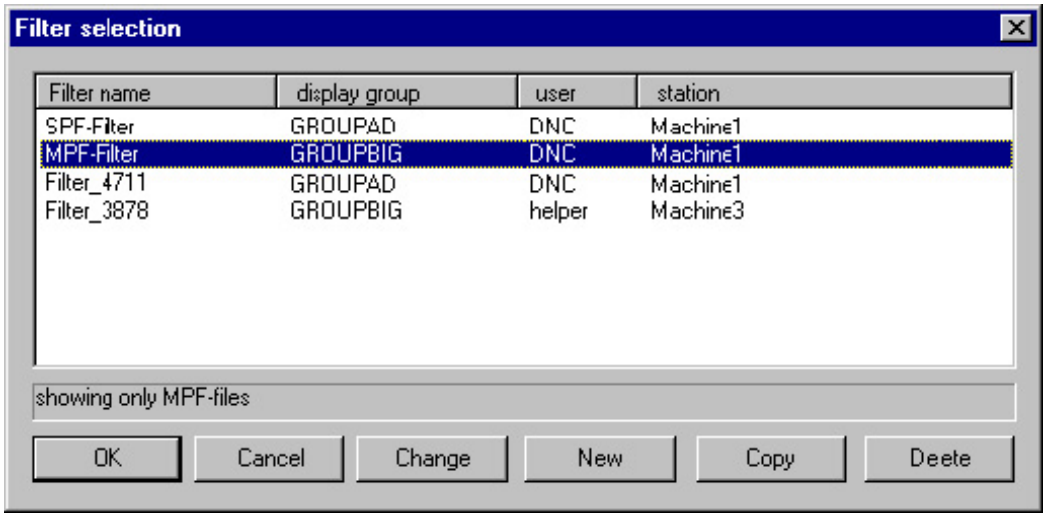

Fig. 3-13: Select Filter dialog

Note

If a filter has not yet been defined, the Edit Filter dialog is displayed so that you can create a new filter (see also the next section).

The dialog for the filter criteria appears with the selected filter when you choose **OK**. **This selected filter is then active.** The filter that is currently active is displayed in the title of the dialog.
You can open the Edit Filter dialog by choosing **New**, **Change** or **Copy**.
When you choose the **Copy** function, the filter criteria of the copied filter are accepted.

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Creating a new filter – general filter data

Choose the following:
View → Filter Editor... → Select Filter → New or
View → Filter Editor... → Select Filter → Copy or
View → Filter Editor... → Select Filter → Change to open this dialog (see below).

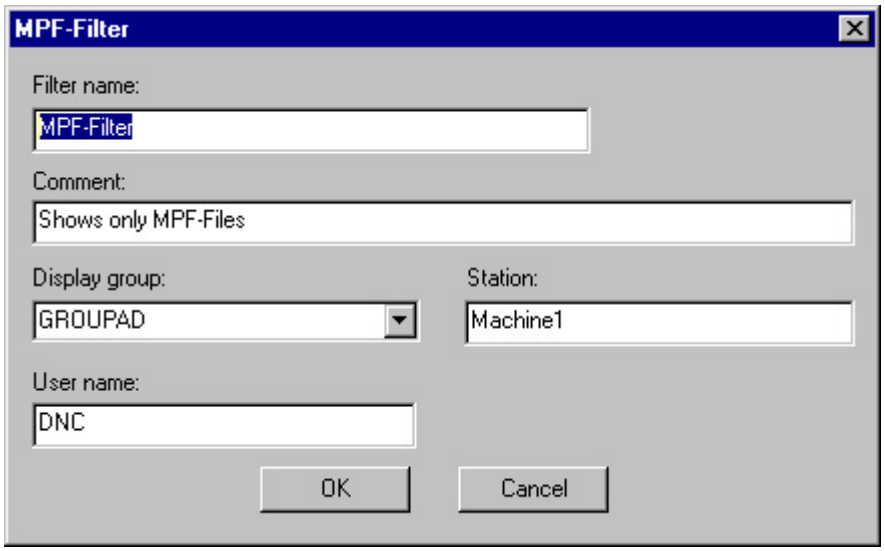

Fig. 3-14: Edit Filter dialog

Note

The filter name must be specified. The Comment field is optional. The other fields can be used to specify who can use the filter. If you enter a station, the filter can only be used on this particular station.

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If you make entries in several of these fields, it is possible that nobody will be able to use this filter because the information you have entered is inconsistent. For this reason, the Display group, Station, and User name fields can be deactivated by the administrator. In this case, the ASSIGNEDFILTER=0 parameter in the DNCGLOBALSETTINGS database table must be set.

Note

It is important to note here that existing filters that are assigned to particular display groups, stations or users and that are to be modified in "inactive" mode are displayed without the assigned display groups, stations or user names. The old assignments are deleted when you save the filter. If you exit the dialog with Cancel, the old assignments are retained.

Confirming the filter with **OK** opens the Select Filter dialog again. The new filter must be selected and confirmed there in order to add the filter criteria.

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3.2.3 Examples of the view filter

Filter criteria

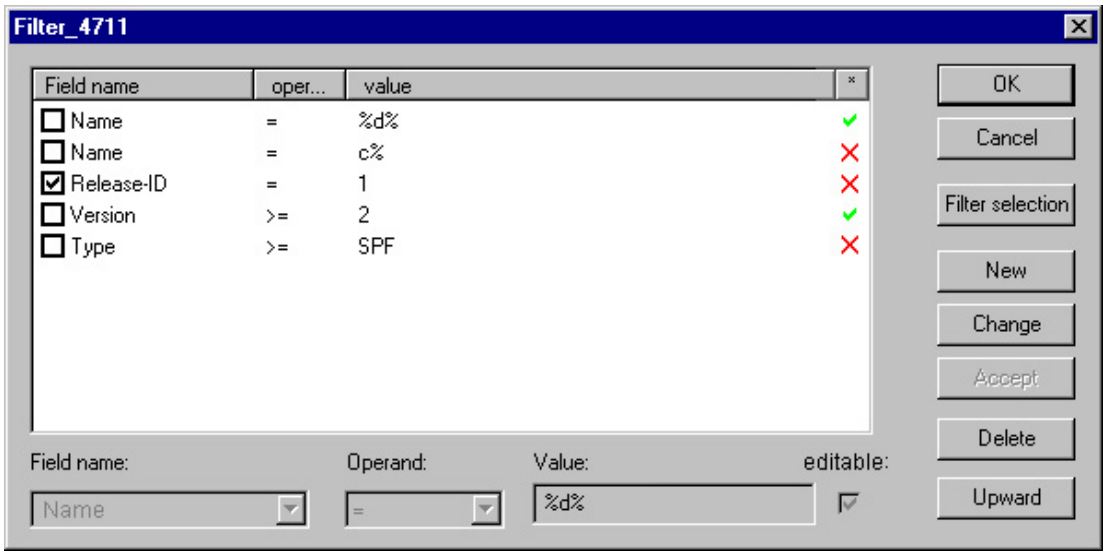

Fig. 3-15: Filter Criteria dialog – example

This filter has a large number of filter criteria, although not all of them are active. The checkmarks in the checkboxes in front of the filter criteria indicate which criteria are currently active.

All the following **examples refer to the filter** in the figure above and are activated/deactivated one after the other. The title of the example indicates which of these criteria has been activated. All the other criteria have then been deactivated for this example.

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Output data without filtering

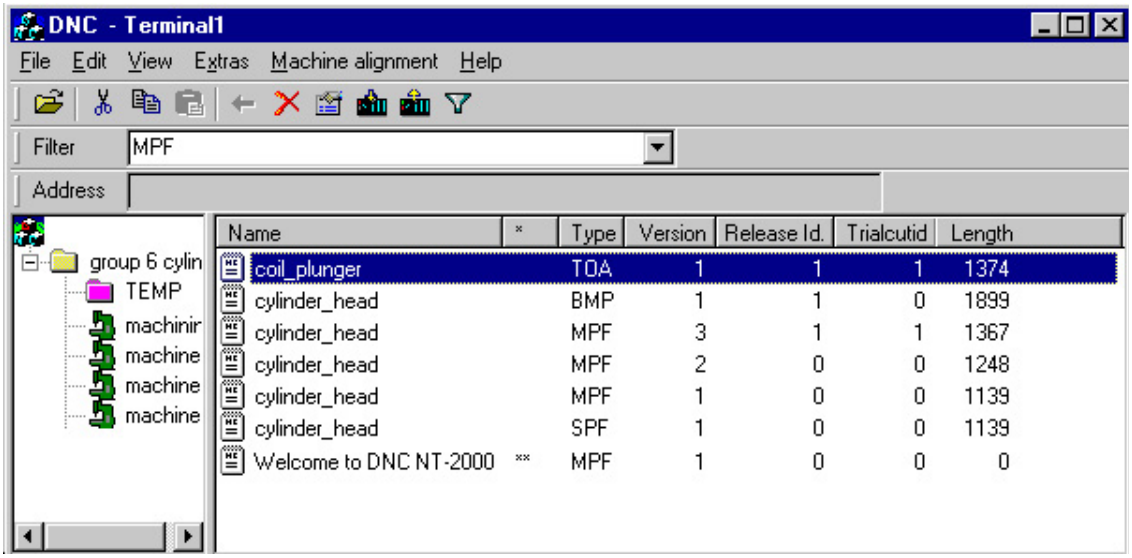

Fig. 3-16: Output data without filtering

Example 1: Program name = c%

Name	*	Type	Version	Release Id.	Trialcutid	Length
coil_plunger		TOA	1	1	1	1374
cylinder_head		BMP	1	1	0	1899
cylinder_head		MPF	3	1	1	1367
cylinder_head		MPF	2	0	0	1248
cylinder_head		MPF	1	0	0	1139
cylinder_head		SPF	1	0	0	1139

Fig. 3-17: Filtering for the output data with filter: Program name = c%

DNC now displays all the NC data that starts with the program name "c". The remainder of the program name is irrelevant, which is why the wildcard "%" is used.

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Example 2: Program name = %d%

Name	*	Type	Version	Release Id.	Trialcutid	Length
cylinder_head		BMP	1	1	0	1899
cylinder_head		MPF	3	1	1	1367
cylinder_head		MPF	2	0	0	1248
cylinder_head		MPF	1	0	0	1139
cylinder_head		SPF	1	0	0	1139
Welcome to DNC	**	MPF	1	0	0	0

Fig. 3-18: Filtering for the output data with filter: Program name = %d%

The system now displays all the NC data that contains a "**d**" in the program name. No distinction is made between upper and lower case, which is why "Welcome to DNC" is also displayed. This is a database setting, however, and may be different in your database.

Example 3: Version >= 2

Name	*	Type	Version	Release Id.	Trialcutid	Length
cylinder_head		MPF	3	1	1	1367
cylinder_head		MPF	2	0	0	1248

Fig. 3-19: Filtering for the output data with filter: Version >= 2

The system now displays all the NC data that has Version 2 or higher.

Example 4: Program type >= SPF

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

Fig. 3-20: Filtering for the output data with filter: Program type >= SPF

The system now displays all the NC data for which the **program type** follows "SPF" (alphabetically). This is why the NC program of type "TOA" is also displayed. Since the criterion was set with **greater than or equal to**, both the SPF and TOA program are displayed.

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Filtering by date in Oracle databases

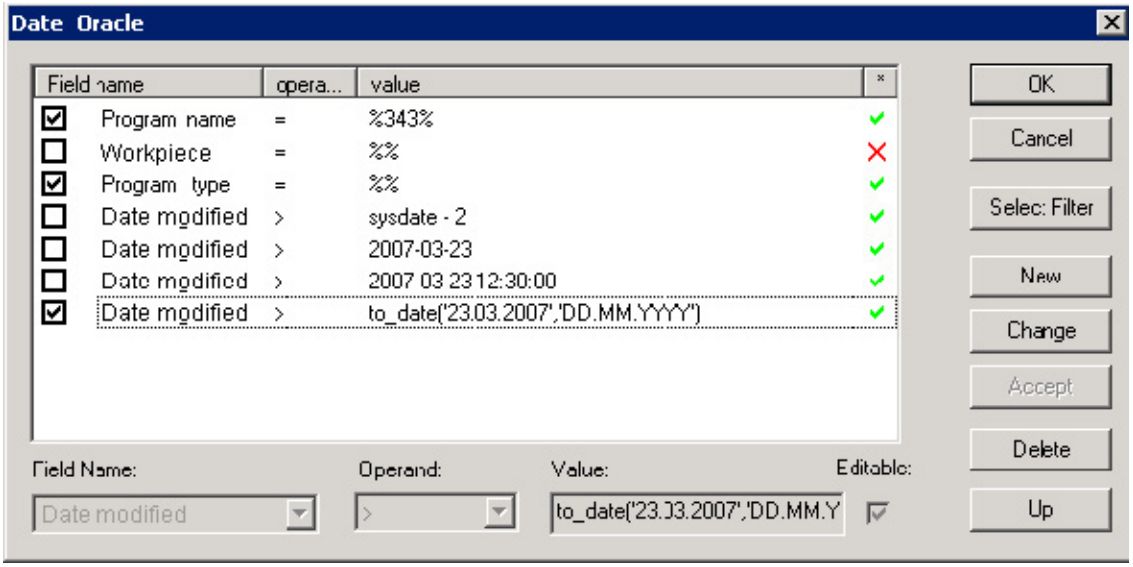

Fig. 3-21: Filter Criteria dialog for date in Oracle databases

Note

The date format depends on the setting in the database. For this reason, the date must be entered in the format required by the database since it cannot be converted.

Example 1: "Change date > sysdate - 2"

The sysdate function allows the current date to be output in Oracle. The filter criterion **Change date > sysdate - 2** returns all the DNC data records whose change date is no more than two days ago. The sysdate function allows the system to filter data on a relative basis, e.g. according to changes made over the past few days (two days in the example provided here). This means that you do not have to specify an absolute date in a particular date format.

Example 2: "Change date > 2007-03-23"

In this example, all the programs whose change date is after 03/23/2007 are displayed. The correct date format must be observed here. The default setting in Oracle is the ISO format:
YYYY-MM-DD. The format should be checked beforehand when this filter criterion is used. It is based on the settings for the Oracle parameter NLS_DATE_FORMAT, which is set by the database client.

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Example 3: "Change date > 2007-03-23 12:30:00"

In this example, all the programs whose change date is after 03/23/2007 12:30:00 are displayed. The correct date format must be observed here. The default setting in Oracle is the ISO format: YYYY-MM-DD HH24:MI:SS. The format should be checked beforehand when this filter criterion is used. It is based on the settings for the Oracle parameter NLS_DATE_FORMAT, which is set by the database client.

Example 4: "Change date > to_date('23.03.2007','DD.MM.YYYY')"

In this example, all the programs whose change date is after 03/23/2007 are displayed. The **to_date** function also allows the specified date format to be explicitly communicated to the database. The benefit here is that the entry is independent of the preset formats. In some cases, the system may not return any hits if the format has been entered incorrectly.

Note

This function should also be used when the system filters according to an absolute date if the filter is created for both DNC HMI and DNC IFC SINUMERIK. They can be applied universally in this form (as with the **sysdate** functions).

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Filtering by date in SQL Server / MSDE databases

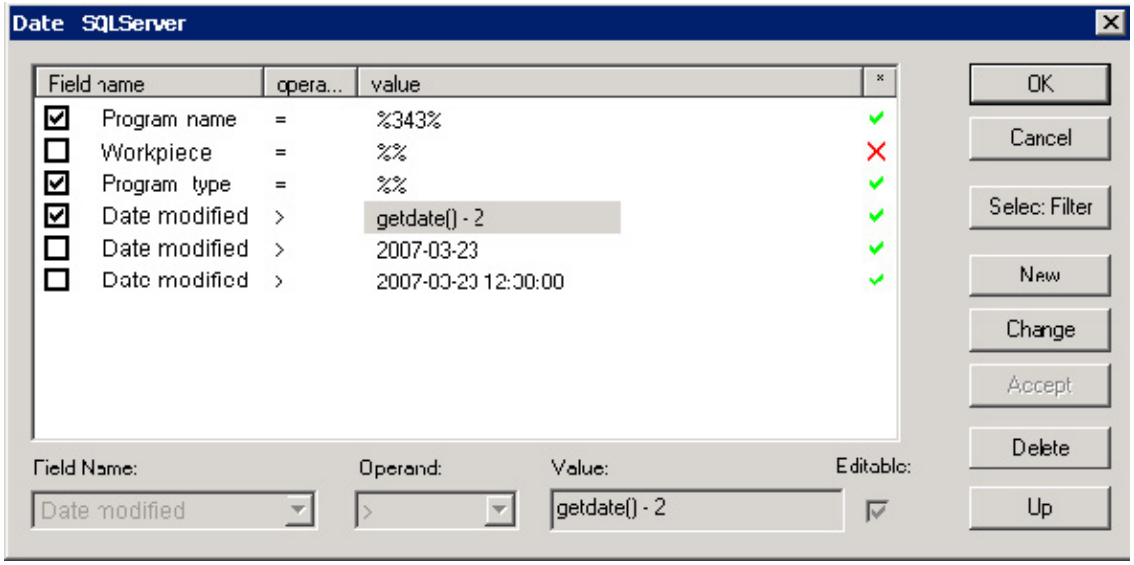

Fig. 3-22: Filter Criteria dialog for date in SQL Server / MSDE databases

Note

The date format depends on the setting in the database. For this reason, the date must be entered in the format required by the database since it cannot be converted.

Example 1 "Change date > getdate() – 2"

The getdate() function allows the current date to be output in SQL Server. The filter criterion Change date > getdate() - 2 returns all the DNC data records whose change date is no more than two days ago. The getdate() function allows the system to filter data on a relative basis (e.g. according to changes made over the past few days (two days in the example provided here)). This means that you do not have to specify an absolute date in a particular date format.

Example "Change date > 2007-03-23"

In this example, all the programs whose change date is after 03/23/2007 are displayed. The correct date format must be observed here. The default setting in SQL Server is the ISO format:
YYYY-MM-DD. The format should be checked beforehand when this filter criterion is used.

Example "Change date > 2007-03-23 12:30:00"

In this example, all the programs whose change date is after 03/23/2007 12:30:00 are displayed. The correct date format must be observed here. The default setting in SQL Server is the ISO format:
YYYY-MM-DD HH24:MI:SS. The format should be checked beforehand when this filter criterion is used.

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3.3 User-specific tree view

To display all of the other machines that the logged-on user is permitted to view, choose **Tools → Display All My Machines**.
In the case of users who do not have an explicit machine assignment, all of the machines in the **DNC** system are displayed.
In the case of users to whom at least one machine has been assigned via the explicit assignment, all the machines assigned are displayed for this user and not just the machines that the user is permitted to view on the station he is logged on to.
See also: Section 5.2.4 "Machine list for a user"

Example

Secondary condition:

- The plant contains machines 1 - 12.
- No machines have been assigned explicitly to user **dnc1** via User Administration.
- User **dnc2** has been assigned the following machines:
  Machine 1
  Machine 2
  Machine 3
  Machine 4
  Machine 5
  Machine 6

- Station **0815** has been permanently assigned the following machines:
  Machine 1
  Machine 2
  Machine 3
  Machine 8
  Machine 9

Standard tree view

After logging onto station 0815, user dnc2 can see the following machines:

- Machine 1
- Machine 2
- Machine 3

This is the intersecting set from the explicit assignment for user dnc2 and the machines assigned to the station.

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After logging onto station 0815, user dnc1 can see the following machines:

- Machine 1
- Machine 2
- Machine 3
- Machine 8
- Machine 9

User dnc1 can see all of the machines assigned to station 0815. No explicit assignment has been made for user dnc1.

User-specific tree view

After choosing **Tools –> Display All My Machines**, user dnc2 can see the following machines:

- Machine 1
- Machine 2
- Machine 3
- Machine 4
- Machine 5
- Machine 6

User dnc2 can see all of the machines assigned to him for the station.

After choosing **Tools –> Display All My Machines**, user dnc1 can see all the machines in the plant because no explicit assignment has been made.
Machine 1
Machine 2
Machine 3
Machine 4
Machine 5
Machine 6
Machine 7
Machine 8
Machine 9
Machine 10
Machine 11
Machine 12

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3.4 Print function

The printout corresponds to the print preview. The data printed depends on which window is active. The system prints the active window.

Note

The user must be assigned the necessary authorizations for these functions.
See also: User administration

Tree view active:

If the window on the left (the tree view) is active, the **DNC** program list in the window on the right is printed. When you call up this function, all the printers connected to the computer are displayed. The field contents printed depend on whether a list description (see Section 10.8.2) has been configured.

List view active:

If the window on the right (the list view) is active, the data of the selected element is printed. The following options are available:

- Print NC data
- Print administrative data

Print format

To set the format for printing the program list and NC data, choose **Tools** → **Settings** followed by the appropriate option in **List Orientation**.

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3.4.1 Print preview

The print layout is displayed page by page depending on the window that is active.

Tree view active:

If the window on the left (the tree view) is active, the **DNC** program list in the window on the right is displayed in the print preview.
The field contents displayed in the print layout depend on whether a list description (see Section 10.8.2) has been configured.

List view active:

If the window on the right (the list view) is active, the data of the selected element is displayed.

Note

No print preview is available for workpieces.

You can set the format for the print preview by choosing **Tools** → **Settings**.

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3.4.2 Printing

Print administrative data

The function for printing administrative data can only be called up in the list view (right window) via the **Print Administrative Data** context menu. This function activates the printout of the administrative data for the selected element.
Only users with the appropriate authorizations are allowed to use the print function.
See Section 5.3.5

Note

Multiple selections are possible. The administrative data of the selected elements is then printed in succession.
There is no print function for workpieces.

Print NC data

The function for printing NC data can only be called up in the list view (right window) via the **Print NC Data** context menu. This function activates the printout of the selected NC data element (of the NC program).
Only users with the appropriate authorizations are allowed to use the print function.
See Section 5.3.5

Note

Multiple selections are possible. The NC data of the selected elements is then printed in succession.
There is no print function for workpieces.

You can set the print format by choosing **Tools** → **Settings**.
You can specify whether the administrative data is to be printed in addition to the NC data (usually NC programs).

Print format
To set the format for printing the NC data, choose **Tools** → **Settings** followed by the appropriate option in **NC Data Orientation**.

Note

If configured, graphic data can also be printed.

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Print program list

The function for printing program lists can only be called up in the tree view (left window) via the **Print Program List** context menu. This function activates the printout of the **DNC** program list in the window on the right.
Only users with the appropriate authorizations are allowed to use the print function.
See Section 5.3.5

Print format
You can set the format for the printout by choosing **Tools → Settings**.
The field contents printed depend on whether a list description (see Section 10.8.2) has been configured.

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3.5 Creating a CSV file

The function for creating CSV files can only be called up in the tree view (left window) via the CSV File context menu.
Based on the filter, this function creates a CSV file that contains all the NC data of the selected group or machine and, depending on how the system is configured, the associated field contents (e.g. name, type, release, etc.). The file is stored in the directory ...Siemens\MCIS\Data\DNC\CSV.
Under HKCU\Software\siemens\mcis\dnc\settings, you can also create a Windows-user-specific key **CSVPath** that can be used for defining a different directory for saving the CSV file.
You can open the file created in the Notepad editor or Microsoft Excel.

Note

The user must be assigned the necessary authorizations for these functions.
See also: User administration

Prerequisites

The following requirements must be fulfilled in order to create a CSV file:

- **A list description with the name #CSV must be configured.**
  The field contents of the data records written to the CSV file are specified by means of the list description #CSV. This is defined when the system is configured. Separators and comment characters are also defined when the system is configured.

- **The group or machine must contain NC data (Caution filter)**

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Structure of the CSV file

Data format
The file is created in UNICODE.
Depending on how the system is configured, the first line can contain the heading with the language-specific field names (parameters).

Separators
In the DNCGLOBALSETTINGS table, enter the ASCII value for the separator in INTVAL (default value is 9 (horizontal tab)).
If you open the file in Excel, the configured separators are evaluated and the individual field contents are displayed in separate columns. If you call the file up in the editor, the configured separators are displayed.

Comment characters
In the DNCGLOBALSETTINGS table, a data record is created by the setup tool with NAME = #CSV with STRINGVAL=; (semicolon) as a comment character.
The first character in front of the language-specific field names (e.g. name, type) in the first row is used as a comment character.

Example: Display in the editor

```
;Name|Type|Workpiece|Version|Enable|Group  /  Machine
valve cylinder head|MPF||2|1|area motors
cut-off cycle|SPF||4|0|area motors
fine grinding cycle|SPF||3|0|area motors
...
```

■

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4

4 NC data management

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4.1 Maintenance functions

4.1.1 Creating/changing administrative data

Creating/changing NC administrative data

NC data properties should be created and maintained by authorized users (e.g. administrators or machine operators). Authorization to change administrative data must be assigned to these users (see also: Chapter 5 - User administration).

Depending on the parameters set, the NC administrative data is displayed on up to four tab pages:

- General
- Information
- Comment (always integrated)
- Attachments

Alongside the existing standard screens, the following change/extension options are available:

- Changing the default list layout of the NC data display via the list editor.
- Changing the field types for the output and edit fields for the properties via the screen editor. The following types are available:
  - Output fields
  - Edit fields
  - Combination fields (combo boxes)
  - Checkboxes
  - Output checkboxes
  - Static output fields

- Redefining data fields for describing NC data

Note

Different field types for the screen fields for creating and changing NC administrative data can be defined.
They can be defined in the DNCFORMDESCRIPTION table using the database fields FIELDTYPE and FIELDTYPE_NEW.

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Characteristics in the Properties dialog can be changed. Fields for which change authorization has not been assigned in the parameters cannot be changed, however.

Note

The parameters can be used to define which fields appear in the dialog. Fields that have not been parameterized for the properties dialog, therefore, cannot be changed either.

The standard user interface features the following screens:

Properties - General

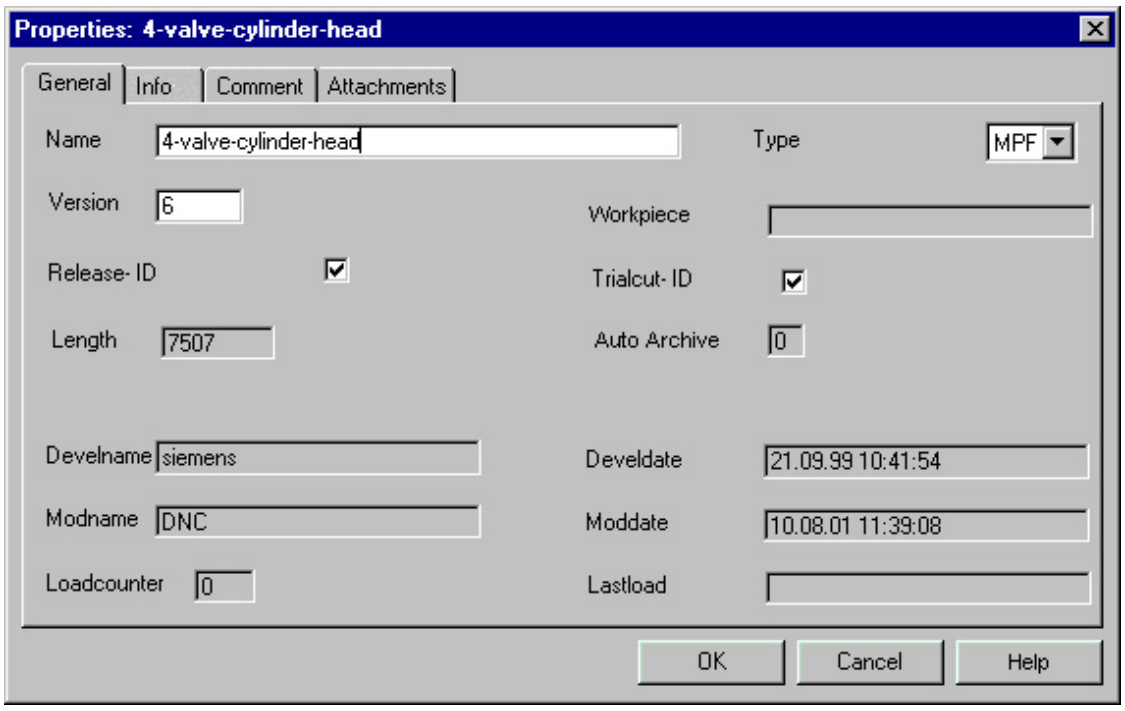

Fig. 4-1: NC data properties / tab: General

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Properties - Information

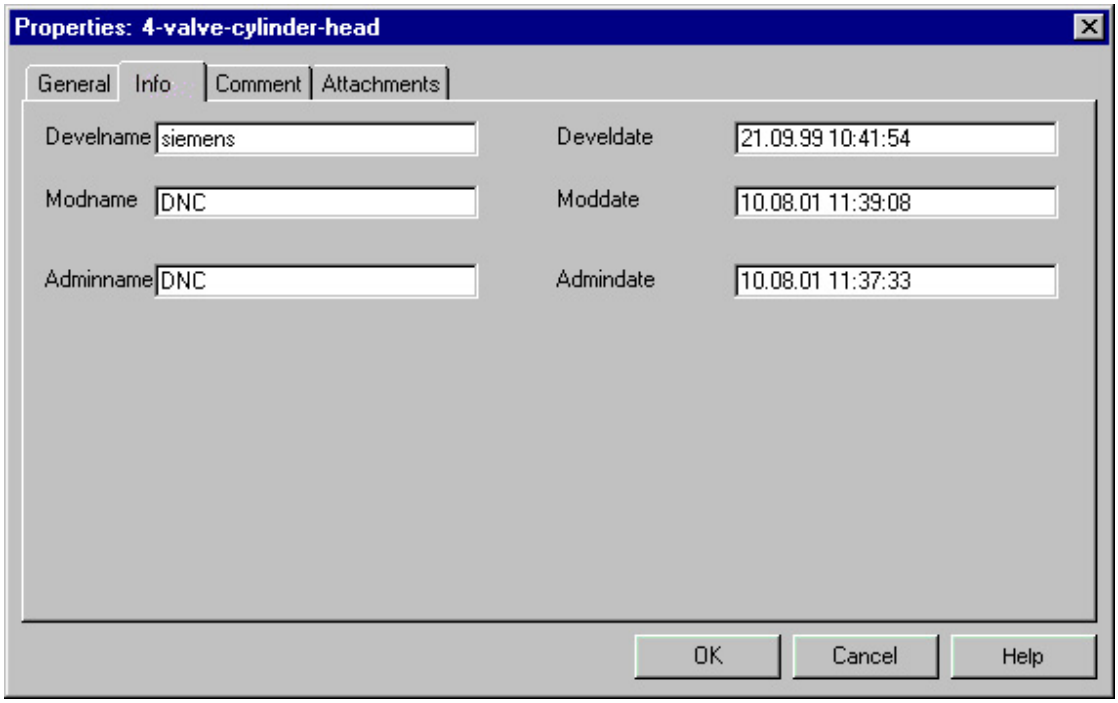

Fig. 4-2: NC data properties / tab: Information

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Properties - Attachments

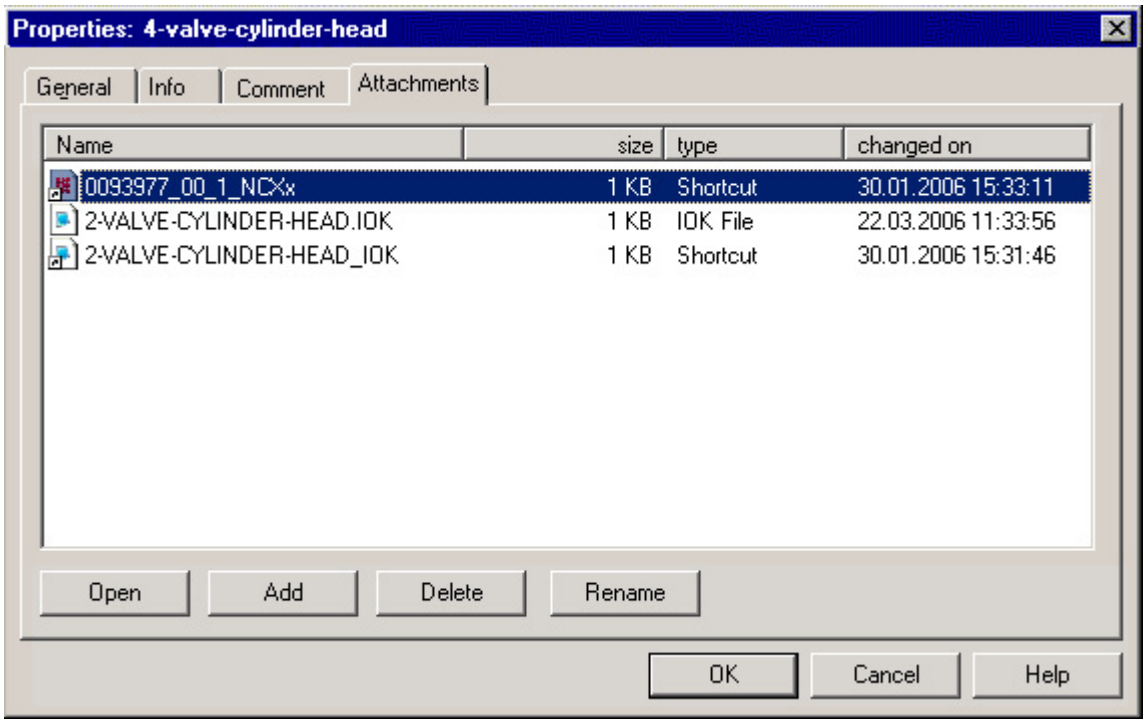

Fig. 4-3: NC data properties / tab: Attachments

The Attachments tab page allows you to add any required files to the NC data in the form of attachments. You can copy the files directly to the attachment or define them as a link. The attached data is located in the directory ...NCDataName_Version_Type.ATT

Note

When you copy/paste or upload NC data, the subdirectory containing the attachments is also taken into account.
When you delete NC data, only files that have been copied in the attachment directory are deleted. The originals of the linked attachment files are retained.
The user must be assigned the necessary authorizations for these functions.
See also: User administration

NC data with an attachment is assigned a special file icon .

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Changing machine configuration data

The machine properties can only be changed in configuration mode in **DNC Admin**. The menu option View → Configuration is available to authorized users (administrators) only. Authorization to configure machine data must be assigned to these users (see also: Chapter 5 - User administration).

Machine properties are displayed on two tab pages:

- Transfer
- Configuration

Only the **Configuration** tab page is required for the configuration. It is divided into two:
It allows users to link physical CNC machines to logical machines in the plant configuration using machine configuration files.
The machine configuration file can be edited on various dialog screens, which can be called up with the **Config. dialog** button.
If required, the machine configuration file can also be edited directly and changed via **EDIT**.
This tab page can also be used to make default settings for the dialog function (see also: Section 10.5 – Machine connections).

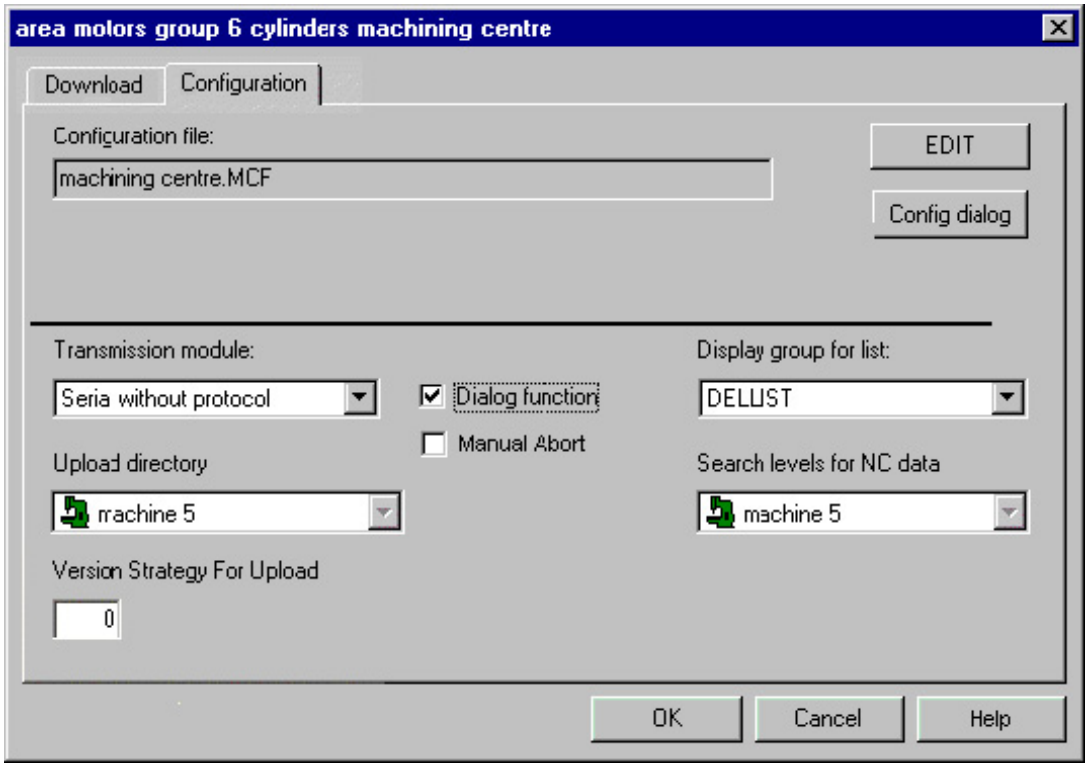

Fig. 4-4: Machine properties / tab: Configuration

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Changing link administrative data

Authorized users (administrators) are authorized to define links in configuration mode. Authorization to configure machine data must be assigned to these users (see also: Chapter 5 - User administration).

When you choose Edit, you can enter a drive or path for a link directly in the MCF. When you choose "Config. dialog", you can select a drive in the file system or enter a UNC path in the screen. This means that **DNC** can now access these files.

Note

Files that are made visible via a link, do not have a database reference.
DNC cannot navigate in any subdirectories of the link that may be available. Only the files that are located directly under the link node can be accessed.

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4.1.2 Importing NC data

General

DNC allows users to import NC data (files of all configured NC data types) from networked or higher-level systems (e.g. from the NC programming system).

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

Database field	Description	Characters
NCDATANAME	NC data name	40 characters; invalid characters: &\"`´*+,/:;<=>?[]|!,(){}%$ß§µ³
DNCDATATYPE	NC data type	3 characters; only types defined in the DNCDATATYPE table.
VERSION	Version number	Long integer
NODENAME*	Machine, group or path (e.g. Group1/Machine2)	40 characters
WORKPIECE	Workpiece name	40 characters
RELEASEID	Release ID	Value range 0..1 (1 = released)
TRIALCUTID	Trial cut ID	Value range 0..1 (1 = trial cut ID)
DEVELNAME	Developer name	32 characters
DEVELDATE	Development date	Date
MODNAME	Modified by	32 characters
MODDATE	Modification date	Date
ADMINNAME	Administrative data modified by	32 characters
ADMINDATE	Date on which administrative data was modified	Date
LOCKNAME	Lock name	32 characters
LOADID	Load ID	Long integer
LOADORDER	Load order	Long integer

* *NODENAME* is not a database field in the DNCDATA table but an auxiliary function to determine the *NODEID* from the node name. *NODEID* is an internal database field in the NODETABLE and DNCDATA tables. It is used for assigning NC data to its node.

Note

If the administrative data table is extended on a project-specific basis, the new database fields can also be used in the header.
Undefined or unassigned fields have the value 0 or a blank string.

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Warning

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

NODEID	is a system-internal variable that is assigned automatically.
LENGTH	is the length of the NC program; set automatically during the import.
LOADCOUNTER	is the transfer counter and is incremented by the system at every transfer.
LASTLOAD	is the date of the last transfer counter and is set by the system at every transfer.
LOCKNAME	is not currently used by the system.

Manual import

When you choose **File → Import**, the system displays a file browser in which you can select the files to be imported and then a selection menu that allows you to specify how the import file is to be processed once it has been downloaded.

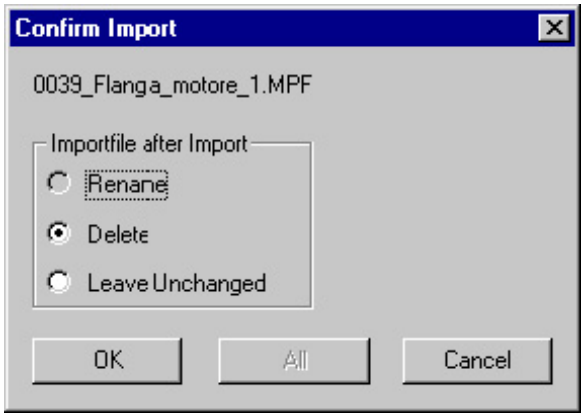

Fig. 4-5: Dialog: Confirm file import

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- **Import without header data**
  NC data without a header can be imported by authorized users (default: Administrators or machine operators). The NC administrative data must be entered in the dialog. To do so, the users must be authorized to import NC data and change the NC administrative data (see also: Chapter 5 - User management).

- **Import with header data**
  Two files are available for importing files with header data. The header data is stored in a header file (Unicode). The user data is stored in a separate file. Importing a file in this way allows NC data to be transferred without the user needing to make any additional entries. This type of import can be carried out by any user.
  If the administrative data is incomplete, authorized users can edit it retrospectively in the dialog. Unauthorized users who are not allowed to modify NC administrative data are not permitted to import the files (see also: Chapter 5 - User administration).

  In the import file, you can assign the administrative data via field names (e.g. NCDATANAME), whereby the import file may contain either selected or all fields in the administrative data record. The import file is divided into the following areas by means of start and end identifiers:
  - Header data / administrative data (HEADER START, HEADER END).
  - Comment (COMMENT START, COMMENT END).
  - Name of the user data file (NC START, NC FILE, NC END).
    Attachments as link or file (ATT_LINK, ATT_COPY, ATT_MOVE)
    ATT LINK: A link to the specified file is created in the attachment directory.
    ATT COPY: The specified file is copied to the attachment directory. ATT MOVE: The specified file is moved to the attachment directory. The source file is deleted.

    The key words are the database field names in the administrative data table DNCDATA.

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An import file can contain more than one import block. Each block must comprise header data and NC data and can also contain comments.
In this way, all the NC data that needs to be edited can be included 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=Smith
HEADER END

NC-FILE=Bfly1.bmp

COMMENT START
This is a butterfly
COMMENT END
```

Note

The import format of the MCIS **DNC** versions up to **DNC** V1.0 is still supported with the appropriate database structure.

- **Import via links**
  This involves copying data from a link and then pasting it into **DNC** (same as the import function). The general conditions that apply to an import with/without header data also apply here.

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Automatic import

Files can also be imported with header data automatically. The format of the header data is the same as that used when files are imported manually with header data.

Note

In the case of an automatic import, the header does not need to define all the database fields.

At least the following database fields must be specified:

- NCDATANAME
- DNCDATATYPE
- VERSION*[1])*
- NODENAME
- WORKPIECE (only relevant if the NC data refers to a workpiece)

If the NC data imported automatically is to belong to machine 2 in group 1, for example, the following definition must be set:

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

If the NC data belongs to a cylinder head workpiece, which belongs to machine 5 in group 1, the following must be defined:

```
...
NODENAME=Group1/Machine5
NCDATANAME=Butterfly
WORKPIECE=CylinderHead
```

When **DNC** is set up, the import directory for the NC data files is defined via 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 unsuccessful automatic import: .ier

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Table 4-3: Structure of the import file for an automatic import

	Line of the import file	Description
x	HEADER START	*Identifier: Start block with administrative data*
x	NCDATANAME=	*40 characters,*
	<program name>	*illegal characters: &\"`´*+,/:;<=>?[]|!,(){}%$ß§µ³*
x	DNCDATATYPE=	*3 characters,*
	<program type>	*only types know in DNC are permitted*
x [1])	VERSION=	*Range of values: 1…999999*
	<version number>	
x	NODENAME=	*40 characters,*
	<target machine or group>	*only machine name or complete path*
	WORKPIECE=	*40 characters*
	<workpiece name>	*only required when the NC program is to be stored in the workpiece*
	RELEASEID =*<0|1>*	*Release ID value 0 or 1 (1 = released)*
	TRIALCUTID=*<0|1>*	*Trial cut ID value 0 or 1 (1 = trial cut ID)*
	DEVELNAME=	*Max. 32 characters*
	<name of the program developer>	
	DEVELDATE=*<date of development>*	*Date in ISO format*
	MODNAME=	*Max. 32 characters*
	<name of the program modifier>	
	MODDATE= *<date of modification>*	*Date in ISO format*
	ADMINNAME =	*Max. 32 characters*
	<modifier of administrative data>	
	ADMINDATE =	*Date in ISO format*
	<date of administrative data modification>	
x	HEADER END	*Identifier: End block with administrative data*
		Attachments to the NC file (pure information files):
[2])	ATT LINK=	*A link to the specified file is created in the*
	<path name \ file name>	*DNC data management.*
[2])	ATT COPY=	*The specified file is copied to the DNC data*
	<path name \ file name>	*management.*
[2])	ATT MOVE=	*The specified file is moved to the DNC data*
	<path name \ file name>	*management, i.e. the source file is deleted.*
x [3])	NC FILE=	*If no path is specified, the NC file must be in*
	<path name \ file name>	*the same directory as the import file*
x [3])	NC START	*Identifier: Start block with NC program*
x [3])	%1234	*Complete NC program*
	N0010	
	...	
	M30	
x [3])	NC END	*Identifier: End block with NC program*
	COMMENT START	*Identifier: Start block with comments*
	Comment line 1	*The entire block must be completely available*
	Comment line 2	*or completely omitted*
	COMMENT END	*Identifier: End block with comments*

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1) If a version that already exists is assigned, it is overwritten. If no version is specified, the set automatic import strategy decides whether the data is imported. When the data is imported, the next available version number is assigned. If the maximum number of versions is exceeded, the version with the oldest modification date that has not been released, is deleted.
The automatic import strategy can be set in the DNCGLOBALSETTINGS table:

Parameter AutoImportStrategy =0 -> import is not performed when version is missing.
Parameter AutoImportStrategy =1 -> import is performed when version is missing.

2) These lines may occur several times.

3) EITHER the path to a file with the NC data file must be specified (NC FILE=...), OR the entire block with the NC data (NC START .... NC END). If the entire NC data file is integrated in the import file (NC START ... NC END), the import file may not be a UNICODE file (pure ASCII).

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4.1.3 Editing NC data

General

NC data can be edited by authorized users.

Unauthorized users (e.g. assistants) can view the NC data but cannot save it back to the database or create a new version. To ensure this, a copy of the NC data is opened in a temporary folder.

Authorization to edit NC data must be assigned to these users (see also: Chapter 5 - User administration).

Note

DNC uses the editor used by the Microsoft Explorer for each file type.
New file types must be assigned to an editor via Microsoft Explorer.

Editing/saving files

All the NC data in the current directory can be opened for editing. Either a new version is created or the old version overwritten in the directory of the original file when saving, depending on the configuration in the DNCGLOBALSETTINGS database table (parameter: NewVersionAfterEdit).

Note

To ensure that data is processed appropriately for **DNC**, only the **Save** and **Exit** menu options of the editor selected by the user should be used. All other functions can be used, but do not have any effect on the **MCIS** database.
The menu option **Save As**, in particular, does in fact create a file with the specified name in the specified directory, but no link is created to the database. In this case, the old file remains unchanged in the database.

Delete Version dialog

If the maximum number of versions as defined during parameterization is exceeded, a dialog is displayed in which you can delete an existing, unreleased version.

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4.2 Download/upload functions

General

In the case of machines connected serially, the interface is only opened for the download/upload procedure and is then closed again. This means that the same serial interface can be used for different machines (e.g. when **DNC** is installed on a mobile station).

Authorization to download/upload NC data must be assigned to the relevant users (see also: Chapter 5 - User administration).

Note

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

Marking

A yellow arrow on the user interface on the machine indicates when data is being downloaded/uploaded.

Fig. 4-6: NC data is being uploaded from the CNC machine tool

Fig. 4-7: NC data is being downloaded to the CNC machine tool

Note

When a download/upload procedure is initiated, it can take a while for the yellow arrow to appear.
This can be due to a number of reasons, such as the conversion of end-of-line characters or code or the insertion of spacers. It can also be due to the size of the file or the computing power.

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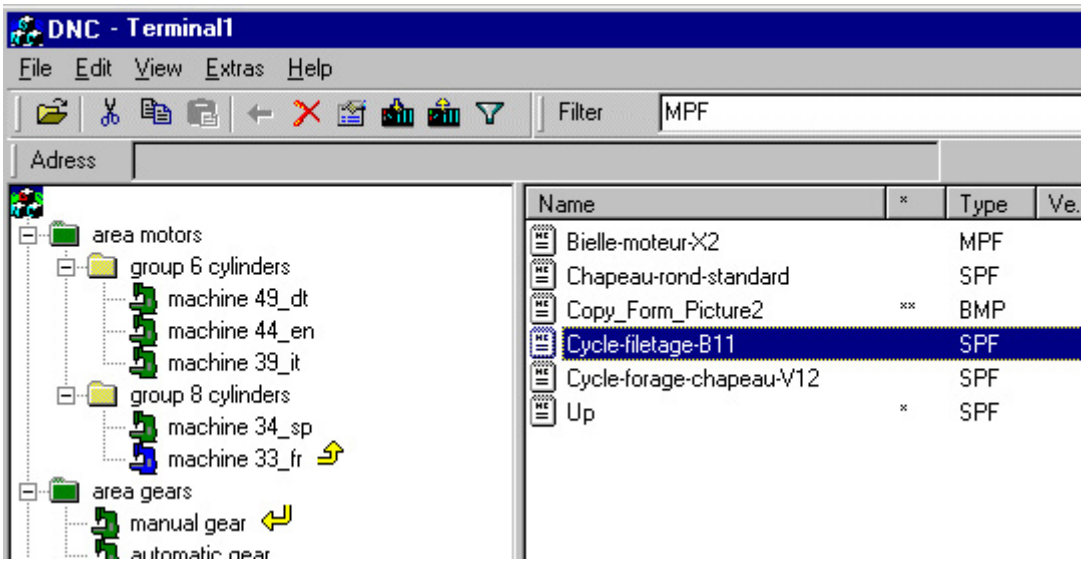

Fig. 4-8: Indication of download/upload functions in **DNC**

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4.2.1 Downloading NC data

Download jobs

Download jobs for serial machines can be tracked in the Properties screen on the machine. The file currently being downloaded is displayed in the **NC Data** field. The list of files still to be downloaded is displayed in the **Download/upload jobs** field.

Download status

The following download states can occur:

- Error (e.g. if a COM port is already being used by a different machine)
- Inactive (default setting)
- Send delay (if send delay is > 0 in the [SEND] section of the machine configuration file)
- Active (downloading)
- Prepare to send (NC date is interpreted after which the file is downloaded (e.g. code conversion)). "Prepare to send" is indicated in the same way as "send delay".

Length

The **Length** field indicates the number of bytes that have been downloaded.

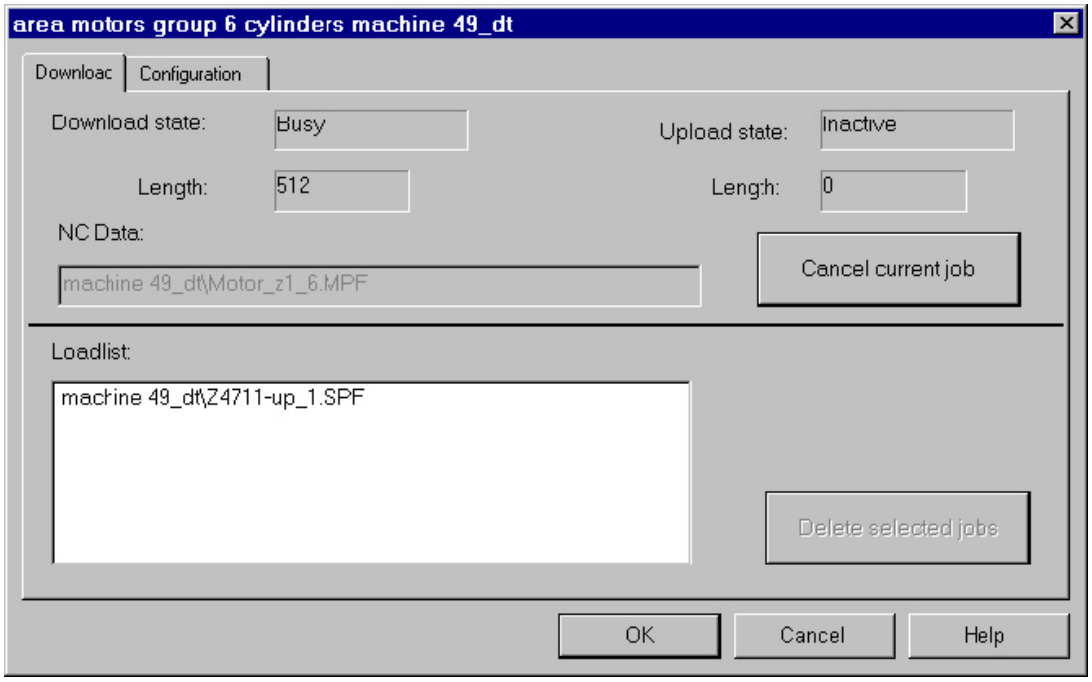

Fig. 4-9: Downloading NC data

Cancel current job

A download can be cancelled.

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4.2.2 Downloading NC data to SINUMERIK* with DNC IFC SINUMERIK

General

If the NC data is downloaded to a SINUMERIK* controller, a dialog is displayed in which the download target within the controller can be selected.

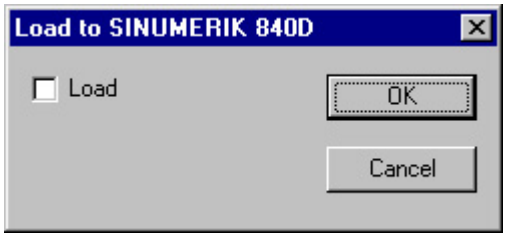

Fig. 4-10: Dialog for download to SINUMERIK 840D

The NC data is downloaded to the SINUMERIK* data management system.
If the *Load* checkbox has been activated, the data is downloaded to the NCK in the SINUMERIK.

The data is downloaded to a directory that is compatible with the data type
e.g. MPF files are downloaded to the part program directory MPF.DIR
SPF files are downloaded to the subprogram directory SPF:DIR
workpieces are downloaded to the workpiece directory WKS.DIR
etc.
Exceptions include pseudo workpieces, which are downloaded to directories corresponding to the pseudo workpiece name.

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4.2.3 Uploading NC data

Upload jobs

Upload jobs for serial machines can be tracked in the Properties screen on the machine. The file currently being uploaded is displayed in the **NC Data** field.

Download status

The following download states can occur:

- Error (e.g. if a COM port is already being used by a different machine)
- Inactive (default setting)
- Ready (**DNC** is ready for the upload to be initiated; this status remains set until the actual upload (from the machine) starts).
- Active (uploading data)

Length

The **Length** field indicates the number of bytes that have been uploaded.

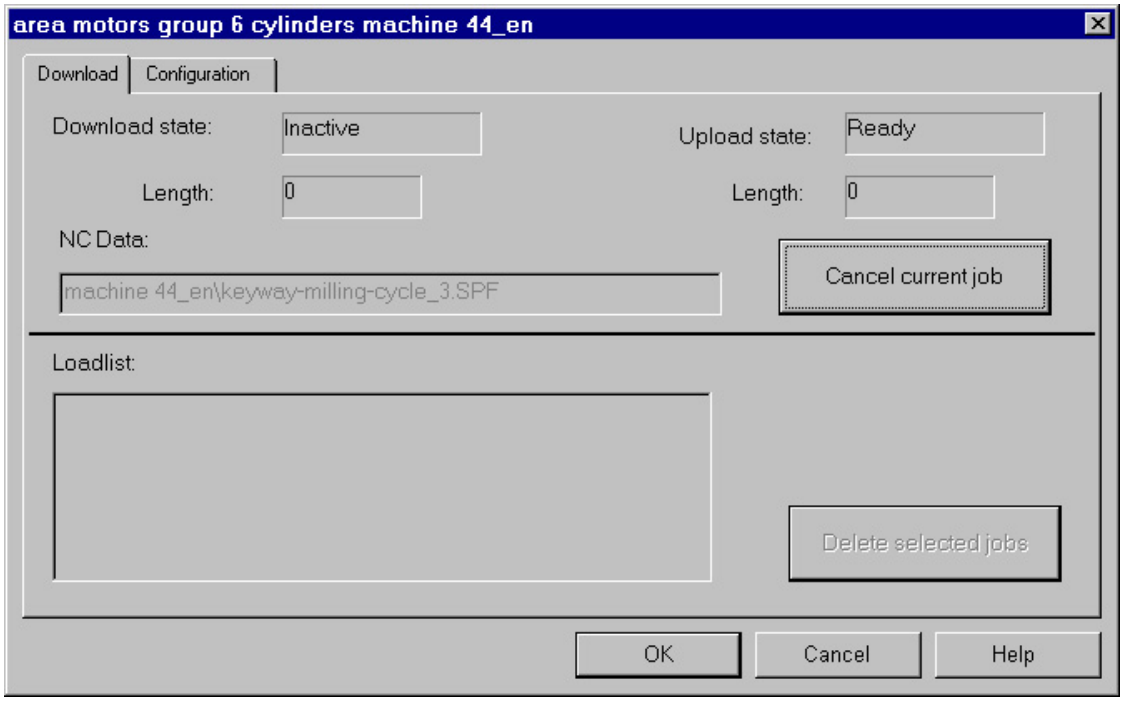

Fig. 4-11: Uploading NC data

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Cancel current job

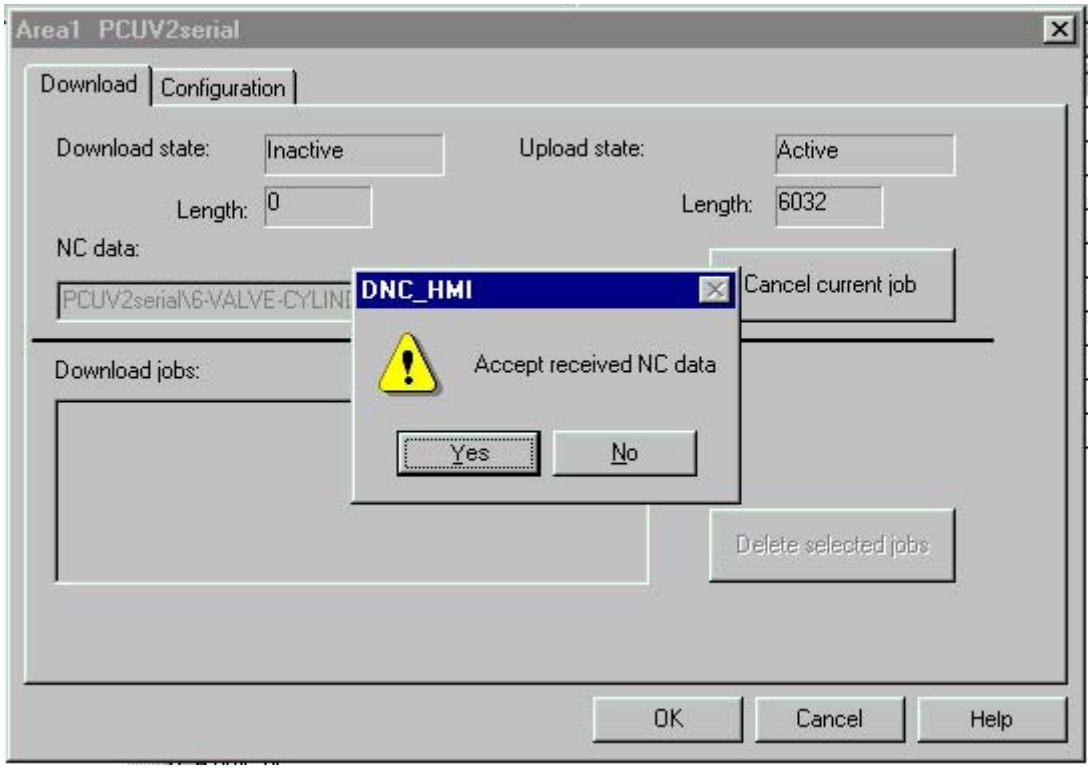

Fig. 4-12: Cancel upload (data reception)

When you choose **Cancel Current Job**, two functions are made available if the **Terminate Manually** checkbox has been activated in the configuration dialog:

- **Do not accept received data**:
  The data is rejected.
- **Accept received data**:
  The data is accepted.
  Background:
  With certain controllers, you have to configure a late receive end (end of upload x seconds after the last character has been received).
  To reduce the transmission time, the upload can be terminated after the final characters have been received. The NC data received is accepted.

Note

The dialog only appears if the **Terminate Manually** checkbox has been activated in the configuration dialog. This checkbox is not normally activated, which means that the data received is not accepted when the upload is terminated.

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4.2.4 Uploading NC data from SINUMERIK*

General

If you select a SINUMERIK* machine and initiate the upload, a dialog showing the SINUMERIK* data management directory is displayed.

.

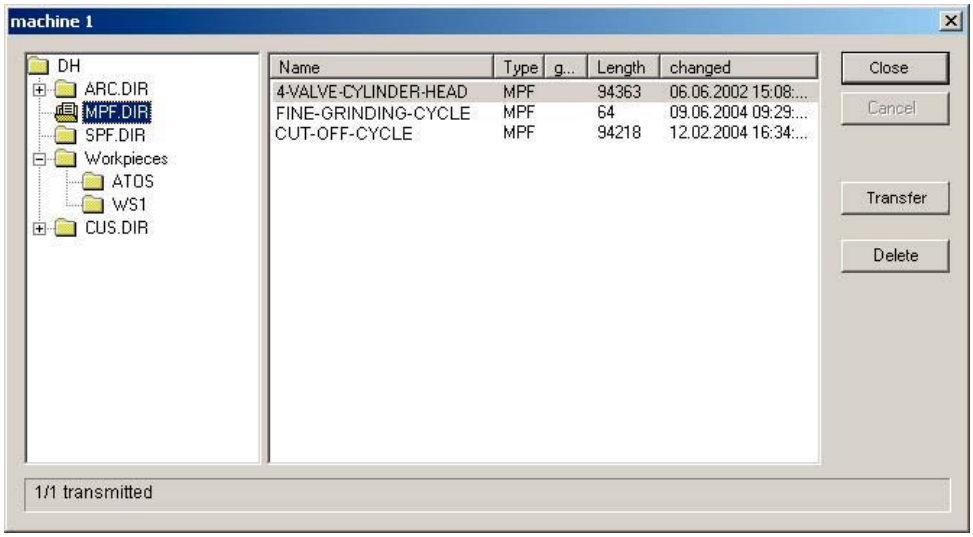

Fig. 4-13: SINUMERIK* data management directory

The content of the SINUMERIK data management system is displayed in a hierarchical tree and list view. The directories are displayed on the left. The list on the right displays the content of the directory selected.

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Upload

When you select one of more of the required NC data files on the right and then choose **Upload**, the system uploads the data to **DNC**.
To upload all of the NC data in a directory, you can also select the appropriate directory in the tree structure.

Note

You cannot upload all the NC data files and subdirectories at once by selecting a directory.

Delete

To delete data on the machine, select an NC data file and then choose **Delete**.
Multiple selections are also possible here.

Configuring the SINUMERIK* view

In the SINUMERIK* machine configuration dialog, you can configure which directories on the controller can be viewed by the user.
See also: Chapter 10 "Configuration dialog"

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4.3 Version management and release / trial cut identifier

4.3.1 Version management

General

DNC allows you to parameterize the maximum number of NC data versions to be stored.
Machine-specific version management uses version zones to define the hierarchy level within which NC data with the same name, type, and version can occur.
A version zone can contain up to n items of NC data of the same name and type provided that the version numbers are different.
The default setting is n = 5, but this can be changed depending on the project.

Note

A version zone can only contain one released version.

Machine-specific version management

Machine-specific version management defines where identical NC data can appear:

- Group: Identical NC data must be unique within the group.
- Machine: Identical NC data can appear on different machines. The names on one machine must be unique, however.

Note

Only the selected version zone is taken into account for the release and when versions are determined.

See also: Section 10.7.4

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Delete Version dialog

If the number of versions exceeds the parameterized limit, the "Delete Version Dialog" is displayed, which contains all the existing versions along with their main properties. You now have to delete one of the versions listed.

- The version highlighted in gray is released and cannot be deleted.
- Versions that are in the copy list (menu command: Copy or Cut) are marked.

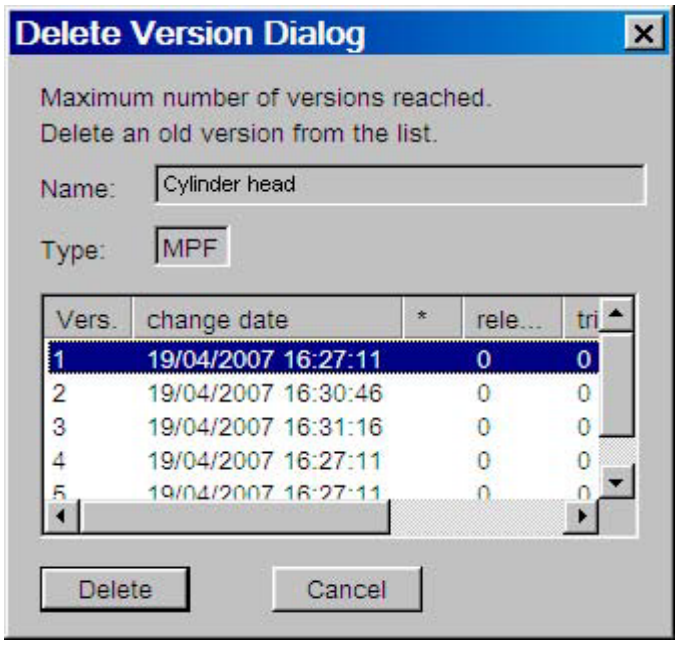

Fig. 4-14: Delete Version dialog

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Editing NC data

Depending on the configuration, modified NC data can be stored as follows:

- Unchanged versions and identifiers
- If the next available version is assigned, this is assigned the identifiers for the edited version.

Importing NC data manually

The following applies depending on whether the NC data is imported with or without header data:

- **Without header:**
  If NC data with the same name, type and version exists, the next available version will be assigned.
- **With header:**
  - If a version that already exists is specified in the header for NC data of the same name and type, the permission of the operator must be obtained via an acknowledgement dialog for transferring the data.
  - If no version number has been specified in the header for the NC data of the same name and type, the next available number will be assigned.

Uploading NC data

When you upload NC data, versions are assigned on the basis of the configured version strategy.
You can choose one of six strategies (see also: Section 10.7.2 Version strategy for upload).

Inserting NC data

If NC data is integrated by means of a cut/paste or copy/paste procedure, the next available version will be assigned if NC data of the same name, type, and version already exists.

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4.3.2 Release / trial cut identifier

General

DNC uses two different types of identifier:
- Release identifier: NC data is released for production
- Trial cut identifier: NC data needs to be tested before it is released

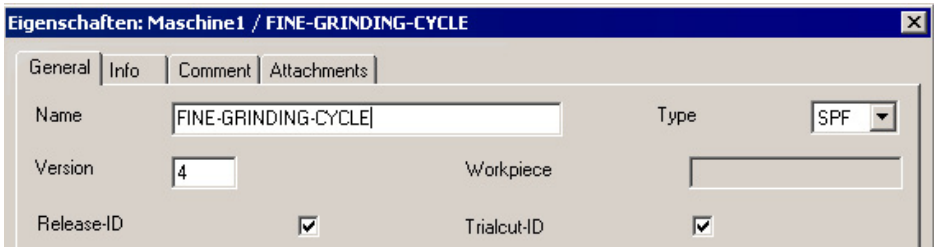

Fig. 4-15: Properties: Machine / release & trial cut identifiers activated

Editing/saving NC data

How edited NC data is saved depends on the parameters in the DNCGLOBALSETTINGS database table. Two options are available here:
- Save with same version
- Save with next highest version (default)

The release and trial cut identifiers are adjusted in line with the selected storage variant:
- Same version: The assigned identifier is retained.
- If the next available version is assigned, this is assigned the identifiers for the edited version.

Importing NC data

The following applies depending on whether the NC data is imported with or without header data:
- Without header:
  The imported NC data is not released.
- With header:
  - If an identifier is set in the header, the identifier is valid.
  - If no identifier is set in the header, the imported NC data is not released.

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Uploading NC data

When NC data is uploaded, the release identifier is assigned on the basis of the configured version/identifier strategy in the DNCGLOBALSETTINGS database table.
You can choose one of six strategies (see also: Section 10.7.2), default is strategy 1.

Inserting NC data

When you insert NC data, the **release identifier** is reset and the **change date** is updated. If necessary, the **version** is also incremented to the next free version (see below). All other NC data properties remain unchanged.

NC data from **Cut/Paste** or **Copy/Paste** only retains its respective versions in the node environment when it is inserted into a different group, which does not contain any NC data file with the same name type, and version. When you copy and paste data to the same group, the version is incremented to the next free version number.
See also: "Machine-specific version management"

Note

If the parameterized maximum number of versions has been exceeded, the "Delete Version Dialog" appears so that you can delete an old version.

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4.4 DNC Compare

DNC Compare offers two functions:

- NC program comparison
- Machine comparison for SINUMERIK*

4.4.1 Machine comparison for SINUMERIK*

General

The machine comparison requires the **DNC Compare** option, which must be obtained separately for each plant.

The SINUMERIK* machine comparison allows you to check whether the NC programs on the machine and the programs managed in **DNC** have the same content.

This function is only available for **SINUMERIK*** with a PCU 50/70 operator interface.

Note

An additional configuration is required for the machine comparison. For more information, see **Chapter 10 - Configuration**.

Carrying out the machine comparison

You can compare individual machines or a group of machines.

To do so, select a machine with the **SINUMERIK* transmission module** and then choose **Machine Comparison → Compare**.

If you select a group, the machine comparison is carried out for each machine with a SINUMERIK* transmission module.

The comparison result for each machine is stored in a file and is retained until the next comparison run is carried out. The file name is the same as that for the machine configuration file with the extension TXT. All of these files are located in the directory ... **DNC\CmpResult**.

Note

The change date and length of the file are compared, but not the content.
Only program versions that have been released are compared with machine programs.

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Displaying the comparison result

Select the machine for which a machine comparison has already been carried out. To display the result file for the machine, choose **Machine Comparison → Display Comparison Result**.

Table 4-4: Sample file for a comparison result

```
                                13.11.2000  11:13:46

          MACHINE44

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

          NC data not the same
          6-VALVE-CYLINDER-HEAD_3.MPF
          GEARBOX4712_1.SPF
             GEARBOX0815\  GEARBOX0815_3.SPF
```

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4.4.2 Individual NC data comparison

The Individual NC Data Comparison function allows you to compare two NC data files with each other (e.g. compare a modified/optimized NC program with the original NC program).
Changes are highlighted and the number of changes is displayed. NC program record numbers can be hidden.

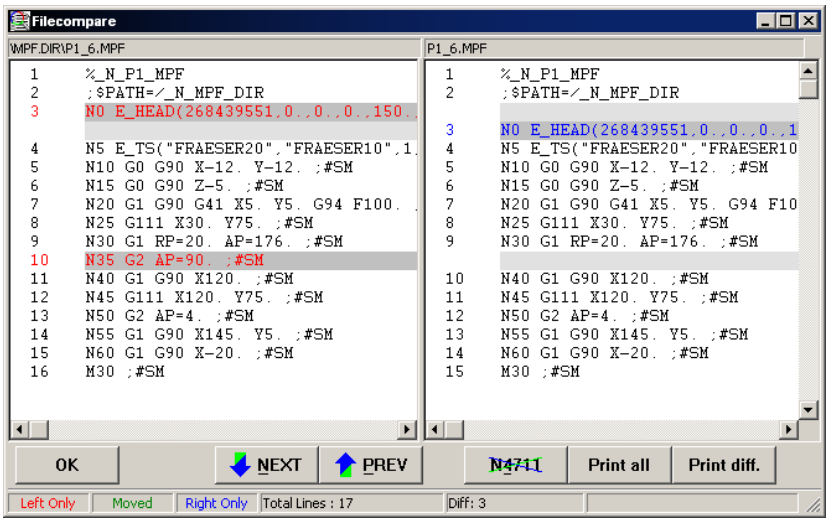

Fig. 4-16: Individual NC data comparison

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4.4.3 Print function for the individual NC data comparison

Two print variants are available:

- Print all
- Print diff.

The standard Windows printer is offered as for the default print function.

Format of the print file

The header on each sheet to be printed is: MCIS DNC Compare result.
The header is always blue.
The path and program name of the two files that have been compared always appears in row 1 ff and applies to the whole printout.

The page number appears at the bottom of the sheet (centered) along with the total number of pages in the printout (e.g. 5/9). The print date and time are also printed (right justified).
The data is printed in landscape format (default setting).

Defining colors for the printout

The colors for the printout can be defined in the StartPrint.ini file in the [Colors] section.

Example:

```
[Colors]
;color no. RGB-CODE:
COLOR1=0,0,100      Color for path and program name
COLOR2=255,0,0      Color for differences, left (1st file)
COLOR3=0,150,50     Color for differences, right (2nd file)
COLOR4=0,0,100
COLOR5=0,0,0        Color for matches, right/left
                    (1st and 2nd file)
```

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Print all

To print all the results of the individual NC data comparison, choose **Print all**.

MCIS DNC Compare result

	C:\Siemens\MCIS\Data\DNC\TMP\ -4014-m82-02-01-dieckmann_hp_1. nca		C:\Siemens\MCIS\Data\DNC\Data\Halle3\ -4014-m82-02-01-dieckmann_hp_1. nca
1	%4014	1	%4014
2	(99713-0.22.6.99.NICKEL)	2	(99713-0.22.6.99.NICKEL)
3	(L4014001..P99713-0.M17657.WPL3617970 * MAGNESIUMMASCH. *)	3	(L4014001..P99713-0.M17657.WPL3617970 * MAGNESIUMMASCH. *)
4	N0001 G40 G90 G80	4	N0001 G40 G90 G80
5	N0002 G00 G53 G60 Z-117.2		
		5	N0002 G00 G53 G60 Z-115.8
6	N0003 X-360. Y246.	6	N0003 X-360. Y246.
7	N0004 M11	7	N0004 M11
8	N0005	8	N0005
9	N0006 A90.	9	N0006 A90.
10	N0007 M82	10	N0007 M82
11	N0008 L99	11	N0008 L99
12	N0009 G54		
12	N0010 T1	13	N0010 T1
13	N0011 L975 R01 90. M65	14	N0011 L975 R01 90. M65
14	N0012 T2	15	N0012 T2
15	N0013 M40	16	N0013 M40
16	N0014 S4030 M03	17	N0014 S4030 M03
17	N0015 M82	18	N0015 M82
18	N0016 L99	19	N0016 L99
20	N0017 G00 G54 X-360. Y246.		
		19	N0017 G00 G54 X-350. Y246.
20	N0018 M07	21	N0018 M07
21	N0019 X-892. Y64. Z-196. M08	22	N0019 X-892. Y64. Z-196. M08
22	N0020 D1 Z-307.775	23	N0020 D1 Z-307.775
		23	N0021 G01 Z-332 F201
24	N0022 G00 Z-307.775	24	N0022 G00 Z-307.775
25	N0475 M19	25	N0475 M19

Fig. 4-17: Example of a printout of all the results of the individual NC data comparison

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Print differences

To print the differences in the results of the individual NC data comparison, choose **Print diff**.

MCIS DNC Compare result

	C:\Siemens\MCIS\Data\DNC\TMP\ -4014-m82-02-01-dieckmann_hp_1.nca		C:\Siemens\MCIS\Data\DNC\Data\Halle3\ -4014-m82-02-01-dieckmann_hp_1.nca
5	N0002 G00 G53 G60 Z-117.2	-1	
		5	N0002 G00 G53 G60 Z-115.8
6	N0003 X-360. Y246.	6	N0003 X-360. Y246.
7	N0004 M11	7	N0004 M11
8	N0005	8	N0005
	~~		~~~
	~~		~~~
9	N0006 A90.	9	N0006 A90.
10	N0007 M82	10	N0007 M82
11	N0008 L99	11	N0008 L99
12	N0009 G54	-1	
12	N0010 T1	13	N0010 T1
13	N0011 L975 R01 90. M65	14	N0011 L975 R01 90. M65
14	N0012 T2	15	N0012 T2
	~~		~~~
	~~		~~~
16	N0014 S4030 M03	17	N0014 S4030 M03
17	N0015 M82	18	N0015 M82
18	N0016 L99	19	N0016 L99
20	N0017 G00 G54 X-360. Y246.	-1	
		19	N0017 G00 G54 X-350. Y246.
20	N0018 M07	21	N0018 M07
21	N0019 X-892. Y64. Z-196. M08	22	N0019 X-892. Y64. Z-196. M08
22	N0020 D1 Z-307.775	23	N0020 D1 Z-307.775
		23	N0021 G01 Z-332 F201
24	N0022 G00 Z-307.775	24	N0022 G00 Z-307.775
25	N0475 M19	25	N0475 M19
26	N0476 M63	26	N0476 M63

Fig. 4-18: Example of a printout of the results of the individual NC data comparison (differences only)

To make it easier to read, three rows with no differences are inserted before and after each difference identified.
To indicate that the file has been cut, two lines containing "~~~" are inserted after the three additional rows.

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4.5 Archiving (manual)

4.5.1 General

You can archive individual machines or a group of machines. Manual archiving uses the same configuration data as auto archiving (see also: Chapter 12 →Auto archiving).

To do so, select a machine with the **SINUMERIK* transmission module** and then choose **Machine Comparison → Archive**.
If you select a group, archiving is carried out for each machine with SINUMERIK*.

The archive function creates or replaces a comparison result in a file each time it is started. This file is located in the directory ...**DNC\CmpResult**. Its name comprises the name of the machine followed by "_AArch.txt".

Note

To execute the **Archive** function, **DNC IFC SINUMERIK** must be installed on the machine with SINUMERIK*.

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4.5.2 Archive results

The results files are in English and contain the following results:

- Group and machine name (below each other)
- Date (at start and end)
- An area entitled "NC data in machine only" in which files are listed that were only found on the machine.
- An area entitled "Different NC data" in which files on the machine are listed that differ from those in the **DNC** system.
- An area entitled "NC data in DNC system only" in which files are listed that were only found in the **DNC** system and not on the machine.

Note

The area **NC data in DNC system only** is only created with the start parameter for the **SHOW_FILESONDNC** auto archive. The NC data located in this section and in the upload directory is assigned the auto archive identifier "2" in the **DNC** system.

The final result is shown at the end. This indicates whether errors occurred during the archive run and how many files were archived.

Note

If no errors occurred and this machine has been configured for archiving, all of the differences will have been dealt with.

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4.5.3 Displaying archive results

When you select a machine (on the left of the operator interface) for which an auto archive run has already been carried out and choose **Machine Comparison → Display Archive Result**, the file with the auto archive result is displayed.

Table 4-5: Sample file for an auto archive result

```
                                13.02.2007  20:16:56

          MACHINE44

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

          NC data not the same
          6-VALVE-CYLINDER-HEAD_3.MPF
          GEARBOX4712_1.SPF
             GEARBOX0815\  GEARBOX0815_3.SPF

          All files of above list were archived.
          (DNCAArch)3 Files were obtained from machine.
          (DNCAArch)
```

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4.6 Data organization

4.6.1 Database

General

DNC organizes data as follows:

- The administrative data is organized in the database.
- The database of the local **DNC Cell** is MSDE or SQL Server.
- The database for the **DNC Plant** server variant is MSDE or SQL Server. An Oracle database can also be used.
- The actual NC data files are managed in the file system.

Database structure

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

- NODETABLE (Plant configuration with DNCNODEINFO)
- DNCNODEINFO (Plant configuration with NODETABLE)
- DNCDATA (Management of NC data)
- DNCDATATYPE (File type management)
- DNCWORKPIECE (Management of the workpieces)
- DNCGLOBALSETTINGS (Global settings such as version strategy etc.)
- DNCLISTDESCRIPTION (Description of the list display)
- DNCFORMDESCRIPTION (Description of the screen display)
- DNCTABLECOLUMNNAME (Language-specific translations of the DNCDATA columns)
- DNCFILTERHEADER (Management of the individual filters)
- DNCFILTERCOLUMN (Management of the individual filter criteria)
- DNCFILTERASSIGN (Management of filter assignments)
- DNCLOG (Log book)
- USERGROUPBASETABLE (Management of the users in MCIS)
- USERGROUPPERMISSIONTABLE "
- USERBASETABLE "
- USERPROFILETABLE "
- PRODUCTTABLE (Management of the installed MCIS products)

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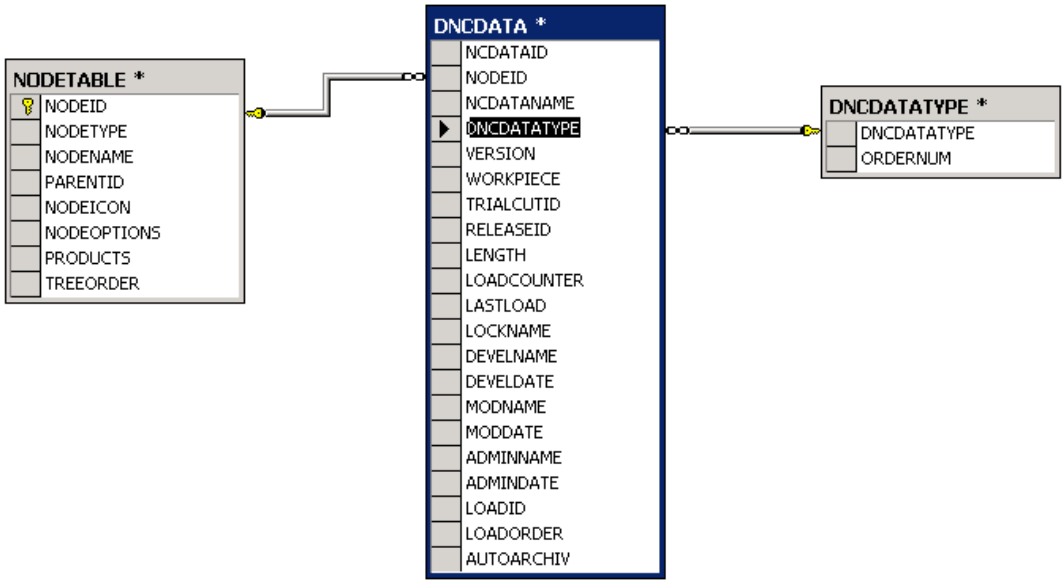

Fig. 4-19: Database structure of the machines, NC and NC type data

List description

The **DNCLISTDESCRIPTION** database table is responsible for the layout of the list on the basis of the display group.
A display group can be assigned to one or more user groups.
For each display group, the fields in the management table for the NC data and for the list display on the right of the screen in **DNC** can be defined in accordance with the following criteria:

- Order of fields
- Column width on output

Note

You can use the **List editor** in **DNC** to create and edit the list display (see also: Chapter Configuration).

Only fields that have been configured are displayed.

Name	*	Type	Version	Trialcut Id	Release Id	Lengt
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. 4-20: List display variant of the operator interface

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Screen description

The **DNCFORMDESCRIPTION** database table is responsible for the layout of the screen displays for the Properties dialog for NC data on the basis of the display group.
A display group can be assigned to one or more user groups.
The fields for the screen display of the NC data properties in the management table for NC data can be defined for each display group. This includes:

- Assigning the database fields to certain tab pages on the screens
- Positioning the field content on the screen
- Defining the output field type

Note

You can use the **Screen editor** in **DNC** to create and edit the description of the Properties screen (see also: Chapter Configuration).

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Plant configuration

The plant configuration can be mapped via the **NODETABLE** and **DNCNODEINFO** database tables.
DNCNODEINFO contains additional configuration data for the different nodes.

NC administrative data

The **DNCDATA** database table describes the NC administrative data. Pointers exist to **NODETABLE** and **DNCNODEINFO** (with regard to the plant configuration) and to **DNCDATATYPE** (with regard to the data type).
The following database fields are configured by default:

Table 4-6: DNCDATA database table

Database field	Description	Field length and type
NCDATAID	*Internal database field*	Long integer
NCDATANAME	NC data name	Character (40 chars)
DNCDATATYPE	NC data type	Character (3 chars)
VERSION	Version number of the NC data	Long integer
NODEID*	*Internal database field*	Long integer
WORKPIECE**	Workpiece	Character (40 chars)
TRIALCUTID	Trial cut ID Range of values: 0/1	Long integer
RELEASEID	Release ID Range of values: 0/1	Long integer
LENGTH	Length of the NC data	Long integer
LOADCOUNTER	Number of accesses	Long integer
LASTLOAD	Date/time of last download	Date/time
LOCKNAME	Locked by user...	Character (32 chars)
DEVELNAME	NC data developer	Character (32 chars)
DEVELDATE	Development date	Date/time
MODNAME	Name of person who modified NC data	Character (32 chars)
MODDATE	Change date of the NC data	Date/time
ADMINNAME	Name of person who changed admin. data	Character (32 chars)
ADMINDATE	Change date for administrative data	Date/time
LOADID	Load ID Range of values: 0/1	Long integer
LOADORDER	Load order for workpieces	Long integer
AUTOARCHIV	ID indicating whether data has been uploaded via the auto archive function.	Long integer

* External key for the NODETABLE database table. This is used to determine the name of the node.

** Like * (relevant if the NC data refers to a workpiece)

Note

Depending on the project, the table can be extended to include variable fields.

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NC data type management

The **DNCDATATYPE** database table contains all the file types supported by the configuration.

Table 4-7: DNCDATATYPE database table

DNCDATATYPE	*ORDERNUM*	**Description**	
MPF	1	Main Program File	Main NC program
SPF	2	SubProgram File	NC subprogram
TOA	3	Tool Offset Active	Tool offsets
ZOA	4	Zero Offset Active	Zero offset
RPA	5	R-Parameter Active	Memory area in the NCK for R-parameters
WPL	6	WorkPLan	ASCII file for tool plans
JOB	7	JOB	Job lists
BMP	8	BitMaP	Graphics file for clamping sketches 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	Quadrant Error Compensation	Quadrant error compensation
PDF	18	Portable Document Format Text and graphics in PDF format	
JPG	19	Joint Photographic Experts Group Graphics file	
TIF	20	Tagged Image File	Graphics file
WPD	21	WorkPiece Directory	Workpiece directory
TTD	22	Tool Target Data	Tool target data

Note

If other NC data types are required, the table can be extended.
The data type WPD must not be used.

Managing the workpieces

The **DNCWORKPIECE** database table is used for managing the workpieces. It defines the location of different workpieces in the plant topology.

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User administration

User administration is carried out jointly for all MCIS programs.
This involves defining user groups, creating users, and assigning them to a user group.

The following **DNC**-specific settings are available:

- Display group
  Users are assigned the list and screen layout of their display group in the operator interface. The display group must be assigned to a user group.
- Initial level
  The initial level determines the view of the tree structure and is user specific.
- Station affiliation
  The station affiliation is only evaluated in the server variant.
- Display size of the operator interface

Managing the filters

The **DNCFILTERHEADER** database table is used to manage the individual filters.

It is structured as follows:

- FILTERNAME contains the unique filter name.
- FILTERCOMMENT determines the comments.
- TABLENAME defines the table to which the filter belongs (DNCDATA or DNCLOG).
- USERNAME defines the user for whom this filter was configured, or the user who created it.
- 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 (e.g. **DNC IFC SINUMERIK** or **DNC HMI**).

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Managing the filter criteria

The **DNCFILTERCOLUMN** database table is used to manage the individual filter criteria. In this table, each criterion of a filter is represented as a data record. As a result, **DNCFILTERCOLUMN** contains x data records for one data record in the **DNCFILTERHEADER** table.

It is structured as follows:

- FILTERHEADER_ID is the assignment of a criterion to a filter in the DNCFILTERHEADER table.
- ROWNUMBER defines the order in which the criteria appear in the filter criteria dialog.
- COLUMNNAME defines the column name that is filtered.
- TYPE defines the data type of the column name (a distinction is made, for example, according to date, integer, flag, character, etc.).
- OPERATOR defines the operator (equal to, not equal to, greater than or equal to, etc.).
- CONDITIONVALUE defines the value that is filtered.
- FLAGS indicates whether this criterion is active or inactive (checkmark in the filter criteria dialog).

Managing the filter assignments

The **DNCFILTERASSIGN** database table is used to manage the filter assignments.

It is structured as follows:

- FILTERASSIGN_ID is a system-internal variable that is assigned automatically.
- FILTERHEADER_ID is the assignment of a criterion to a filter in the DNCFILTERHEADER table.
- 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

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Language-specific translations of the column names in database tables

The **DNCTABLECOLUMNNAME** database table is used for the language-specific translation of the columns in the **DNCDATA** table. This table is relevant for the filter, list editor and screen editor.
The table is structured as follows:

- Assignment of the data record to a table.
- Assignment of the data record to a column name in the table.
- Language ID (GR, UK, FR, SP, etc.); this assigns the data record to a language.
- Translation of the column name into the relevant language.

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4.6.2 File system

The file system reflects the plant configuration:
The **DNC** configuration elements "group", "machine", "link" and "workpiece" are stored in the file system as directories, while the NC data is stored as files. The directory structure of the file system is similar to the tree structure on the left of the interface.

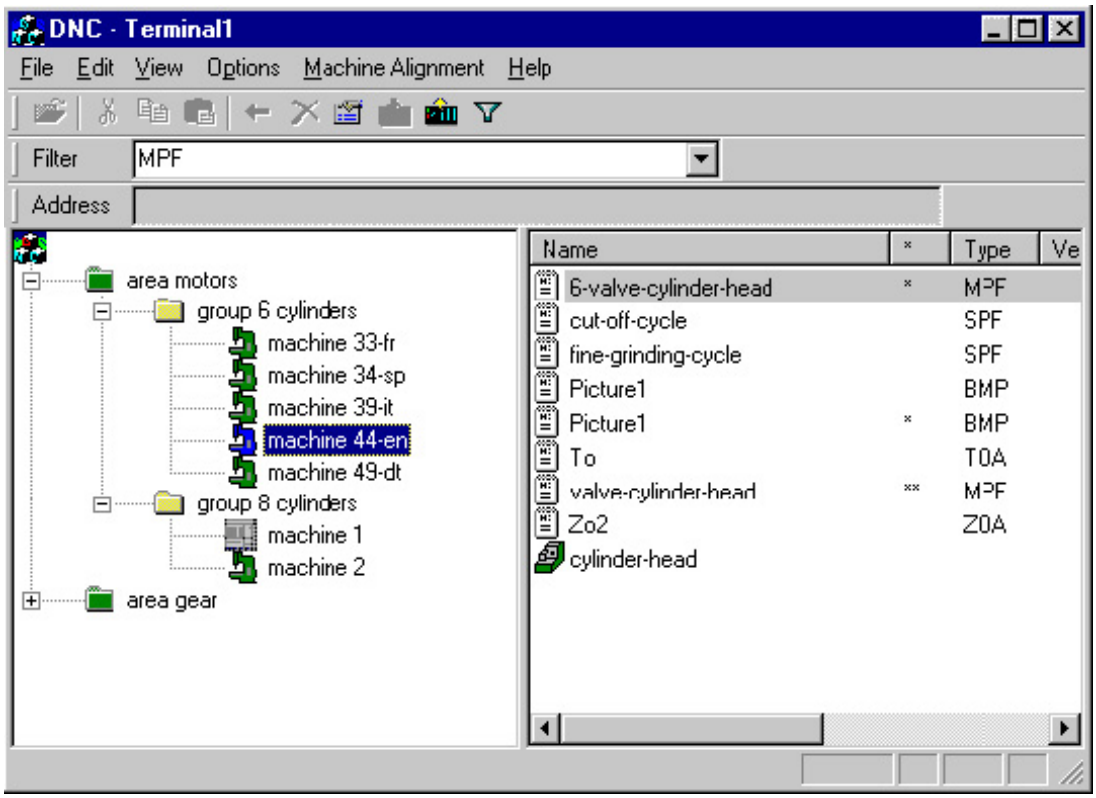

Fig. 4-21: Tree structure of operator interface

Table 4-8: Standard icons in the directory

ROOT	Network file systems
Group/subgroup	Workpiece
Link	NC file
Machine with DVK transmission module ("SINUMERIK 840D")	NC file with comment (similar to: SPF, etc.)
Machine (transfer serial without protocol)	NC file with attachment
Machine with "SINUMERIK*" transmission module	Tool setting device
NC package*	

* Only available in conjunction with Siemens PLM Teamcenter

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Group/machine/workpiece

In the file system, these administrative units are represented as **directories** in the plant structure, whereby groups can contain subdirectories (groups, machines, and workpieces). Machines can contain workpieces as subdirectories. Any of the folders may contain NC data files.

This directory structure is located in the **NC data master directory**. The NC data master directory is located under the **data directory** (specified during installation) in the "Data" subdirectory.
Example: C:\Siemens\MCIS\Data\DNC\Data

NC data

The actual NC programs, subprograms, tool setup data, graphics data, and so on are represented as files in the system; the associated administrative data is stored in the database. NC data can be stored in any of the directories in the **DNC** system (group, machine and workpiece).

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

Link

You can use the links to view the files in the linked directory. Like files, these are assigned the relevant access rights.

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4.7 Consistency check

4.7.1 General

The consistency check is used to check for and rectify inconsistencies between the NC administrative data records in the database and the NC data files in the **DNC** file structure.

A quick consistency check is performed each time **DNC Admin** is started. If inconsistencies are found, a message popup is displayed drawing the user's attention to this.

Inconsistencies can occur, for example, if an old backup of the database is imported, which means that database entries are missing or that there are too many entries.

Inconsistencies must not occur under normal operating conditions. In this context, "normal operating conditions" means that the database is not replaced and that the **DNC** file structure is modified using **DNC**. If inexplicable inconsistencies occur on a regular basis, however, contact our support team.

Note

With **DNC Plant**, you are advised to check for consistencies and rectify these directly on the server because the consistency check covers all the NC administrative data for all groups and machines.

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4.7.2 Consistency check when DNC Admin is started

The consistency check performed when **DNC Admin** is started counts all the files in the **DNC** file structure. The number of files (see also Fig. 101 NC data files) is compared with the number of NC database entries (see also Fig. 96 "Administrative data records"). The message popup shown above only appears if the numbers in these two fields differ.

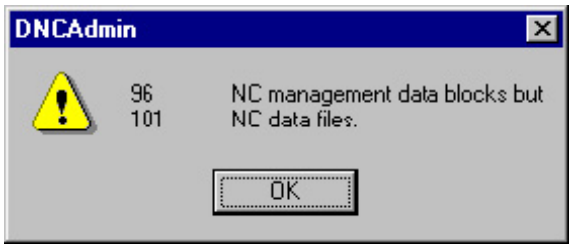

Fig. 4-22: Consistency check when **DNC Admin** is started

Note

Since only the number of files and records is checked, inconsistencies can still occur even if the message popup is not displayed. To ensure that all consistencies have been rectified, the user must call up the Consistency Check dialog.

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4.7.3 Consistency Check dialog

The Consistency Check dialog contains a list of the inconsistencies found and the options available for rectifying them.

Note

The Consistency Check dialog is only regenerated when it is opened. This means that changes (rectified inconsistencies) not made in this dialog will not be visible until the dialog is closed and opened again. Toggling between the options described below does not result in the consistency being checked again because the user would have to wait a long time in the case of large plants.

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Missing files

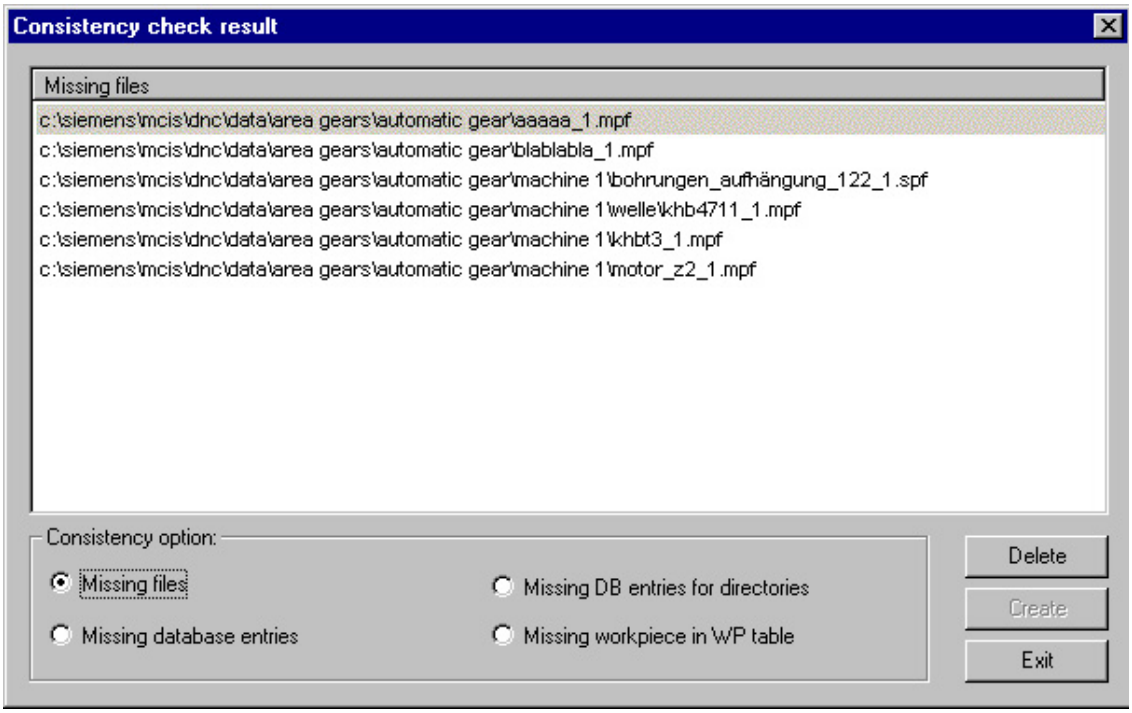

Fig. 4-23: Consistency Check dialog: Missing files

This dialog displays administrative data records for which the corresponding file is missing.

The complete path in which the file should appear is displayed. This path comprises the NC data master directory (in this case: C:\Siemens\MCIS\Data\DNC\Data\) and the subdirectories for the group(s), machine, workpiece and attachments for NC data. The file name of an NC administrative data record comprises the NC data name, the version number and the NC data type.
Example: data name_13.MPF

To delete the selected **administrative data records** from the database, choose **Delete**.

You can also use Microsoft Explorer to add the file at the required location. The name of the file is not case sensitive. If you carry out this step, you have to close the Consistency Check dialog and open it again so that this inconsistency is no longer displayed.

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Missing database entries for NC data

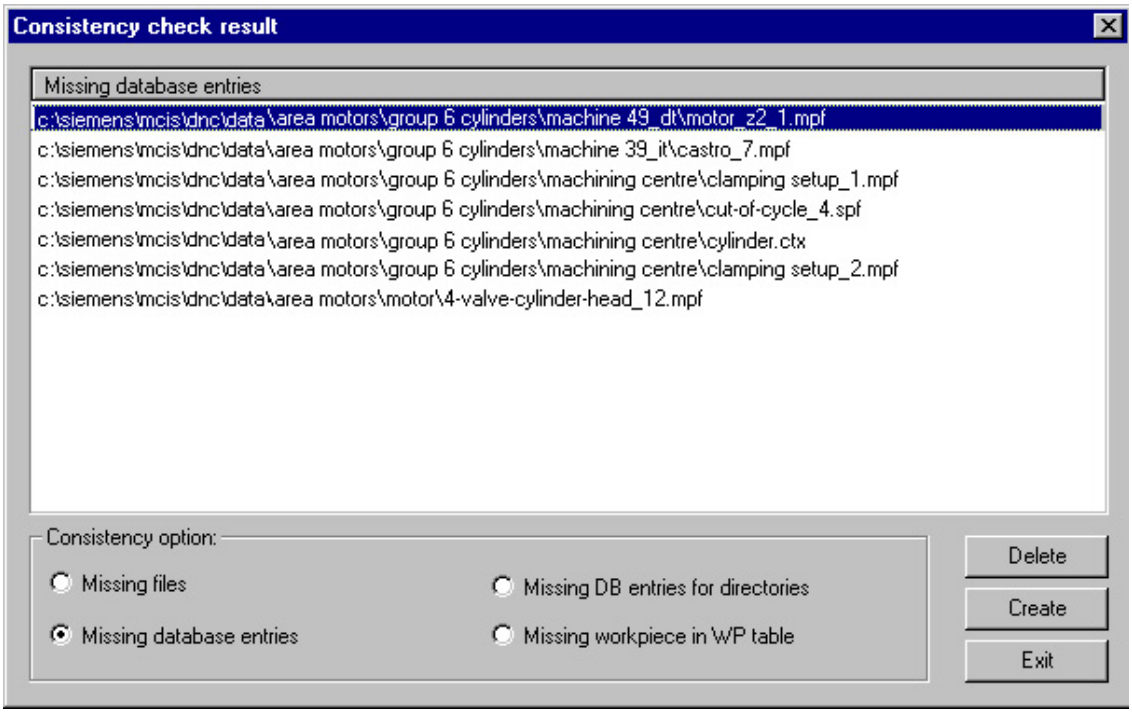

Fig. 4-24: Consistency Check dialog: Missing database entries for NC data

This dialog displays files located in the NC data master directory and to which no administrative data record is assigned in the database.

The complete path is displayed in which the file without an administrative data record is located.

To delete the selected **files** from the NC data master directory, choose **Delete**.

To create an administrative data record for this file, choose **Create**. The Properties dialog is displayed for each file.

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Missing database entries for directories

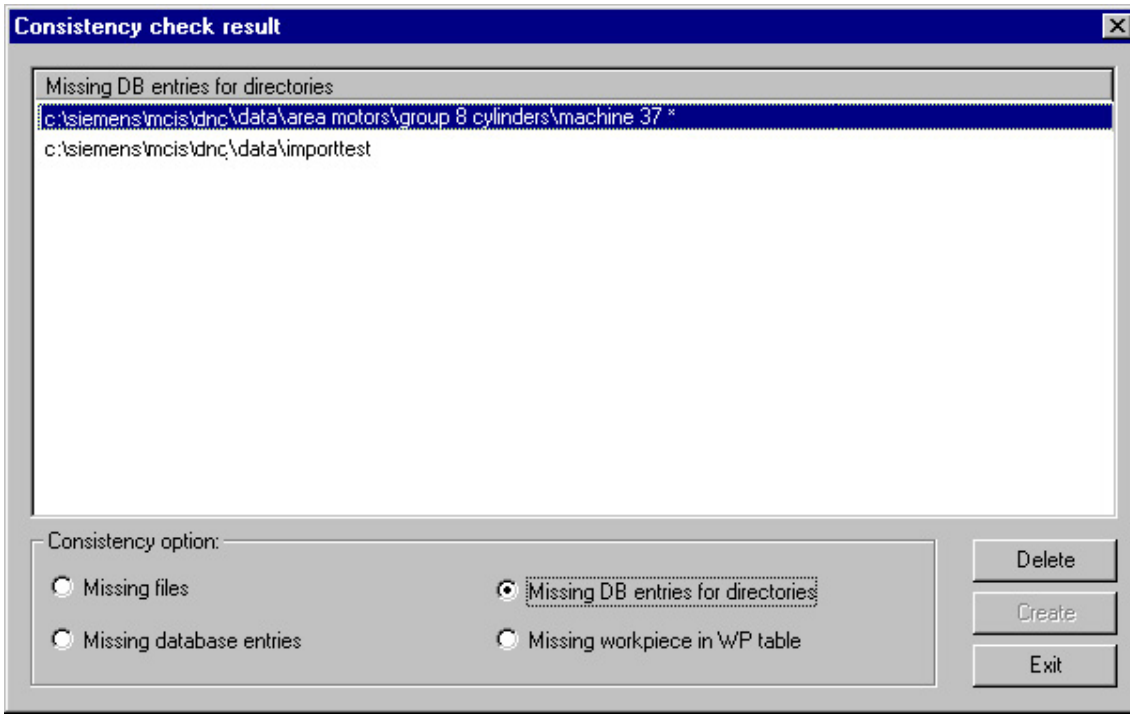

Fig. 4-25: Consistency Check dialog: Missing database entries for directories

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

The complete path is displayed.

To delete the selected **empty directories** from the NC data master directory, choose **Delete**.

Empty directories that do not contain any files are identified by means of "*****" at the end of the directory name. Only these directories can be deleted.

Alternatively, you can create a group, machine or workpiece with the same name using **DNC Admin** in configuration mode in order to rectify these inconsistencies.

Exception:
Directories of NC packages cannot be created in this way.

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Missing workpieces in the workpiece table of the database

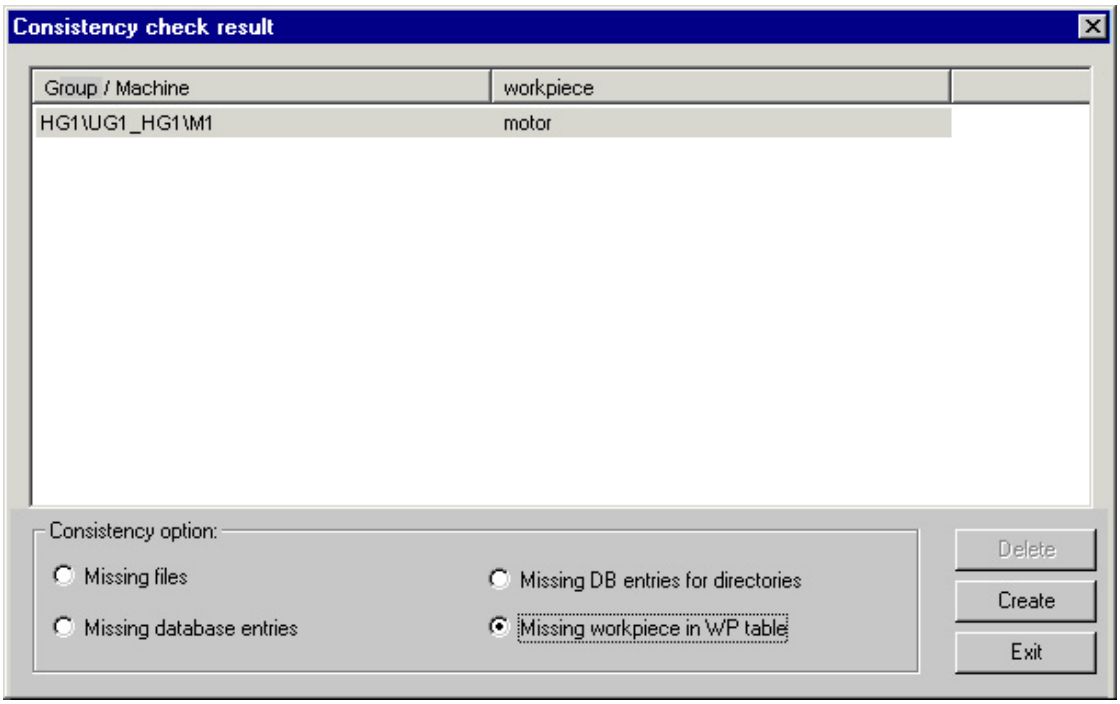

Fig. 4-26: Consistency Check dialog: Missing workpieces in the workpiece table of the database

The "**Missing WP in WP Table**" radio button is only active when inconsistencies in workpieces have been detected.

Note

If inconsistencies occur with workpieces, you are advised to correct the inconsistencies in "Missing Files" first before correcting the inconsistencies in the workpieces.

This inconsistency occurs automatically if you want to use a **MCIS** database from an earlier version of **DNC**. This dialog can also be used to update your **older 2.x-version database** in the workpiece area. To do so, select all your workpieces and choose **Create**.

SINUMERIK*:	SINUMERIK 810D SINUMERIK 840D SINUMERIK 840Di PCU50 under Windows with SINUMERIK 840D sl

■

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5

5 User administration

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5.1 Structure of the user administration

User-specific data is defined via the user administration under **Tools → User Administration**. The user administration is only available 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, that is, each individual user in a user group is assigned the same **DNC** user rights and the same list and screen display.

Users

To allow individual access to the **DNC** software, users must be configured with passwords. Each user is assigned further special parameters (see also: Sections 5.2, 5.3).

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5.2 User administration

5.2.1 General

When the user administration function is called up, all the user names are listed along with the user group, language, and product.

When you choose **Change** or **New**, a user administration dialog is displayed in which the existing user data can be changed or new users defined. To delete a user, select the user in question and choose **Delete**. To make a user-specific filter assignment, choose **Assign Filter**.

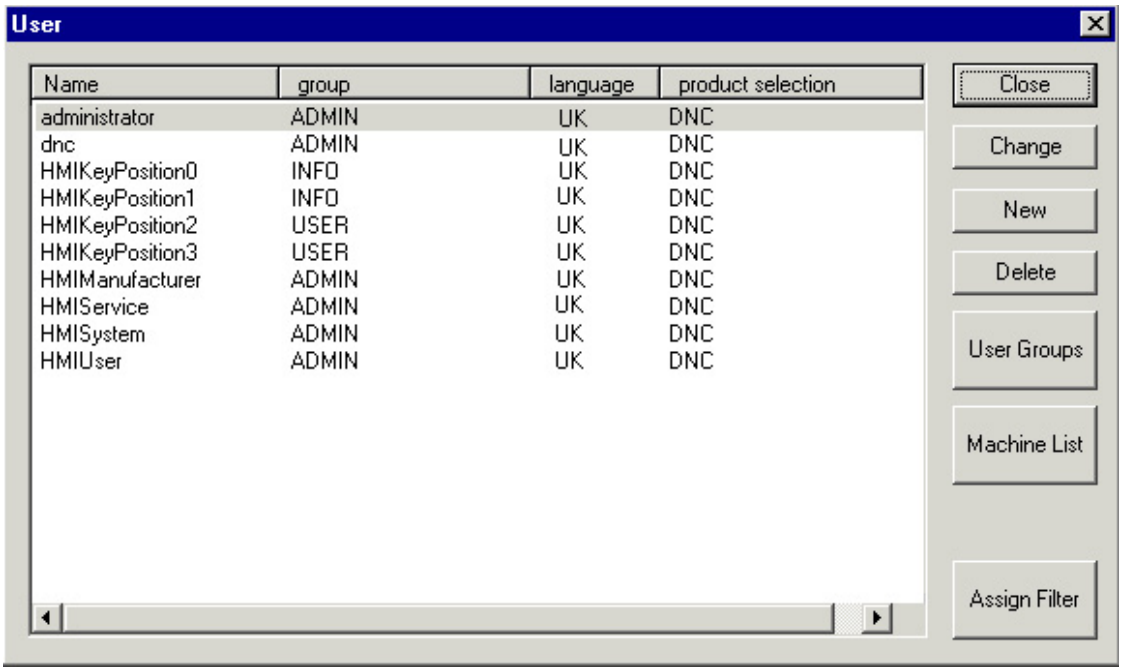

Fig. 5-1: Overview of existing users

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5.2.2 Creating new users / changing user properties

To call up the dialog in which you can define users, choose **New** or **Change** in the user screen. Here, you can create a new user or change the properties of an existing user that you selected beforehand. The following parameters are available:

- User name
- Full name
- Access password
- User group (group to which the user belongs)
- Area to be displayed

The two checkboxes allow you to select the large-format user interface and activate the filter.

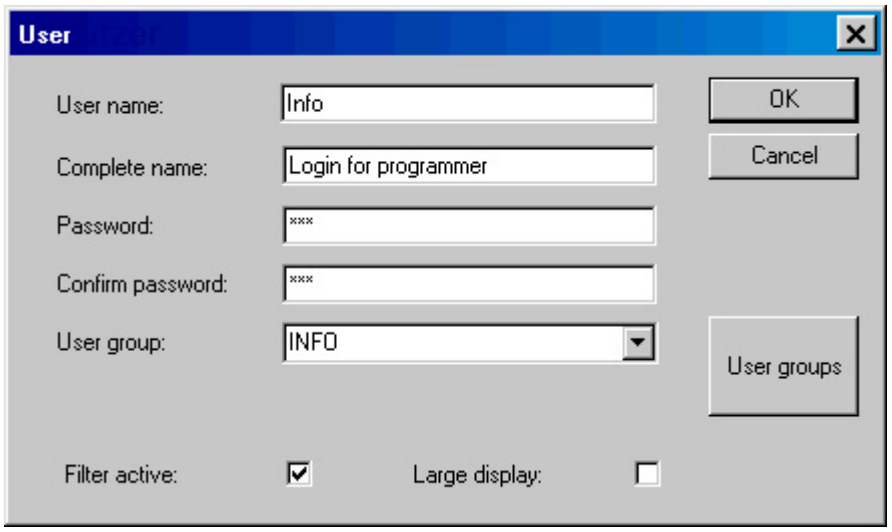

Fig. 5-2: Screen for creating/changing users

User name

The user name is the name specified when the user logs on to **DNC**.

Full name

Text can be entered in the **Full Name** field to provide additional information about the user name. This text is only visible here.

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Password

The password is required by users to identify themselves when they log on. For security purposes, the password must be entered again in the *Confirm Password* field.

Note

As delivered, a user **DNC** (password: DNC) is always defined with administrator rights.
During commissioning, you should create a new administrator and delete the user DNC or, at the very least, assign it a new password.

User group

An existing user group for assigning user rights and the display group can be selected in the User Group selection field. If a user group with the required access rights or display group does not exist, you must create a new user group. To call up the dialog for creating/modifying user groups, choose **User Groups**.
See also: "Managing user groups"

Filter activated

If the **Filter Activated** checkbox is activated, the last filter used is active for this user once the user has logged on.

Note

If a filter has not yet been defined, the user has an unfiltered view of all the NC data defined in the system.

Large display

The **Large Display** checkbox determines the size of icons and text when displayed on the user interface. The large display makes the user interface easier to read for users in workshops.

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5.2.3 Assigning filters for users

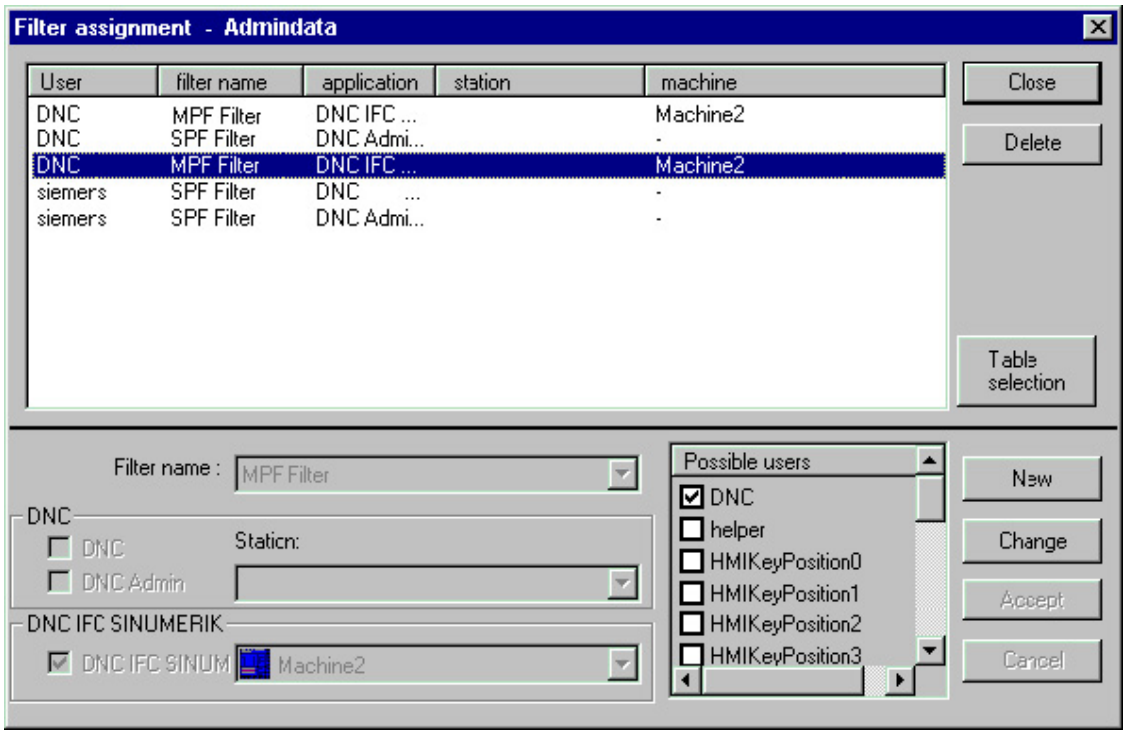

Fig. 5-3: Filter assignment

To assign filters, choose **Tools** → **User Administration** and then **Assign Filter**. This allows you to assign filters to users. You can do this both for the standard **DNC** user interface and for the **DNC Admin** configuration program as well as for machines with **DNC IFC SINUMERIK**.

You can use the Assign Filter dialog to create, change, or delete filter assignments.

The dialog is divided into two parts:

The upper part is used to select and delete an existing filter assignment. Using the Select Table button, you can choose the database (NC administrative data or log data) to which the filter assignment is to apply.

The lower part of the dialog is used to change or create filter assignments.

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Select table

You can use the **Select Table** button to choose the database for the filter assignment. You can select from the following options:

- Administrative data (NC administrative data)
- Log data (records of all the errors and messages that occur)

Deleting a filter assignment

To delete a filter assignment, first select the assignment you want to delete and then choose **Delete**. You can only select and delete one filter assignment at a time.

If you want to delete more than one filter assignment, first sort the list so that all of the assignments you want to delete appear underneath each other. Select the first entry to be deleted and then delete the other entries individually.

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Adding or changing a filter assignment

You can create one or several new filter assignments by choosing **New**. You can change the selected filter assignment and create one or more new filter assignments by choosing **Change**.

The following settings need to be made:

- **Select filter name**
  A list of users that can use this filter is then displayed. This list can be restricted to a small number of users depending on the restriction criteria set when the filter was configured. (See also: "Creating or changing filters").

- **Assign users**
  The relevant checkbox must be activated for each user to whom this filter is to be assigned.

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

  DNC / DNC Admin
  In the **Station Name** combo box in **DNC** and **DNC Admin**, an empty combo box means that the filter assignment applies to all stations. If you specify a particular station, however, the filter assignment applies to this station only.

  DNC IFC SINUMERIK
  If you select a group for **DNC IFC SINUMERIK**, a filter assignment is created or an existing filter assignment changed for all the SINUMERIK* machines under this group.

- **Accept data**
  Using the Accept button, you can create filter assignments or change existing ones.

Note

Only one filter assignment can be defined per user, application (**DNC IFC SINUMERIK**, **DNC** and **DNC Admin**), machine or station. This means that if a filter assignment already exists, and a **new one** is nevertheless defined, the old filter assignment will be replaced by the new one. **This is carried out automatically**.

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5.2.4 Managing user groups

Refer to Section 5.3.

5.2.5 Machine list for users

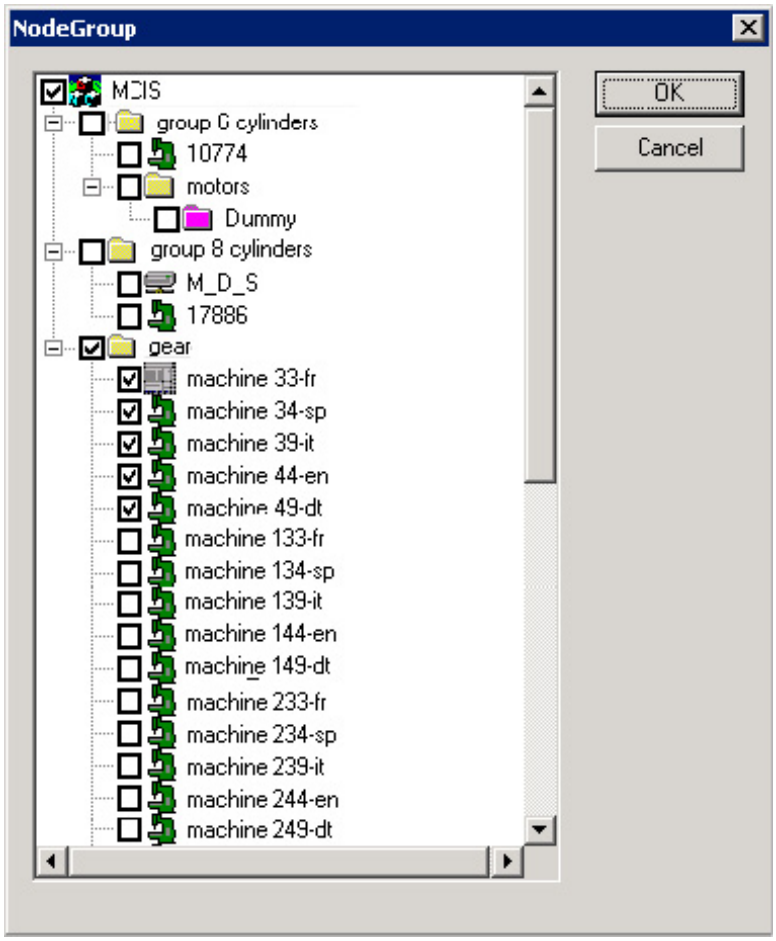

Fig. 5-4: Machine list for enabling/disabling nodes on a user-specific basis

General

You can disable or enable certain nodes (groups, machines, links) for specific users explicitly. The steps for configuring this are carried out in **DNC** User Administration although this applies to all products, that is, the dialog can also be used by MCIS TPM, for example.

Selecting users

In the user list, you select the user for whom you want to create or change a machine list.

Note

The machine list is not defined for the user logged on but instead for the user selected in user administration.

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Determining machine lists

To open the **Machine List** dialog, choose **Machine List**.
By selecting/deselecting the checkboxes for the nodes, you can select/deselect the machines, links, and groups. When you choose **OK**, the nodes currently selected are assigned explicitly to the user.
If a user does **not** have an explicit machine assignment, this user will be able to see – on **DNC** computers to which at least one machine is assigned – precisely those machines assigned to this computer.
If a user has an **explicit machine assignment**, this user will be able to see – on **DNC** computers to which at least one machine is assigned – precisely those machines assigned to this computer if they have also been assigned to him via User Administration. The machines in this station that have not been assigned to him explicitly are not displayed. This is then the intersecting set of station assignments and assignments made via User Administration.

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5.3 Managing user groups

5.3.1 General

When you call up the function for managing user groups, all the user groups are listed along with any comments.

When you choose **Change** or **New**, a User Group Management dialog is displayed in which the existing user group data can be changed or new user groups defined. To delete a selected user group, choose **Delete** (provided that all the users in this group have already been deleted).

5.3.2 Creating new user groups / changing user group properties

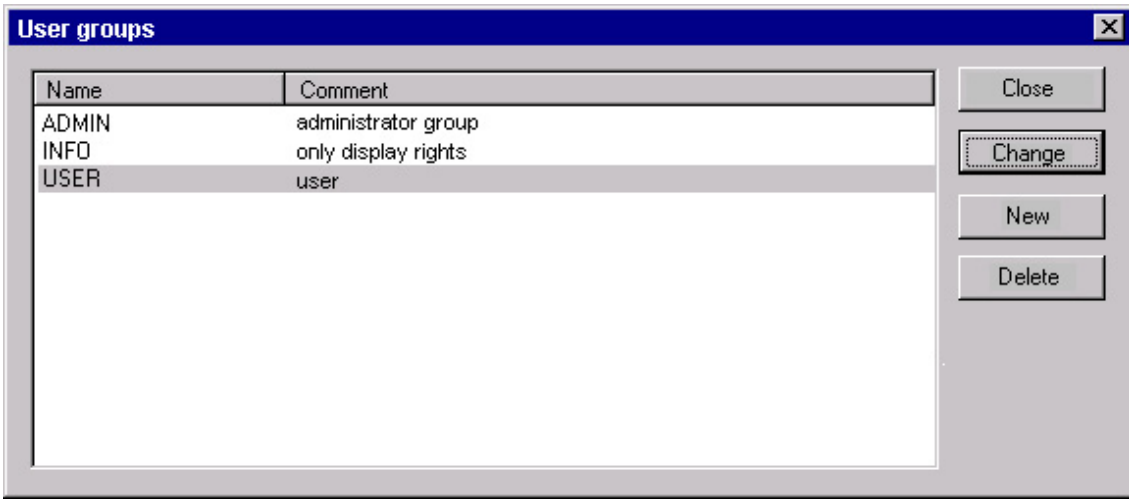

Fig. 5-5: Overview of existing user groups

When you choose **User Groups** in the **Create User / Change User Properties** dialog, a dialog is displayed in which you can manage the user groups. Here, you can create a new user group or modify the properties of an existing user group. The following user groups are defined in the standard **DNC** system:

- Administrator ADMIN
- Users USER
- Information user INFO

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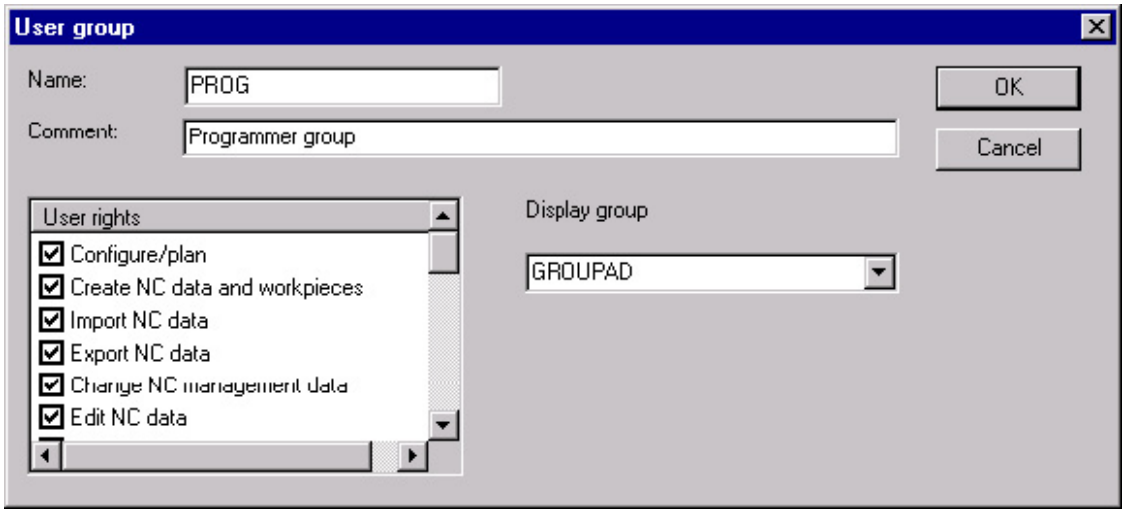

Fig. 5-6: Screen for managing the user groups

Caution

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

To create or change a user group, you have to specify the following:

5.3.3 Name of the user group

The name of the user group is displayed in the overview of the user groups and in the dialog for creating/changing a user.

5.3.4 Comment

A comment is displayed in the overview of the user groups to provide additional information about the user group.

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5.3.5 User rights

The user rights assigned to users disable or enable the menu options in **DNC** and **DNC Admin** for the user group in question.

Planning/Configuring

When this checkbox is activated, the user is authorized to call up configuration mode in **DNC Admin** and to carry out the required configuration activities (**View** menu). The user is also permitted to enter or change data in the dialogs for editing DNCGLOBALSETTINGS and DNCMACFG.

Create NC data and workpieces

When this checkbox is activated, the user group is authorized to create new NC data and workpieces via **File** → **New** or the context menu.

Import NC data

When this checkbox is activated, this user group is authorized to import NC data manually (**File** menu).

Export NC data

When this checkbox is activated, this user group is authorized to export NC data (**File** menu).

Change NC administrative data

When this checkbox is activated, users are authorized to change the NC data in the Properties dialog (provided that the properties screen contains fields that can be changed).

Edit NC data

When this checkbox is deactivated, an NC data file is opened as read only. No changes can be made to the original file or saved.

Copy/paste NC data in administrative data

When this checkbox is activated, users are authorized to copy and paste NC data (**Edit** menu and context menu).

Copy/paste NC data in link

When this checkbox is activated, users are authorized to copy and paste NC data from/to links (**Edit** menu and context menu).

Note

Both rights must be assigned to enable data to be copied from a link to the administrative data and vice versa.

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Delete NC data

When this checkbox is activated, users are authorized to delete NC data. The function for deleting versions in the Delete Version dialog is separate from this.

Cut NC data

When this checkbox is activated, users are authorized to cut NC data files (**Edit** menu and context menu).

Download NC data with release identifier

When this checkbox is activated, users are authorized to download NC data (**File** menu, context menu and icon in toolbar) with a set release identifier.

Download NC data with trial cut identifier

When this checkbox is activated, users are authorized to download NC data (**File** menu, context menu and icon in toolbar) with a set trial cut identifier.

Upload NC data

When this checkbox is activated, users are authorized to upload NC data (**File** menu, context menu and icon in toolbar).

Compare NC data

When this checkbox is activated, users are authorized to carry out a comparison between two NC data files and a machine comparison with SINUMERIK*.
This function is only supported, however, if the **DNC Compare** option has been installed.

Reset release identifiers

When this checkbox is activated, the *Reset Release ID* function (multiple selection) in the **Edit** menu and in the context menu is available. The function can, however, also be enabled for an individual NC data file in the Properties dialog.

Configure list descriptions

When this checkbox is activated, users are authorized to call up the list editor in **DNC Admin** (**Tools → List Editor** menu).

Configure screen descriptions

When this checkbox is activated, users are authorized to call up the Screen editor in **DNC Admin** (**Tools → Screen Editor** menu).

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Configure user

When this checkbox is activated, the user group is authorized to activate user administration to create users and user groups, assign rights, or delete users (**Tools** → **User Administration** menu in **DNC Admin**).

Note

If a user deactivates his own *Configure User* right, he will no longer be able to access User Administration.

Change tools settings

When this checkbox is activated, the user group is authorized to make changes in the **Tools** → **Settings** menu (e.g. change the language).

Perform consistency check

When this checkbox is activated, the user group is authorized to perform consistency checks. This right should only be assigned to administrators because the Consistency Check dialog lists not only the inconsistencies found but also the options for rectifying them (**Tools** menu).

Configure filter

When this checkbox is activated, the user group is authorized to create, change, or select filters (**View** menu).

Change filter

When this checkbox is activated, the user group is authorized to change filter values (**View** menu). The change is, however, temporary and is only valid until **DNC** is exited.

Note

When the *Configure filter* right is activated, deactivation of *Change filter* has no effect.

Select filter

When this checkbox is activated, the user group is authorized to choose between a range of different filters (**View** menu). If the group has *Configure filter* right, deactivation of *Select filter* has no effect.

Activate/deactivate filter

When this checkbox is activated, the user group has the option of activating or deactivating filters via the filter icon.

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Generic filtering

When this checkbox is activated, the user group is authorized to use generic filters.

Print

When this checkbox is activated, users are authorized to print program lists, NC data, NC administrative data, graphics and comments.
The menu option **File → Print** and the context menus **Print Program List, Print NC Data, Print Administrative Data, Print Graphic** and **Print Comment** are also activated.

Create CSV file

When this checkbox is activated, users are authorized to create CSV files.
The **Create CSV File** context menu is also activated.

Manage attachments

When this checkbox is activated, users are authorized to manage attachments for NC data.
The Add, Delete, and Rename buttons on the **Attachments** tab are active.

Open attachments

When this checkbox is activated, users are authorized to open attachments.
The Open button on the **Attachments** tab is active.

Delete NC data on SINUMERIK 840D

When the **Delete NC data on SIN. 840D** checkbox is activated, the **Delete** button is active on the Upload dialog of the SINUMERIK 840D.
NC data can then be deleted directly on the SINUMERIK 840D.

Start Teamcenter NC Package Viewer

When the **Start TC NC Package Viewer** checkbox is activated, the Teamcenter NC Package Viewer can be called.

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5.3.6 Display group

The drop-down list field for the display group is supplied from the DNCFORMDESCRIPTION screen definition table in the database. All of the display groups defined here appear in user administration
(see also: Sections 10.8 - List editor and 10.9 - Screen editor).

SINUMERIK*:	SINUMERIK 810D SINUMERIK 840D SINUMERIK 840Di PCU50 under Windows with SINUMERIK 840D sl

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6 Dialog function

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6.1 General information about the dialog function

The dialog function (**DNC IFC Dialog**) is optional. In the case of machines connected in series, it allows data to be downloaded/uploaded directly from the CNC machine tool. Dialog programs for requests (created via an editor on the controller) and responses are exchanged between **DNC** and the machine server. These contain the data relevant for the download/upload.

If a machine is configured with the dialog function (see also "Configuration"), the associated machine server is started when the **DNC** program is started (unlike in general mode) and runs until the program is ended. This means that the defined interface is always occupied.

Note

If the required COM interface is not opened when the **DNC** program is started, repeated attempts are made to open it.

For special requests, in addition to the integrated dialog interpreter, an external dialog interpreter in the form of an ActiveX DII can be integrated.

Important

The following controller requirements must be fulfilled:

- It must be possible to save at least two NC programs on the controller.
- An NC program editor must be available with which an NC program can be generated.
- The alphanumeric characters of the required NC program name must be available on the machine's operator panel.

If one or more of these requirements is not fulfilled, you can use the dialog function 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 analyzes the following rows in the [DIALOGFUNCTION] section of the machine configuration file:

Program number

Dialog function ID
%MPF9999

Command program row

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

File name program row

File name
- Specific name
- (Wildcard)
- X999 (wildcard alternative for controllers that cannot edit all characters)

File types program row

File type
- Specific type
- (Wildcard)
- Y001 (alternative for specific type with controllers that cannot edit all characters; Y001 normally represents MPF files)

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

Note

This section of the machine configuration file can also be created in the configuration dialog, which is described in Section Configuration → Configuration dialog → Dialog function tab page.

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6.2.2 Examples

Table 6-1: Example of a download request with default configuration parameters

Sample file	Description
%MPF9999	Dialog program Request from CNC machining unit
(S)	Request to download a released NC data file
(TEST_1)	Name of requested file
(MPF)	Type of requested file
M30	End-of-program ID

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

Sample file	Description
%MPF9999	Dialog program Request from CNC machining unit
(SL)	Request to download an NC data file list
X999	Wildcard replacement for *
Y002	File type SPF due to 2nd field entry in standard DNCDATATYPE
M30	End-of-program ID

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6.3 Dialog program responses

6.3.1 Program structure

Program number

ID for a response to a formulated request.
%MPF9998

1st to nth program row

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

End-of-program ID

M30

6.3.2 Examples

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

Sample file	Description
%MPF9998	Response ID to a formulated request
(Name size...changed on)	List header
(Zkpf_1.mpf 24096 06.05.99 17:59:04)	List content
(Zkpf_2.mpf 28116 10.05.99 08:03:40)	List content
....	....
M30	End-of-program ID

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

Sample file	Description
%MPF9998	Response ID to a formulated request
Requested data not found! Request:Zkpf_2.mpf	Error message
M30	End-of-program ID

Note

In the DNCGLOBALSETTINGS database table, the DLGFUNCLISTREQ parameter defines which NC data files are included in the list.
1 = released NC data files only
2 = NC data files with trial cut ID only
3 = released NC data files with trial cut ID only
0 is not permitted.

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6.4 Configuration parameters

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

Note

This section of the machine configuration file can also be created in the configuration dialog, which is described in Section Configuration → Configuration dialog → Dialog function tab page.

Table 6-5: Configuration parameters for the dialog function

Configuration parameters	Description	Standard configuration
DlgScanLines	Number of rows to be searched through for a DlgID parameter in the NC data file, starting from row 1.	10
DlgID	ID for a dialog program for a formulated request	%MPF9999
DlgIDSend	ID for a response to a formulated request. The response can have the following content: • List (response to list request) • Error message (response to a program request that cannot be fulfilled)	%MPF9998
DlgSendEnd	Program end of a response (list, error) from **DNC** to the machine.	M30
DlgSendCmd	Command to download released NC data files.	(S)
DlgSendTcCmd	Command to download NC data with trial cut ID	(ST)
DlgReceiveCmd	Command to upload NC data files. Two programs are sent one after the other: • Request program • Program to be uploaded	(R)
DlgSendListCmd	Command to request a list. The ID must be in the 1st line of the NC data file.	(SL)
DlgWpdMark	ID for workpieces in the dialog program. In the case of controllers that cannot edit all characters, path information or conditions (e.g. Z888 or G040) are also possible.	WPD

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DlgExchangeCNCType	ID for file types in the dialog program. In the case of controllers that cannot edit all characters, path information or conditions (e.g. Y001 or G02) are also possible. The character is declared in the "Dialog" section. The numeric constituent of the ID refers to the ODERNUM field in the DNCDATATYPE database table.	Y
DlgExchangeWildcard	Wildcard alternative for controllers that do not support * (e.g. in the case of requests for lists of all data types or file names).	X999
DlgConverter	This parameter can be used to configure an external dialog interpreter.	DNCDlgI.DNCCntrl
DlgSubNumber	This parameter can be used to assign an additional ID for the interpretation type to the external dialog interpreter.	0

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7 Code conversion function

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7.1 Code conversion

General

DNC uses NC programs in ASCII code. Data is always downloaded/uploaded in the code required by the CNC machine tool. If necessary, the code may have to be converted. The **DNC** code conversion server supports three types of code:

- ASCII code
- ISO code
- EIA code

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

Code conversion tables

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

#	Start of assignment
2A	Two-digit input value in hex
	Blank used as separator
AA	Two-digit output value in hex
	Blank used as separator
'*'	Mnemonic as comment
	Two blanks used as separator

The code conversion table can also be used to hide certain characters. For this purpose, **FF** must be entered as the output value.

Note

The offset must never be changed; if it is changed, this could result in non-initializations or incorrect initializations.

Note

Each station is only assigned one code conversion file (CODES.TXT).
Any changes made in one of the six code conversion tables only affect machines that use this code type.

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7.2 Examples

The code conversion tables can also be used to create a machine-specific code. For this purpose, 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: Hidden "CR" characters 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

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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	Pentium class processor P III or higher
Main memory	≥ 512 MB
Hard disk	≥ 5 GB for the system (operating system, database, **DNC....**) Additional disk memory for the data to be managed
Screen resolution	≥ 800 x 600
Drive	CD-ROM
COM interfaces	Optional, depending on the required serial interfaces: 4x / 8x interface cards, COM server
Network card	Optional in network

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8.1.2 Requirements for DNC Plant

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

Hardware component	**Server and DNC HMI computer requirements**	**Requirements regarding station PCs**
PC	Pentium class processor P III or higher	Pentium class processor P III or higher
Main memory	≥ 512 MB	≥ 256 MB
Hard disk	≥ 5 GB for the system (operating system, database, **DNC**...) Additional disk memory for the data to be managed	≥ 5 GB for the system (operating system, database, **DNC**....) Additional disk memory for the data to be managed
Screen resolution	≥ 800 x 600	≥ 800 x 600
Drive	CD-ROM	CD-ROM
COM interfaces		Optional, depending on the required serial interfaces: 4x / 8x interface cards, COM server
Network card	Yes	Yes
Backup medium	Depends on the backup concept	
Raid system	Depends on the availability requirements	

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8.2 Software

8.2.1 Requirements for DNC Cell

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

Remark	**Software component**
Operating system	Windows 2003 Server Windows XP Professional Windows Vista Ultimate **
Required for each networked PC / SINUMERIK when the server operating systems are used	Client access license
MSDE required	Internet Explorer
Network protocol optional in network (provided with Windows)	TCP/IP
When suitable modules are used	Driver software for multiple series interfaces
MCIS database	• MSDE (license-free SQL Server) – available in **DNC Cell** • SQL Server *

* If SQL server is already installed on the system, this is used for managing data and an MSDE does not need to be installed.

** For Windows Vista, see readme.pdf

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8.2.2 Requirements for DNC Plant

Table 8-4: Software requirements for **DNC Plant** computers

Remark	Software component
Operating system	Windows 2003 Server
For each networked PC / SINUMERIK	Client access license
MSDE required	Internet Explorer
Network protocol optional in network (provided with Windows)	TCP/IP
When suitable modules are used	Driver software for multiple series interfaces
MCIS database	• MSDE (license-free SQL Server) – available in **DNC Plant** • SQL Server * • Oracle **

* If SQL server is already installed on the system, this is used for managing data and an MSDE does not need to be installed.
** Data can also be managed on Oracle 9i (V9.2) instead of MSDE/SQL Server. This is not installed as standard. See: readme.pdf

Requirements for the station PCs and HMI computers

Table 8-5: Software requirements for **the station PCs and HMI computers**

Remark	Software component
Operating system	Windows 2003 Windows XP Professional Windows Vista Ultimate **
Additional license for server operating system	Client access license
MSDE required	Internet Explorer
Network protocol optional in network (provided with Windows)	TCP/IP
When suitable modules are used	Driver software for multiple series interfaces (not required for HMI computers)

* If SQL server is already installed on the system, this is used for managing data and an MSDE does not need to be installed.
** For Windows Vista, see readme.pdf

■

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Notes

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9 Software structure

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9.1 Software structure

The software structure shows the data flow between the **DNC** user interface, the servers and the machine.
All transfer functions are handled via the machine servers. Standard or user-specific code conversions can also be carried out, if necessary. You can call up either the **DNC** code conversion server or your own code conversion server. You could set up your own code conversion server in such a way that it then calls up the **DNC** code conversion server. Depending on the project, an external dialog interpreter can be used for the dialog function. In this case, the data flows to the machine server via the dialog interpreter, where the code is converted, and then to the machine.

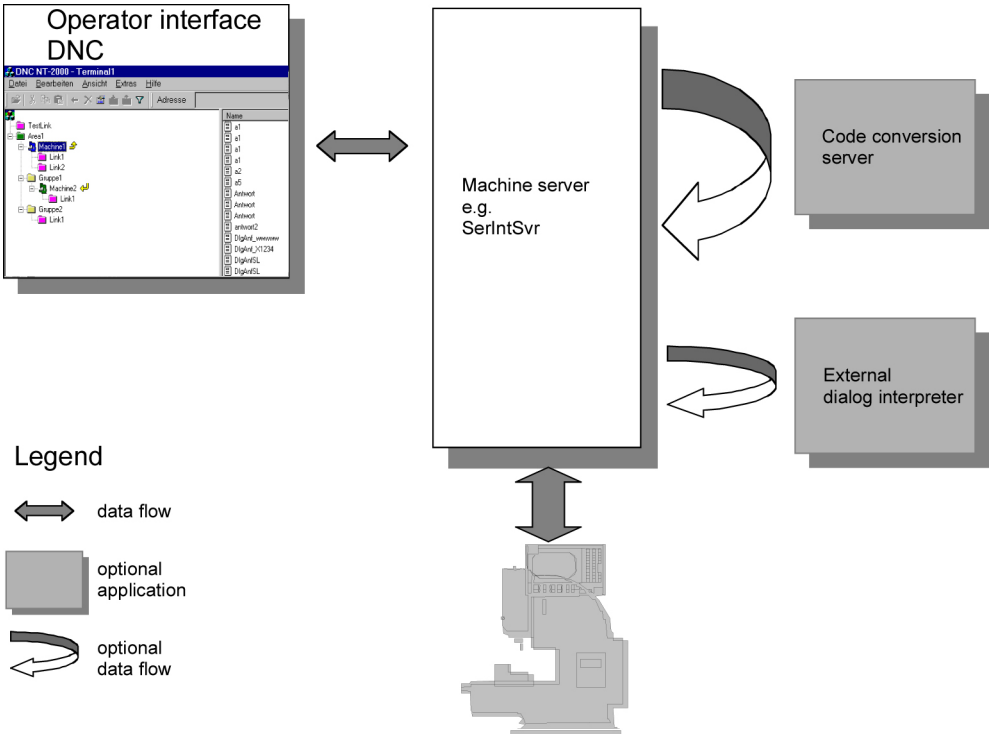

Fig. 9-1: Software structure

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9.2 Machine server

DNC uses the data transmission functions available on machine servers for the following reasons:

- The server is replaced independently of **DNC**.
- Changes on the server are independent of **DNC**.

All machine servers are OLE/COM servers with defined interfaces to **DNC**.
DNC normally uses the SerIntSvr for the interface to serial machines. Separate machine servers can be created for machines that require a different type of data transmission.

9.2.1 SerIntSvr

Function

DNC offers the SerIntSvr as standard for serial data transmission without protocol. The SerIntSvr features a dialog interpreter function and can, if necessary, also call up an external dialog interpreter and the code conversion servers.

9.2.2 Separate serial machine servers

If the SerIntSvr cannot fulfill the requirements, customer-specific machine servers can be created.
Applications include the following:

- Machines without a serial interface
- Machines that require serial data transmission with protocol

9.3 Code conversion server

DNC code conversion server

The **DNC** code conversion server offers three conversion codes: ISO, ASCII and EIA. The definition tables for the conversion contain the CODES.TXT file. It is in the program directory of **DNC** together with the DNCConvSvr code conversion server.

Separate code conversion servers

If the DNCConvSvr cannot fulfill all the requirements, separate code conversion servers can be created. Possible applications include:
Converting a different code
Further conversions (e.g.: A = AV)

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9.4 External dialog interpreter

General

DNC offers an optional interface for an external dialog interpreter that allows you to carry out project-specific name conversions or a specific interpretation of the dialog program, for example. The dialog interpreter must be created as an ActiveX DLL with Visual C++ or Visual Basic. It is called up from the machine server.
This involves a different type of conversion than that for the code conversion server since it is only configured for the dialog function. Applications include controllers that cannot edit all characters. In cases such as this, "G00" could be converted to "cylinder head", for example.

Note

A short description of the external dialog interpreter is available on the MCIS DNC CDROM in the IBS_Doku directory in "ExternalDialogInterpreter.pdf". Additional information can also be called up if required.

Configuration

The configuration is carried out in the [DIALOGFUNCTION] section of the machine configuration file or in the configuration dialog for the serial machines.

■

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10 Configuration

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10.1 General

Configuration should only be carried out by authorized users. Definitions and configurations can/must be carried out in the following areas:

- Definition of station name and type (for DNC Plant only)
- Plant structure (software simulation of the plant topology)
- Machine connections (type of machine interface)
- Screen definitions for the NC data properties and the import
- List definition
- Parameters for the dialog function
- User-specific data (access and display definition; see also: Chapter 5)

The "**DNC Admin**" program is available for most configurations. Only a small amount of configuration work can be carried out in **DNC** (e.g. creating and changing filters and NC data).

10.2 Separation of DNC Admin and DNC

10.2.1 General

DNC Admin and **DNC** are independent of each other to prevent unintentional changes being made to the **DNC** configuration. Separating these two programs ensures that the user explicitly chooses to configure the plant. **DNC** is easier to use as a result of the configuration functions being removed.

DNC Admin should only be used by authorized personnel, whereas **DNC** can be used by anyone from administrators to assistants.

Note

DNC Admin is also available to other users. Users must be assigned authorizations on an individual basis in order to determine which functions they are permitted to use. See also: Chapter 5 "User administration".

Some **configurations** that are performed in **DNC Admin**, only take effect when **DNC** is **restarted**!

Although, at first sight, the two programs look very similar, they contain 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 rectification	-	X
Configure users and user groups	-	X
Screen editor	-	X
List editor	-	X
Edit configuration tables	-	X
Create CSV file	X	-
Download NC data	X	-
Upload NC data	X	-
User for editor	X	-
Machine comparison / archive	X	-

From the **background color**, users can see which program they are working in and whether configuration mode (green) has been activated. The background colors in **DNC Admin** can be changed during commissioning. See also: Readme.pdf

Additional functions in DNC Admin

The **configuration mode** (View → Configuration) is used to create and change the plant topology. This means that the user can create and delete groups, machines, tool setting devices and links in the configuration mode and parameterize machines or tool setting devices. See also: Plant structure

The **consistency check** (Tools → Consistency Check) is used to check for and rectify inconsistencies between the NC administrative data records in the database and the NC data files in the **DNC** file structure. A quick consistency check is performed each time **DNC Admin** is started.

Configure users (Tools → User Administration). Users authorized to configure users can use this function to create and delete new users as well as change their authorizations, passwords, display groups, and other user-specific settings.

The **screen editor** (Tools → Screen Editor) can be used to adapt the NC data properties dialogs and to create new display groups for these dialogs.

The **list editor** (Tools → List Editor) can be used to adapt the layout and the contents of the list display and to create new display groups for these list displays.

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Edit configuration tables (Tools → Config. Tables). This dialog allows you to display the selected database table as it currently appears in the database and, if you are an administrator, edit it.

Note

The user must be assigned the necessary authorizations for these functions.
See also: User administration

Additional functions in DNC

Based on the filter, the **Create CSV File** function creates a CSV file that contains all the NC data of the selected group or machine and, depending on how the system is configured, the associated field contents (e.g. name, type, release, etc.). You can open the file in the Notepad editor or Microsoft Excel.

Download NC data (File → Download) allows the user to send NC data from **DNC** to the NC machine.

Upload NC data (File → Upload) allows the user to send NC data in the other direction from the NC machine to **DNC**.

User for Editor (Tools → User for Editor) enables an existing Windows user in **DNC** to be disclosed who is assigned write authorization for Windows editors (for example, Notepad, etc.) irrespective of the current **DNC** user. This user authorization allows editable files to be edited and stored in **DNC** regardless of whether the current **DNC** user has write authorization.

The **Machine Comparison** function is used to determine which programs exist on the machine as compared with the data management system for this machine in **DNC**. You can also carry out a comparison between files on the machine and in **DNC**. This function is only available on machines with **SINUMERIK*** and **PCU50/70** as well as **DNC IFC SINUMERIK**.

Note

The user must be assigned the necessary authorizations for these functions.
See also: User administration

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10.3 Defining the station name and type

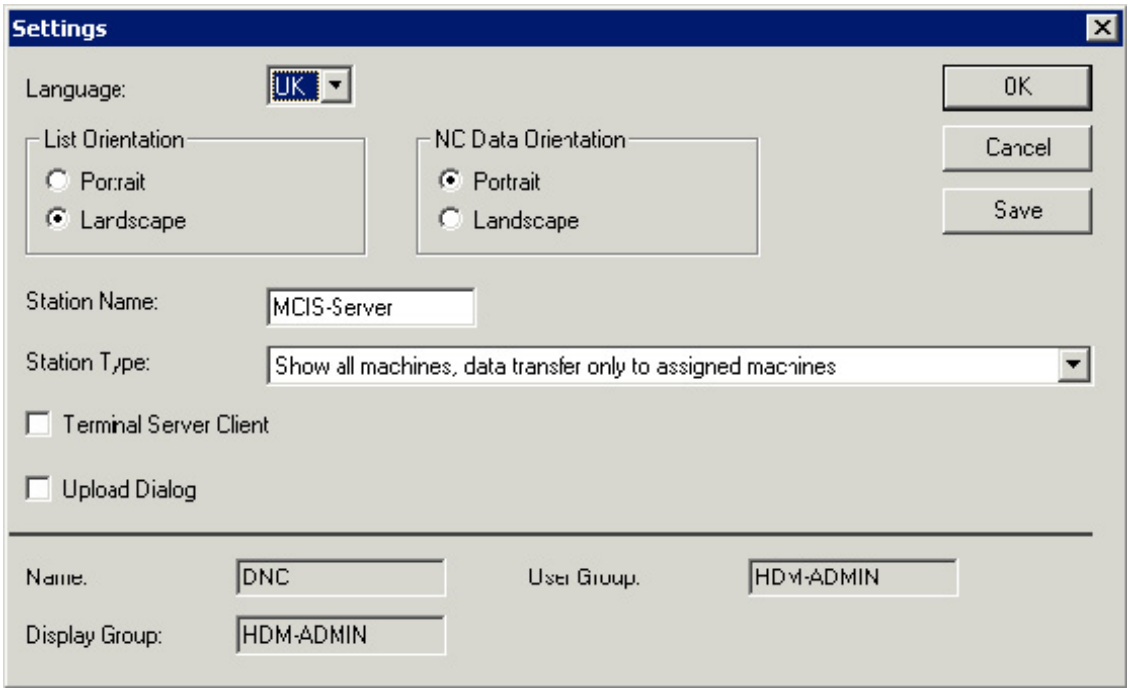

Fig. 10-1: Settings

General

The **Tools** → **Settings** function can be used to configure the station name and type once after DNC Plant has been installed. This can only be done in configuration mode. This does not need to be carried out for DNC Cell. The two fields are deactivated.

Station name

If the computer to be configured is the DNC server or a station PC, specify the name of the station for your computer here. If the computer to be configured is a terminal server client, the station name is assigned automatically if the **Terminal Server Client** checkbox is activated. In this case, the station name is the name of the terminal server client.

Note

If the computer to be configured is a terminal server client and the **Terminal Server Client** checkbox is not activated, overwrite the station name of the server.

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Station type

Depending on whether your computer functions as a server, terminal server client or station PC, the station type is stored for a specific user or a specific computer.

User-specific relevance:
The **Terminal Server Client** checkbox is activated. The station type is defined for the user. The user-specific parameters in the DNC database are updated.

Computer-specific relevance:
The **Terminal Server Client** checkbox is deactivated. The station type is defined for the computer. The computer-specific parameters in the DNC database are updated irrespective of the user logged on.

The following station types are available:

- **Display assigned machines, data transfer possible:**
  Only machines that are assigned to the terminal-specific station are displayed. Data transfer is possible to the machines displayed.
- **Display all machines, no data transfer:**
  All machines are displayed irrespective of whether they are assigned to the terminal-specific station. Data transfer to the machines is not permitted.
- **Display all machines, data transfer only to assigned machines:**
  All machines are displayed irrespective of whether they are assigned to the terminal-specific station. Data transfer is only permitted to machines that are assigned to the terminal-specific station.
- **Display all machines, permit data transfer to all machines:**
  All machines are displayed irrespective of whether they are assigned to the terminal-specific station. Data transfer is permitted to all machines that are assigned explicitly to the terminal-specific station or no station.

! **Important**

If machines in the system are assigned explicitly to a different station, data transfer to these machines is not possible.

- **DNC server:**
  The computer must be the DNC server. All machines are displayed. Data transfer is permitted to all machines.

Terminal Server Client

Activate this checkbox if your computer functions as a terminal server client, that is, if it is neither a station PC nor the DNC server.

Note

You can only activate the checkbox in configuration mode. The checkbox cannot be activated for DNC Cell.

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10.4 Plant structure

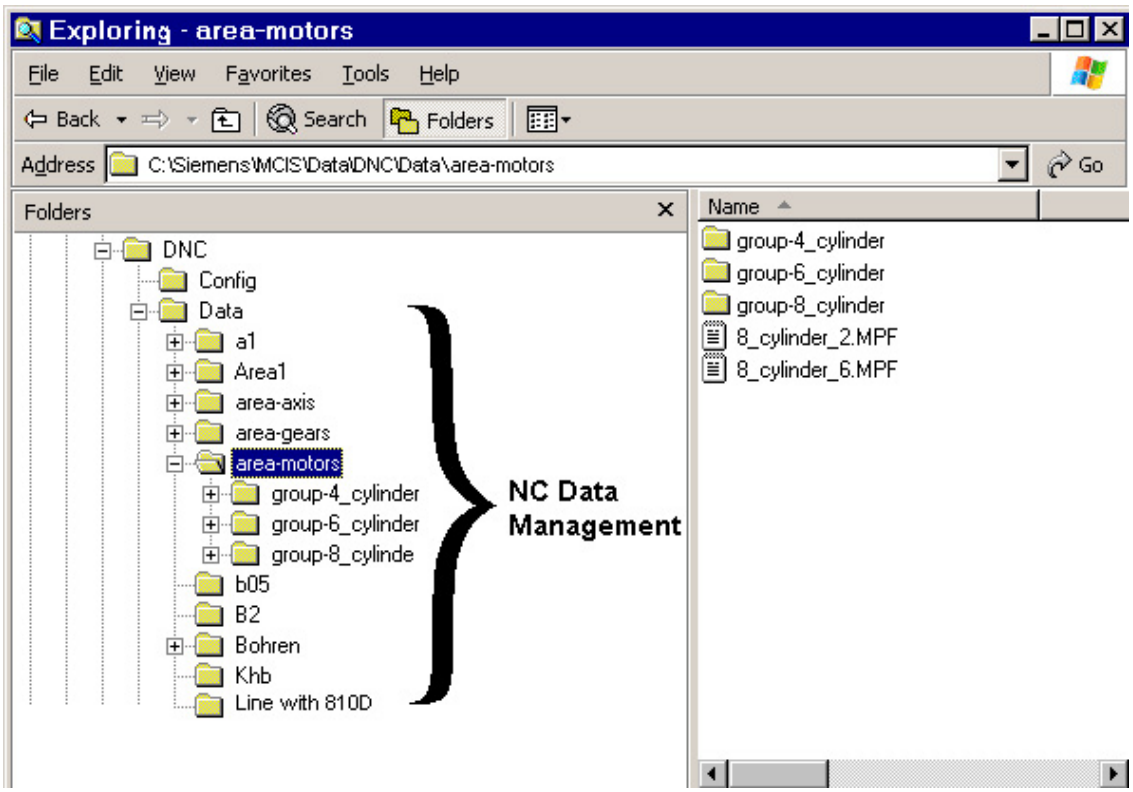

Fig. 10-2: Plant structure in the file system

The plant structure can be configured via the **DNC** user interface. Configuration mode must be selected.
The directories and subdirectories of the file system correspond to the tree structure of the user interface.

The access path is (default): <Drive> Siemens\MCIS\Data\DNC\Data.

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10.5 Machine connections

The machine connections are configured in machine configuration files. If a configuration file does not yet exist for the selected machine, the user is prompted to select one from predefined template files for machine configurations. Once a template has been selected, the configuration file is assigned the name: *MachineName*.*MCF*.

See also: Templates for configuration files

You can choose one of the following connection types:
- Serial without protocol
- SINUMERIK* connected via Ethernet
- Via Windows file system

The entries in the machine configuration file differ accordingly.
The configuration file is divided into different sections, which are evaluated by the relevant servers. The entry *MachineType* in the [GLOBAL] section contains the connection type. In addition to the sections already available, you can add new ones for connecting different servers. Comment lines are preceded with ;.
To edit the configuration file, choose **EDIT** in the editor.
In the case of the serial machine connection without protocol, the machine configuration file can also be edited via the configuration dialog. To call this up, choose **Config Dialog**. Each section is displayed on a separate tab page.

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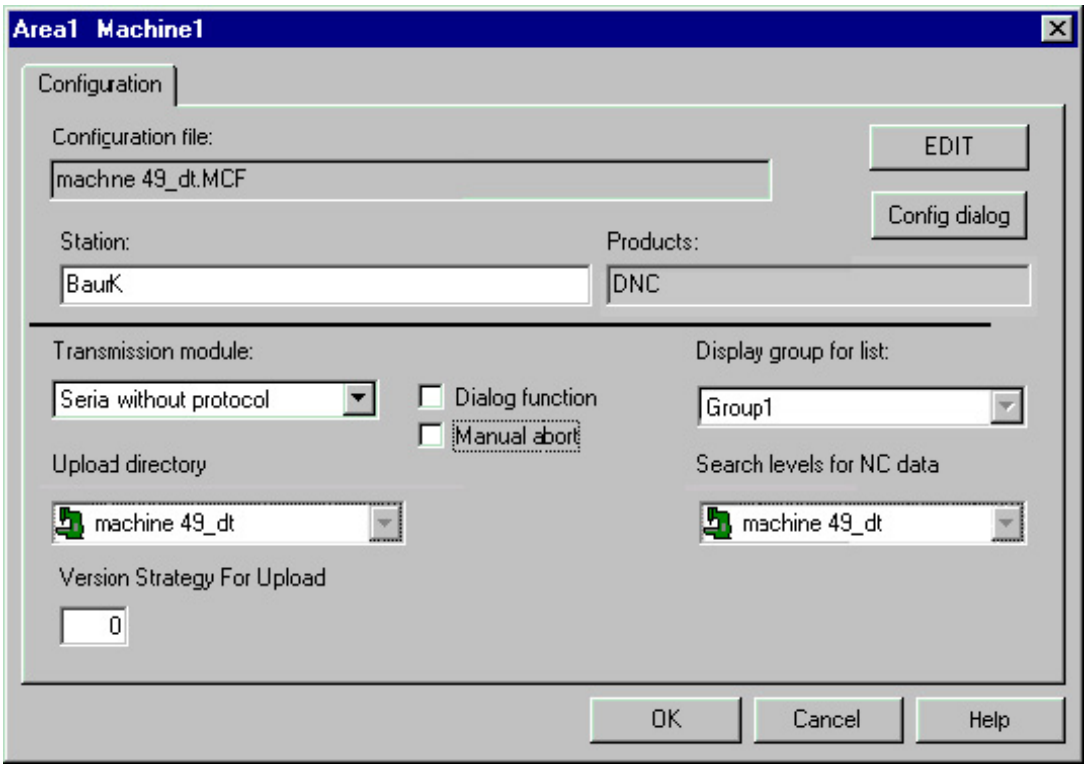

Fig. 10-3: DNC Plant: Machine properties transmission mode: Serial without protocol

Station

In DNC Plant, enter the name of the station to which the machine is to be assigned. This entry is not necessary in DNC Cell because there is only one station.

Note

When you confirm the Properties dialog, a plausibility check is carried out to determine whether the station name has already been assigned to a tool setting device. In this case, the dialog remains open until a correct station name has been entered.

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Machine-specific version strategy for the upload

If a global version strategy is not sufficient, you can also define a machine-specific strategy. You can use the **Version Strategy For Upload** field for this in the bottom left of the dialog box. If 0 is configured there, the global version strategy applies. Other permissible values include 1-6 in accordance with the global version strategy (see Section 10.5.2).

Note

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

Terminate manually

The **Terminate Manually** checkbox allows you to control how the system responds if a current NC data upload job is terminated.

- When you activate the checkbox, a dialog appears when the receive operation is terminated. In this dialog, you can specify whether the data that has already been received is to be accepted or rejected.
- If you do not activate the checkbox, the receive operation is terminated without a dialog appearing. No data is accepted.

See also: Uploading NC data

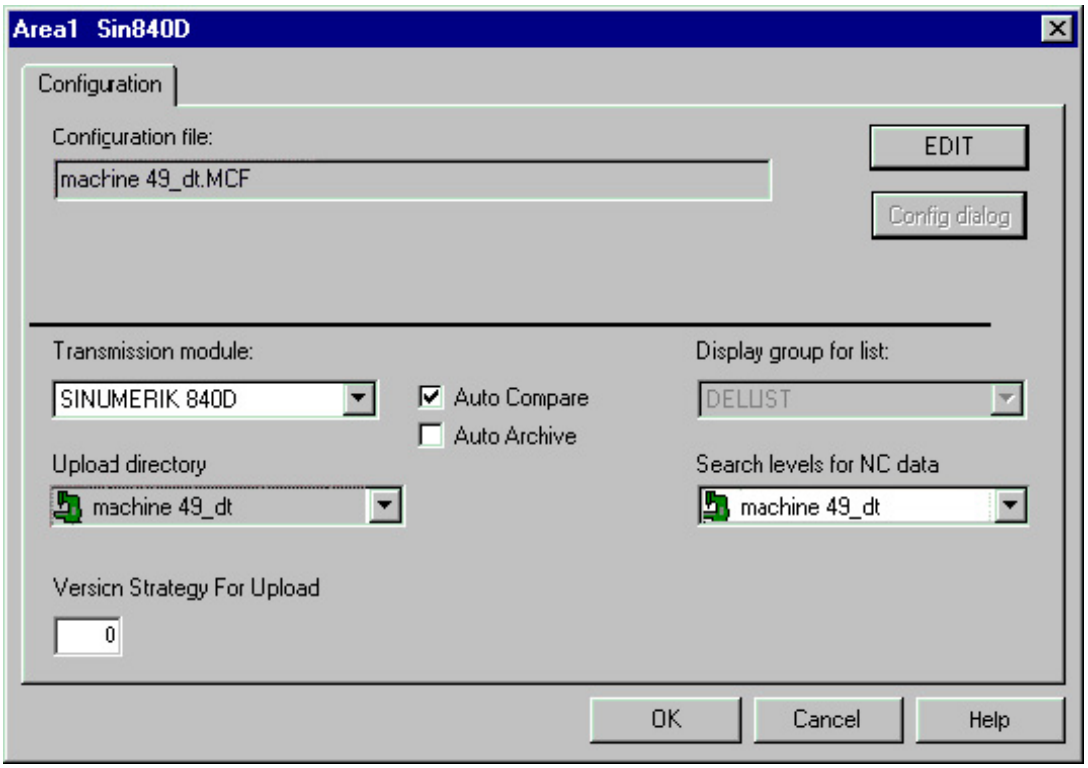

Fig. 10-4: DNC Cell: Machine properties transmission mode: SINUMERIK*

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10.5.1 Machine configuration files

Standard configuration files

DNC includes the following standard machine configuration files:

- Dncmastd.MCF for machine connections with a serial interface without protocol
- SIN840DStd.MCF for SINUMERIK* machine connections
  When you select the Auto Compare and Auto Archive checkboxes, NC data on SINUMERIK* machines is compared with the NC data in the **DNC** system and is downloaded automatically to the **DNC** system if any differences are established.
- The **file system** machine type can be used to transfer NC data from and to any network drives that have been released. Any network-capable controller can be connected to the **DNC** system under Windows. Two configurable directories are available for downloading and uploading data. When data is uploaded, the version strategy is used. The administrative data is updated when data is downloaded/uploaded.
- Any of the machine servers can also be used to establish connections with controllers with different interfaces (e.g. OLE/COM, or special serial protocols).

Note

The machine configuration files may not contain standard specifications for certain parameters with string assignments. When functions are used that contain parameters with string assignments, the standard machine configuration file should be adapted in such a way that all the relevant entries exist. This means that the adjustments do not need to be made for each individual machine.

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Templates for configuration files

In addition to the standard machine configuration files, separate templates for machine configuration files can be created. The following general conditions must be fulfilled:

- The file extension must be **.MCF**.
- The files must contain a [GLOBAL] section with a machine type key that corresponds to the selected controller type.

Table 10-2: Controller types for machine configuration file templates

Template file	Machine type	Remark
Dncmastd.MCF ...	Serial	For serial transmission without protocol
SIN840DStd.MCF	SINUMERIK840D	For SINUMERIK*
DNCFSStd.MCF	File system	For transmission to network drives

! Important

The templates must be stored in the ...config/template directory.

The standard system includes the following three template files:

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

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If several template files of the selected machine type are in the ...config/template directory, clicking the **Edit** or **Config Dialog** button opens a dialog for the template selection, which contains all the template files available in the ...config/template directory. Different template files are already available for controller types from other manufacturers.

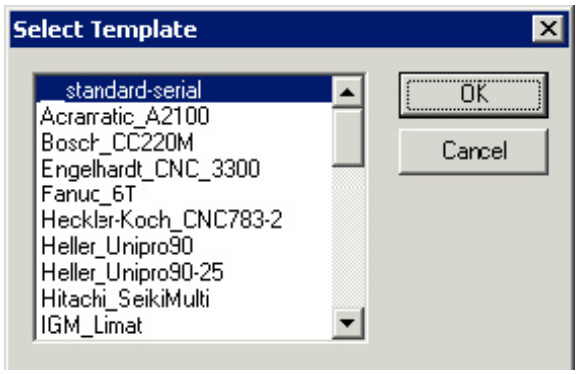

Fig. 10-5: Template selection for serial transmission without protocol

Note

The dialog for selecting the template is only displayed if the template directory contains more than one template file for the machine type in question.

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10.5.2 Configuration for the serial connection without protocol

Configuration dialog for the serial connection without protocol

The machine configuration file is configured in the configuration dialog.

General tab / [GLOBAL] section

The General tab page describes the [GLOBAL] section of the machine configuration file. The machine server to be used is configured here. You have to enter the program ID (ProgID) of the machine server to be used. It comprises the following elements: *ComponentName.ClassName*.

Note

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

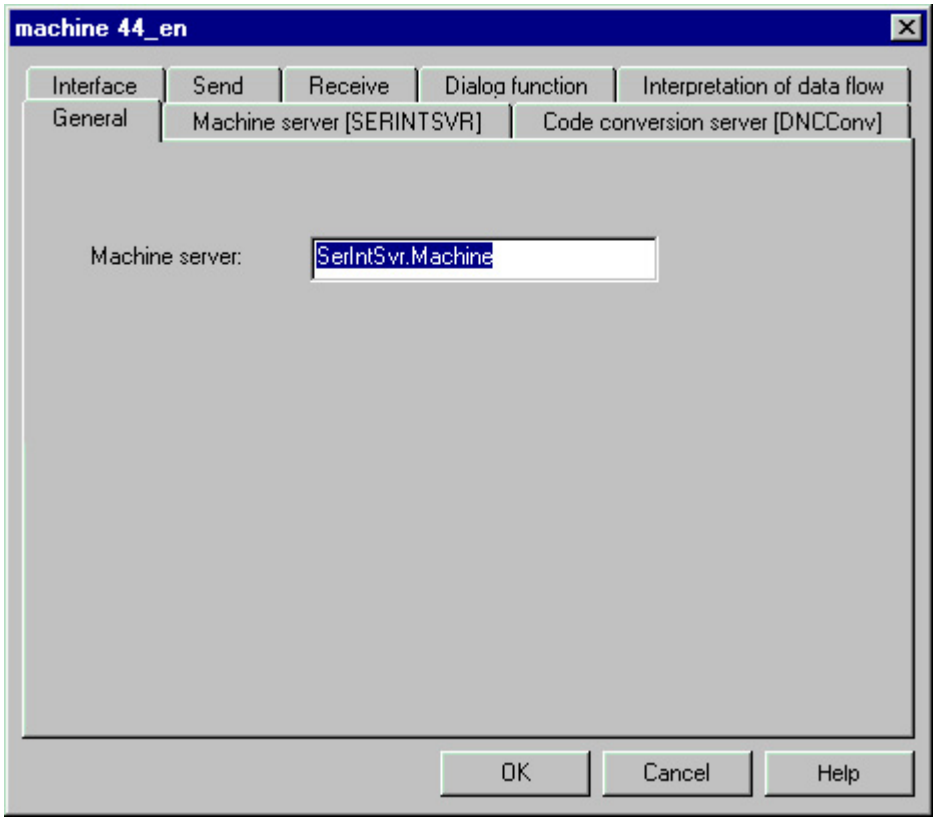

Fig. 10-6: Config dialog / tab: General

Extract from machine configuration file:

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


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Machine Server tab page / [SERINTSVR] section

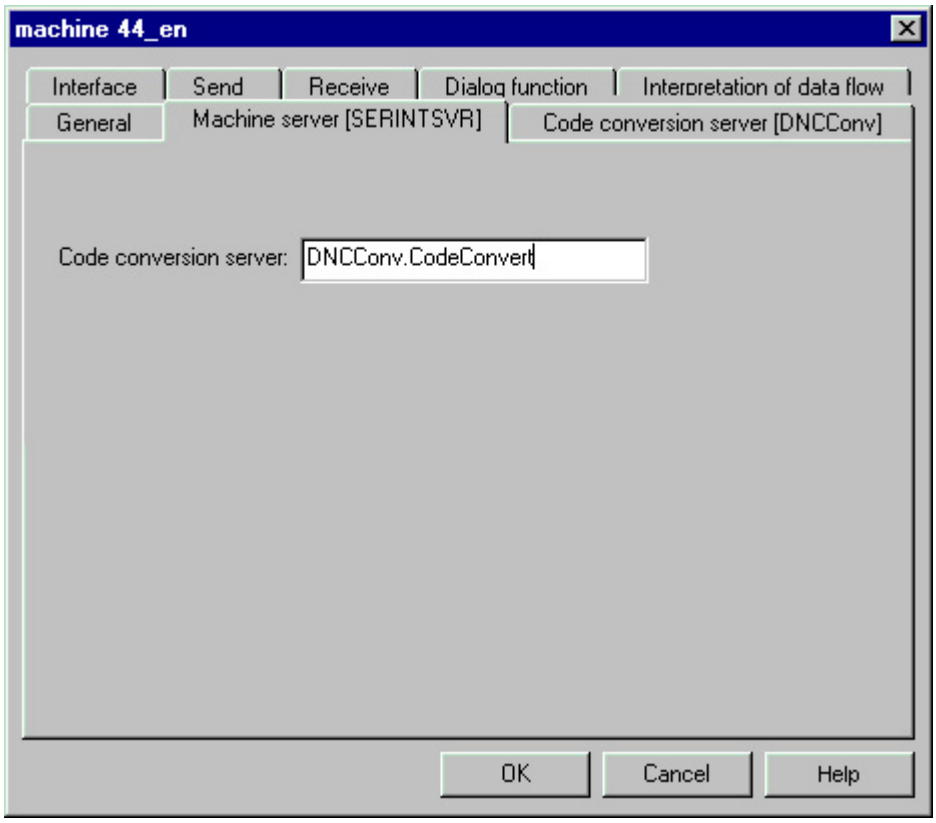

Fig. 10-7: Config dialog / tab: Machine Server

The Machine Server tab is the [SERINTSVR] section of the machine configuration file. Here, you configure the code conversion server to be used. You have to enter the program ID (ProgID) of the code conversion server to be used. It comprises the following elements: *ComponentName*.*ClassName*.

Note

The code conversion server is called: DNCConv.CodeConvert (default)
If the code conversion server is to be called by a different machine server, you are advised to assign a new section.

Warning

Do not enter a code conversion server if code conversions are not to be carried out.

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Extract from machine configuration file:

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

Note

This extract from the machine configuration file contains a commented-out code conversion server because no code conversion is to be carried out.

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Code Conversion Server tab page / [DNCConv] section

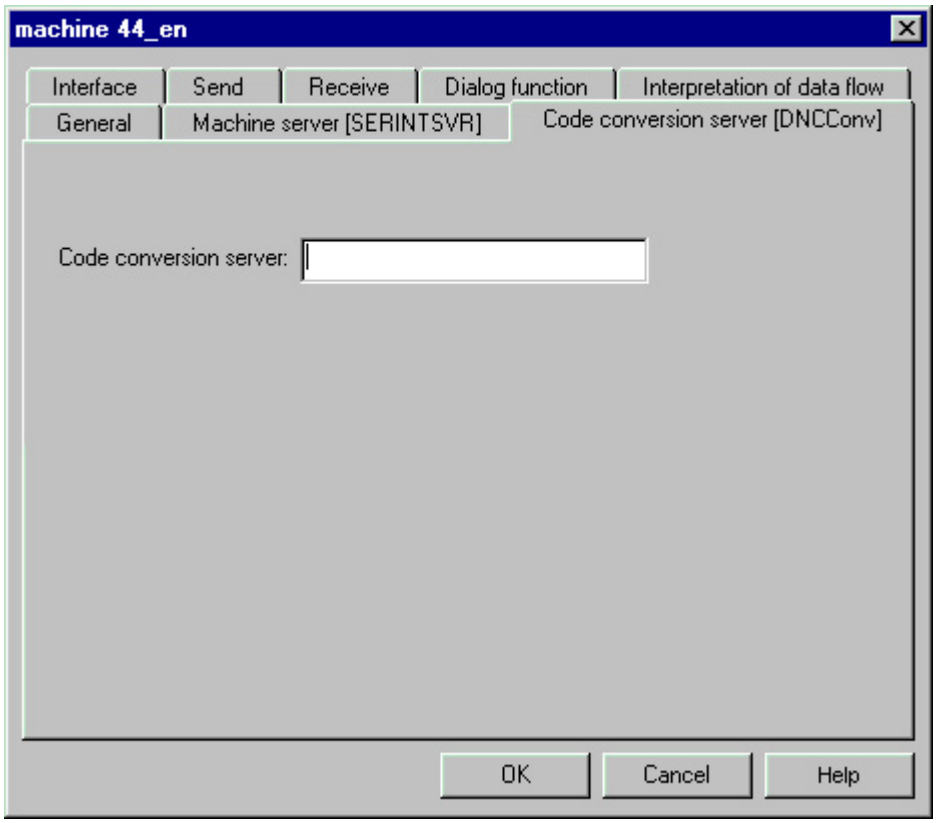

Fig. 10-8: Config dialog / tab: Code Conversion Server

The Code Conversion Server tab page is the [DNCConv] section of the machine configuration file. You specify the code conversion type here. Conversions from ASCII to CNC code are carried out when data is downloaded and from CNC code to ASCII when data is uploaded.
You can select the following code conversion types from a combination field:

- ASCII
- ISO
- EIA

Note

Do not enter a code conversion server in the [SERINTSVR] section or on the Code Conversion Server tab page if code conversions are not to be carried out.

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

Extract from machine configuration file:

```
DNCConv]
CNCcode=ISO
```

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Interface tab page / [COM] section

The Interface tab page is the [COM] section of the machine configuration file. You set the serial interface parameters here.

Note

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

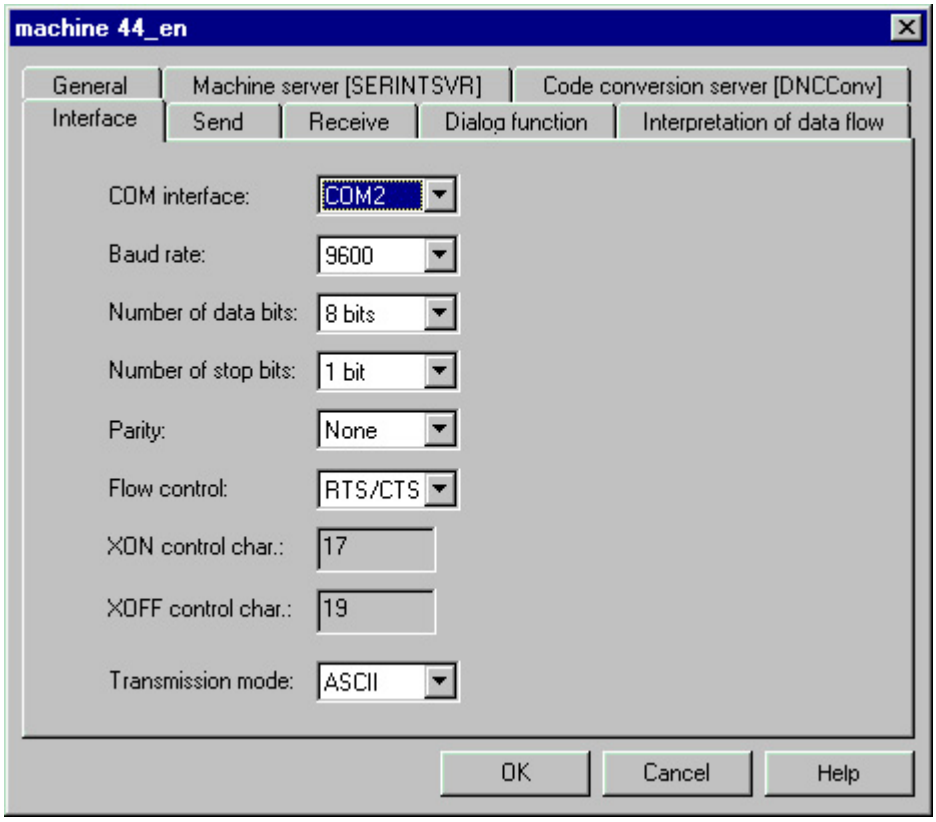

Fig. 10-9: Config dialog / tab: Interface

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- COM interface
  The COM interface is used for connecting the machine. Interfaces 1 to 256 can be assigned.

  1= COM1
  ....
  16= COM256

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

Note

ComPort=0 is not a valid interface.

- Baud rate
  The baud rate specifies the transmission rate of the interface.
  Baud rates of 110 to 256000 are possible.

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

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

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

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

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

- Parity
  The following parities can be defined:

Table 10-3: 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 machine configuration file:
```
Parity = N
```

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- Flow control
  Flow control specifies the handshake setting. The following parameters can be defined:

Table 10-4: 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 machine configuration file:

```
FlowCtrl = RTSCTS
```

- XON/XOFF control characters
  If controllers are configured with a different code type, deviations may occur with the XON/XOFF control characters. If flow control is controlled with XON/XOFF, the control characters for XON/XOFF must be defined in accordance with the controller.

  Extract from machine configuration file:

```
;XONChar=17
;XOFFChar=19
```

Note

If the XON / XOFF control characters in the machine configuration file are commented out, the internal presettings apply (XON=0x11, XOFF=0x13).

- Transmission mode
  The transmission mode specifies the type of transmission. The following transmission modes are available:

Table 10-5: Transmission modes of the serial interface

0	ASCII
1	Binary

Note

In "binary" transmission mode, the transmission file is transmitted 1:1 and is not formatted beforehand.

Extract from machine configuration file:

```
Binary = 0
```

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Send tab page / [SEND] section

The Send tab page is the [SEND] section of the machine configuration file. The transmission parameters for the machine server are set here.

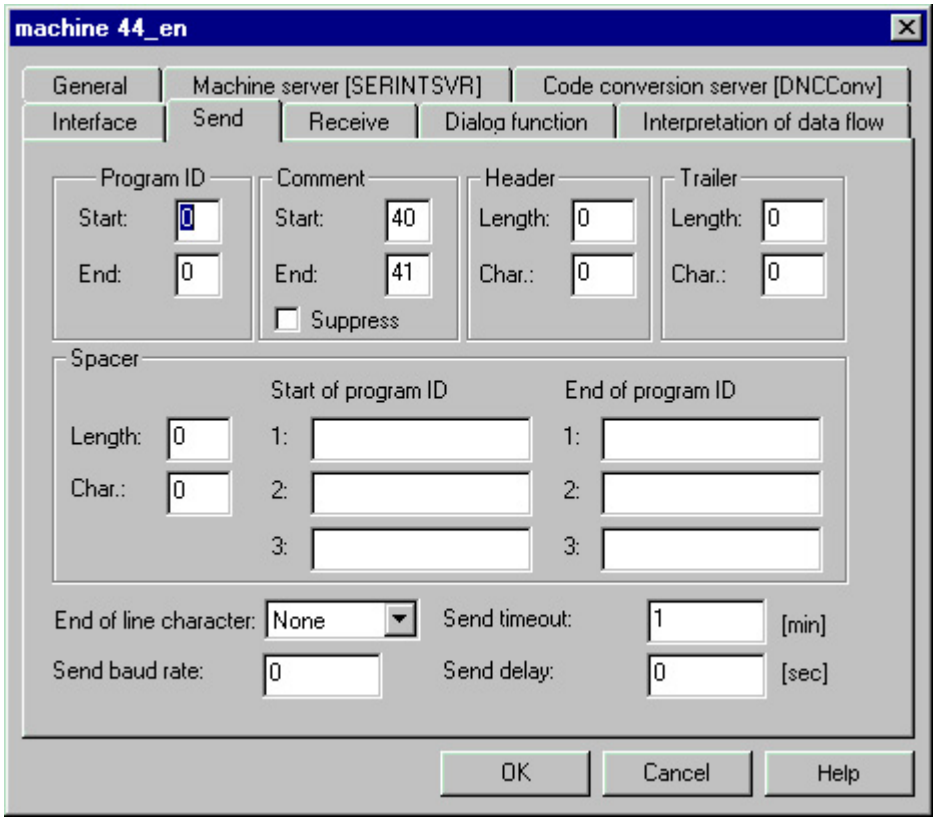

Fig. 10-10: Config dialog / tab: Send

Note

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

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- Start-of-program identifier
  The start-of-program identifier specifies the marker for the start of the program as an ASCII character in decimal code (0 ...255), which is inserted before each NC data file (example: 065 for A).

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

- End-of-program identifier
  The end-of-program identifier specifies the marker for the end of the program as an ASCII character in decimal code (0 ...255), which is inserted after each NC data file (example: 069 for E).

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

- Comment start
  The comment start identifier specifies the marker for the start of the comment as an ASCII character in decimal code (0 ...255), which is inserted before each comment (example: 075 for K).

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

- Comment end
  The comment end identifier specifies the marker for the end of the comment as an ASCII character in decimal code (0 ...255), which is inserted after each comment (example: 101 for e).

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

- Suppress comment
  This checkbox enables a comment to be suppressed so that it is not transmitted.

Table 10-6: Comment during transmission

0	Comment is transmitted
1	Comment is suppressed

Extract from machine configuration file:
```
SuppressComment=1
```

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

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

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

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

Note

In this case, the header is HHHHHHHH

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

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

- Trailer character
  The trailer character is inserted as an ASCII character in decimal code (0 ...255) with the factor trailer size (example: 078 for N)

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

Note

In this case, the trailer is NNNNNN

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- Spacer
  If a file contains several NC programs that are to be sent to a machine together, certain controllers require a spacer to be transmitted between the individual NC programs.
  The spacer consists of a configurable number (SpacerSize) of identical characters (SpacerChar).

Note

If code conversion is activated, the spacer is converted too. (This is not the case with the header and trailer, which must be configured directly in line with the code type.)

Up to six strings can be configured for the search to determine where the spacer is to be inserted. Three strings are used for searching for a start-of-program identifier (**SpacerMark1..3**), and three for an end-of-program identifier (**SpacerMarkInsertAfter1..3**).

Note

A search should be carried out for start-of-program identifiers only or end-of-program identifiers only, otherwise two spacers may be inserted between the NC programs.

When the system searches for start-of-program identifiers, the spacer is inserted before the line containing the start-of-program identifier.
When the system searches for end-of-program identifiers, the spacer is inserted after the line containing the end-of-program identifier.

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

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

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- Spacer character
  The spacer character is inserted as an ASCII character in decimal code (0 ...255) with the factor spacer size (example: 090 for Z).

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

Note

In this case, the spacer is ZZZZZZZZZZZZZZZ

Up to six strings can be configured for the search to determine where the spacer is to be inserted. Three strings are used for searching for a spacer start-of-program identifier (**SpacerMark1..3**), and three for a spacer end-of-program identifier (**SpacerMarkInsertAfter1..3**).

Note

A search should be carried out for spacer start-of-program identifiers only or spacer end-of-program identifiers only, otherwise two spacers may be inserted between the NC programs.

- Spacer start-of-program identifier
  The spacer is inserted before the line containing the start-of-program identifier. The start-of-program identifiers may have maximum 16 characters.

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

- Spacer end-of-program identifier
  The spacer is inserted after the line containing the end-of-program identifier. The end-of-program identifiers may have maximum 16 characters.

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

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- End-of-line character
  The end-of-line character is the character that indicates the end of a line. If the end-of-line character is converted, the SerIntSvr proceeds as follows:

  - All end-of-line characters are converted to CR-LF for downloads.
  - All CR-LF and LF are converted according to the following table for uploads.

Table 10-7: End-of-line character conversion during download

End-of-line character	Description
0	No conversion
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	RD

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

- Send baud rate
  The send baud rate specifies the baud rate (differs from that for the interface definition ([COM] section)) with which data is transmitted. If 0 is specified for the baud rate, the baud rate of the interface description ([COM] section) is used.

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

- Send timeout
  The send timeout specifies the interval in minutes after which the send job is aborted if the machine is not ready to receive. The value 0 means that the system will wait indefinitely.

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

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

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

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Receive tab page / [RECEIVE] section

The Receive tab page describes the [RECEIVE] section of the machine configuration file. The upload parameters for the machine server are set here.

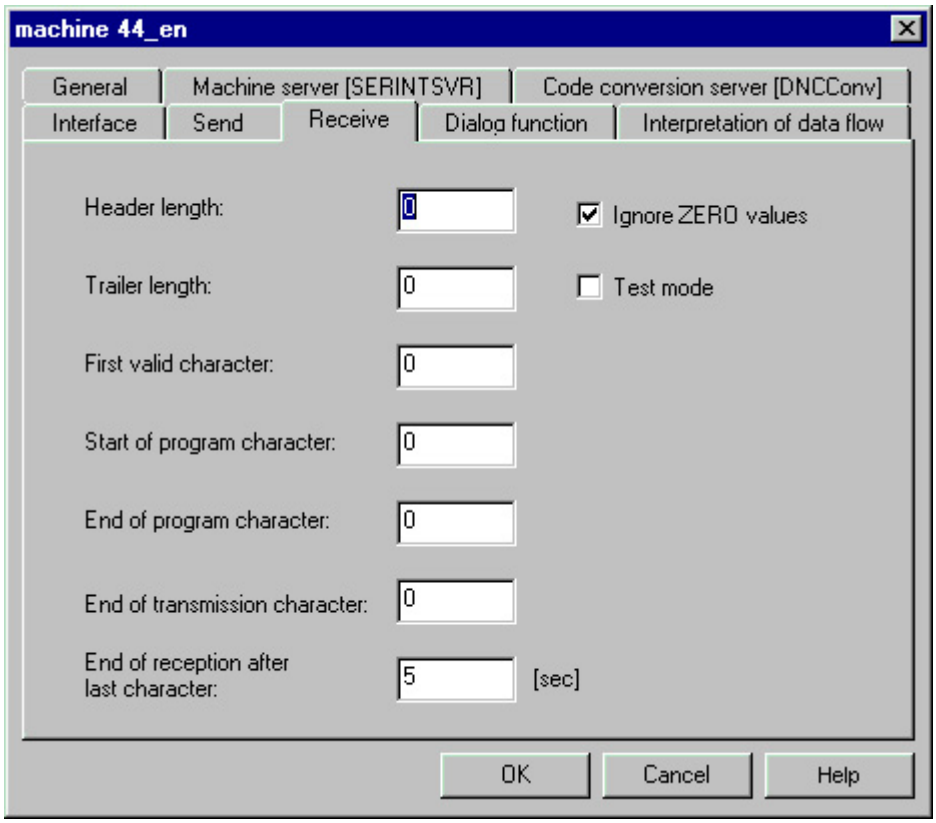

Fig. 10-11: Config dialog / Receive tab page

Note

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

- Header size
  The header size is specified in bytes. It indicates the number of header characters to be deleted after the data has been received.

  Extract from machine configuration file:
  `HeaderSize=8`

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- Trailer size
  The trailer size is specified in bytes. It indicates the number of trailer characters to be deleted after the data has been received.

  Extract from 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 ...255) (example: 086 for V). The search is performed in the header. All characters that appear in front of the first valid character are truncated.

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

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

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

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

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

- End-of-transmission character
  End-of-transmission character specified as an ASCII character in decimal code (0 ...255) (example: 4 for EOT). Reception is terminated when this character has been received. The end-of-transmission character itself is cut off.
  When **EOFChar=0**, the system does not monitor for an end-of-transmission character; reception is terminated by means of a timeout.

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

Note

If the machine does not transmit an EOFChar, the upload procedure is terminated in accordance with the configured receive end after the final character (timeout).

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- End receive after last character
  This is the time interval in seconds after which transmission is terminated if no further characters are received. Values between 1 and 600 can be entered. Monitoring is not carried out if 0 is entered. Data receipt is terminated by means of the end-of-transmission character only.

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

- Ignore ZERO values
  This parameter specifies whether binary zero values within the file to be transmitted are to be discarded.

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

- Test mode
  When the test mode is activated (TestMode=1), the temporary files in the parameterizable temporary directory (default: ...DNC\Tmp) are not deleted. This enables data that has been sent and received to be compared.

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

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Dialog Function tab page / [DIALOGFUNCTION] section

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

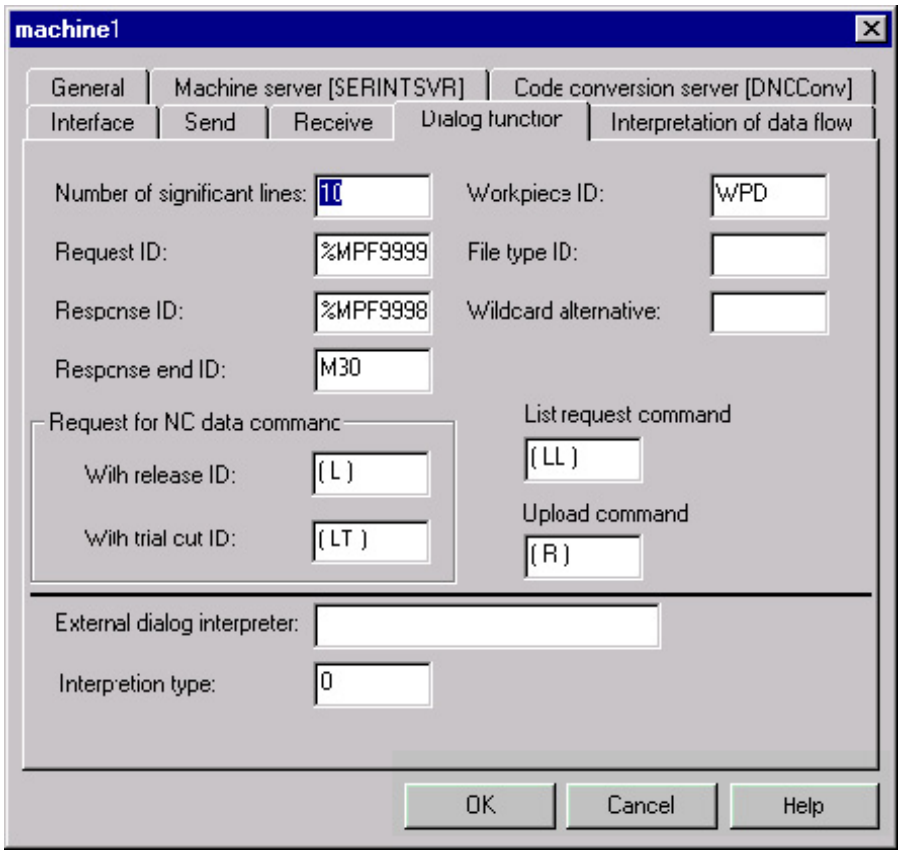

Fig. 10-12: Config dialog / Dialog Function tab page

Note

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

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

Examples are available in the sections **Dialog programs** and **Dialog program responses**.

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- Number of significant lines
  This parameter specifies the number of lines as of line 1 within the NC data file in which a search is made for the request ID **DlgID**.

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

- ID for request
  This parameter defines the ID of a request made by the CNC machining unit by means of the dialog function.

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

- ID for response
  This parameter defines the ID of a response to a request made by the CNC machining unit by means of the dialog function.
  The response can have the following content:
  List (response to list request)
  Error message (response to a program request that cannot be fulfilled)

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

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

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

- Command for NC data request with release ID
  DlgSendCmd is the command for requesting NC data with a release ID via 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)
  ```

- Command for NC data request with trial cut ID
  DlgSendTcCmd is the command for requesting NC data with a trial cut ID via 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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- Command for list request
  DlgSendListCmd is the command for requesting a list of NC data files via 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)
  ```

- Command for upload
  DlgReceiveCmd is 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 successively:
  Request program
  Program to be transferred back

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

- External dialog interpreter
  This parameter contains the name of an optional dialog interpreter. You can use the external dialog interpreter to carry out project-specific name conversions. You have to enter the program ID (ProgID) of the dialog interpreter to be used. It comprises the following elements: *ComponentName.ClassName*.

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

- Type of interpretation
  You can use this parameter to assign an additional ID for the code conversion type to the external dialog interpreter.

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

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- Workpiece ID
  The **DlgWpdMark** parameter specifies the workpiece ID in the dialog program. Combined axis/numeric IDs (e.g. DlgWpdMark=W Z888) can also be used for controllers that cannot edit all characters.

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

- File type ID
  The File Type ID parameter specifies the file type ID in the dialog program. Combined axis/numeric IDs (e.g. Y002) can also be used for controllers that cannot edit all characters. The character is declared in the **DlgExchangeCNCType** parameter. The numeric part of the ID refers to the sequence of file types in the DNCDATATYPE database table, starting with 001; increment = 1.

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

- Wildcard alternative
  The Wildcard Alternative parameter specifies the wildcard alternative for controllers, which cannot edit *, in the dialog program. The parameter for list requests (e.g. to request lists of all the data types or file names) is important here.

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

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Data Stream Interpretation tab page / [RECEIVE] section

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

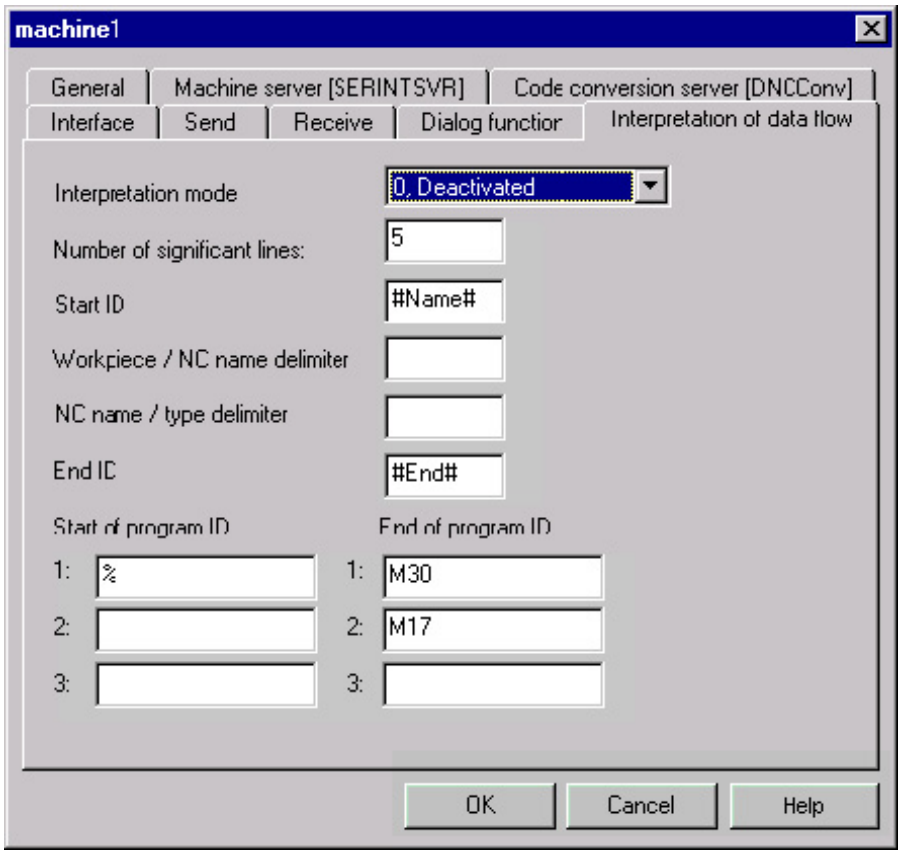

Fig. 10-13: Config dialog / Data Stream Interpretation tab page

Note

If the number of significant lines (NCNameLines) > 0, with no separator strings defined for the workpiece ID or type ID, this is identified as an error in the machine configuration (red dot on the machine icon).
If the dialog function and data stream interpretation are active, the data stream interpretation has priority over the dialog function, even if a request program has been received immediately beforehand.
If the data received does not constitute a request program and does not contain the IDs (start identifier, workpiece identifier, etc.) for interpreting the data stream, the data is discarded.
If the data received contains a type that is not known to **DNC**, the data will be rejected with an error message. In this case, nothing is saved.

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Interpretation mode

Interpretation mode (**NCSplit** parameter) specifies how the received data can be split. Three values can be set for this parameter.

Table 10-8: Data stream interpretation: Interpretation mode: NCSplit parameter

Interpretation mode	Description
NCSplit = 0	**Disabled**
NCSplit = 1	**SINUMERIK*:** This activates the name assignment in accordance with the SINUMERIK convention. The parameters for determining the file name are of no significance. The start-of-program and end-of-program identifiers must be parameterized.
NCSplit = 2	**Other controller:** The parameters for determining the file name as well as the start-of-program and end-of-program identifiers must be parameterized.

If third-party controllers (**other controllers**) are connected, the syntax of the lines to be interpreted is not clearly specified.
In this case, configuration parameters are used to specify how separators in the data as well as the NC program file name and type are defined.

Parameter for determining the file name

Table 10-9: Data stream interpretation: Configuration parameters for NC data files for other controllers (NCSplit=2)

Parameter	Type	Description
Number of Significant Lines (NCNameLines)	Integer	Number of lines as of the start of the program in which a search is made for the name string 0 = function deactivated (default)
Start Identifier (NCNameBegin)	String	String for identifying the start of the name
Separator Workpiece / NC Name (NCNameWPD)	String	Separator string between the workpiece and NC program name
Separator NC Name / Type (NCNameWPD)	String	Separator string between the NC program name and type
End identifier (NCNameEnd)	String	String for identifying the end of the NC program name

Note

Each individual NC program should always have a name with identifiers (start identifier, workpiece ID, etc.) so that the data stream can be interpreted. This helps prevent any confusion.
If this is not possible, the name of the NC program saved beforehand is used, and a consecutive number is appended (_*i* (i=1,2,3....) in order to make a distinction between the programs. The file name (of the entire data stream) specified by the operator is used for the first NC program.

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Program start identification / program end identification (NCProgramStart.../NCProgramEnd...)

Three strings can be defined in each case for the start and end, whereby any combination of start and end strings is valid.
When the data is split, a distinction must be drawn between the following cases:

1. **Only start identifiers defined**
   The data before the first start identifier is ignored. The data as of the start identifier up to the next identifier is stored in the first file. Starting at the second identification in the second file, etc., until the file end.
   If no start identification is found, all the data will be discarded and a message issued to the operator.
2. **Only end identifiers are defined**
   From the start of the data up to and including the first end identifier, all the data is stored in the first file. As of the next line, the data is stored in the next file, up to the next end identifier and so on. The last block is also stored even if no further end identifier is found. Likewise, all of the data is stored if the file does not contain any end identifiers.
3. **Start and end identifiers are defined**
   The data between an identified start and end string (including the lines in which the identifier string was identified) is stored in each case in a separate file. Data that occurs between these areas is ignored.

A search is always alternately made for a string type:
Initially, a search is only made for the start identifier string. If the start of the program is found, only a search is then made for the end, that is, other start strings are ignored. If the end identifier is found, a search then starts again for the start string.
The data will be discarded if no start identifier is found. If the last end identifier is missing, the data up until the end is stored.

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Data interpretation for SINUMERIK*

Data that is received serially from a SINUMERIK*/802D/840C always contains information on the storage location and the file names in the data management system on the controller. When this data is received, the NC program name and file type are determined in **DNC** from the information for interpreting the data flow. The syntax is specified by the SINUMERIK*. If these files originate from a workpiece directory on the controller, this information is evaluated too and an appropriate workpiece is created or the NC program files are stored in a workpiece directory, which may already exist, with the same name.

Note

All of the control lines are always interpreted. If necessary, the data is divided up among several files.

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 identifier:	#Name#
Workpiece / NC name separator	#SWPN#
NC name / type separator	#SNT#
End identifier	#End#

Table 10-10: Example: Data stream interpretation

File contents	Description
#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 definition for SINUMERIK*/802D/840C

Number of significant lines	3
Start-of-program identifier:	%
End-of-program identifier:	M30
End-of-program identifier2:	M17

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Standard machine configuration file for serial connection without protocol

Table 10-11: Example of a standard machine configuration file for serial connection without protocol

```
; 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=
SpacerMark3=
```

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```
   ;---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
   ;
NCProgrammEnd3=
```

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

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```
;   #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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10.5.3 Configuration dialog for the SINUMERIK* connection type

Configuration dialog for the SINUMERIK* connection type

The machine configuration file is configured in the configuration dialog.

General tab page (SINUMERIK* machine configuration) [GLOBAL]

The General tab page is the [GLOBAL] section of the machine configuration file for SINUMERIK* machine connections.

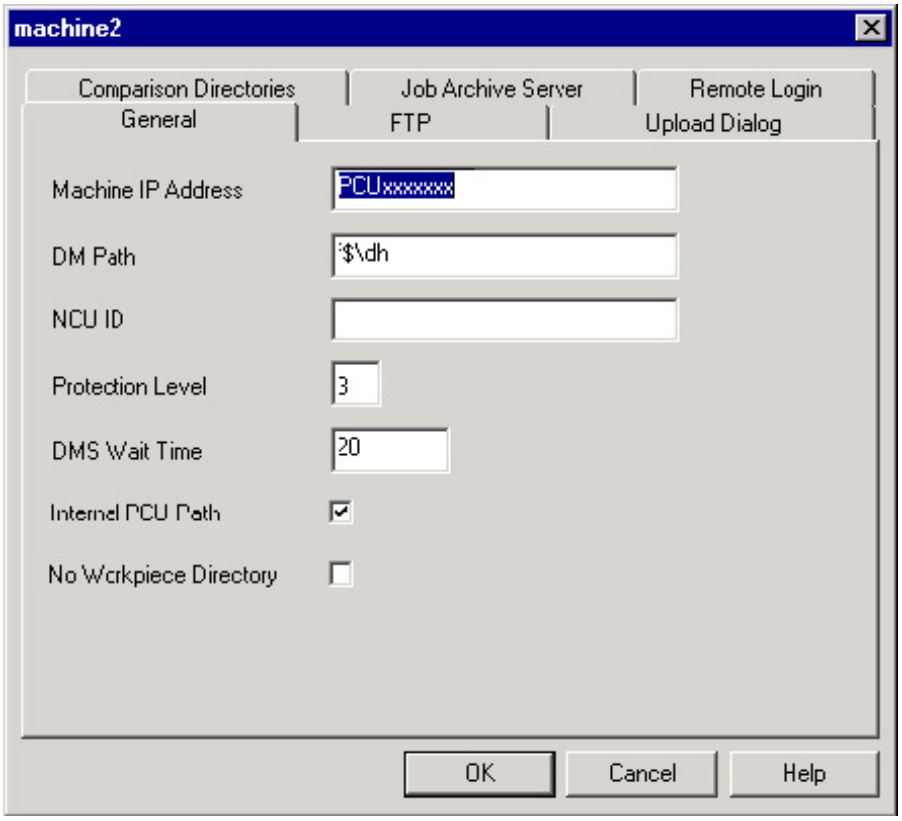

Fig. 10-14: Config dialog SINUMERIK* / General tab page

- **Machine IP address**
  Here, you enter the IP address or the name of the machine (controller).

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

- **DMS path**
  This input field contains the path to the data management system on the controller. To be able to access the data management system on the controller from the **DNC** computer, a share must be set up on the controller.

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

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- **NCU ID**
  Designation (ID) of the controller for M:N functionality.

  Extract from machine configuration file:
  ```
  NCU_Id=1
  ```

- **Protection level**
  To access the SINUMERIK* machines operated with a high protection level (0-3) from **DNC**, you have to set the appropriate protection level for downloads and uploads in **DNC**. For this purpose, you have to enter the protection level in the MCF file. If this is configured, prior to the download/upload, the protection level on the machine is fetched, possibly the appropriate password set, and after the download/upload reset again.

  Changing the protection level by **DNC** also acts on the SINUMERIK user interface, i.e. the machine operator has all operating capabilities possible with this protection level!

  Protection level 0: System password
  Protection level 1: Manufacturer password
  Protection level 2: Service password
  Protection level 3: User password

  Extract from machine configuration file:
  ```
  NC_ACCESLEVEL=3=
  ```

- **DHS wait time**
  Time interval during which calls made to the data management server are monitored (The default value should be used.)

  Extract from the machine configuration file:
  ```
  DCOMDhsWait=20
  ```

- **Internal PCU path**
  This parameter controls the evaluation and generation of a header with an internal path (Siemens program header) in the NC data file.

  Checkbox not activated: No evaluation
  Checkbox activated: One or more paths evaluated

  Extract from machine configuration file:
  ```
  Section[PATHS]  DriveInternPath  =2
  ```

Warning

The check to determine whether an NC data file already exists on the controller can only be carried out correctly if this checkbox has not been selected.

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- **No workpiece directory**
  This parameter can only be selected if the **Internal PCU Path** checkbox is activated. It is only active when bundled workpiece NC programs are uploaded.

  Checkbox not activated:
  A workpiece is created in **DNC** after the upload has been completed. The bundled NC files are stored in the workpiece directory.

  Checkbox activated:
  No workpiece will be created in **DNC** after the upload. The bundled NC files are stored without a workpiece directory in the machine or group.

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

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FTP tab page (SINUMERIK* machine configuration) [FTP]

The FTP tab page is the [FTP] section of the machine configuration file for SINUMERIK* machine connections. The settings for data transmission via FTP are made here.

Note

The FTP checkbox must be activated on the General tab page too.

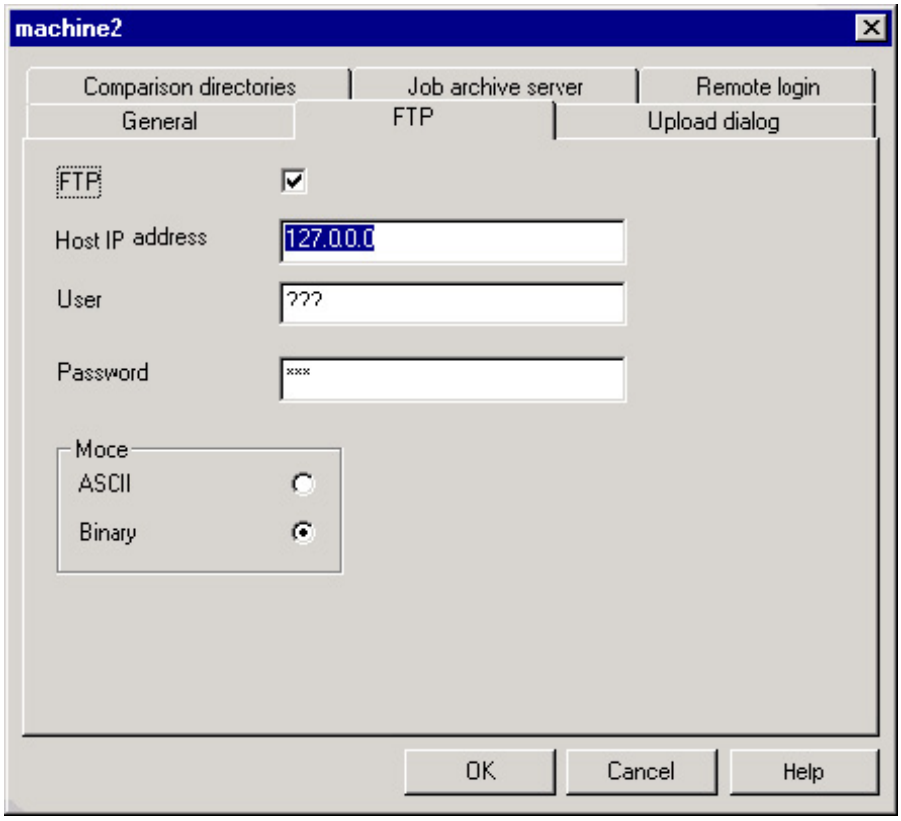

Fig. 10-15: Config dialog SINUMERIK* / FTP tab page

- **FTP**
  Data transmission takes place via FTP if the FTP checkbox is activated (UseFTP=1). The appropriate settings must also be made on the FTP tab page.

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

- **Host IP address**
  This input field contains the IP address or the name of the **DNC** computer. (The computer must be configured as the FTP server here.)

  Extract from the machine configuration file:
  ```
  HostIpAddress=127.0.0.0
  ```


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- **User and Password**
  In these fields, you enter the user name and password required for the FTP.

  Extract from the machine configuration file:
  ```
  User=
  Password=
  ```

- **Mode**
  Mode specifies the transmission type. The following transmission modes are available:
  1: ASCII
  2: Binary

  Extract from machine configuration file:
  ```
  Mode=2
  ```

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Upload Dialog tab page (SINUMERIK* machine configuration) [UPLOADDLG]

The Upload Dialog tab page is the [UPLOADDLG] section of the machine configuration file for SINUMERIK* machine connections.

Note

The SINUMERIK* directories that the user can see for the upload from SINUMERIK* are defined here.

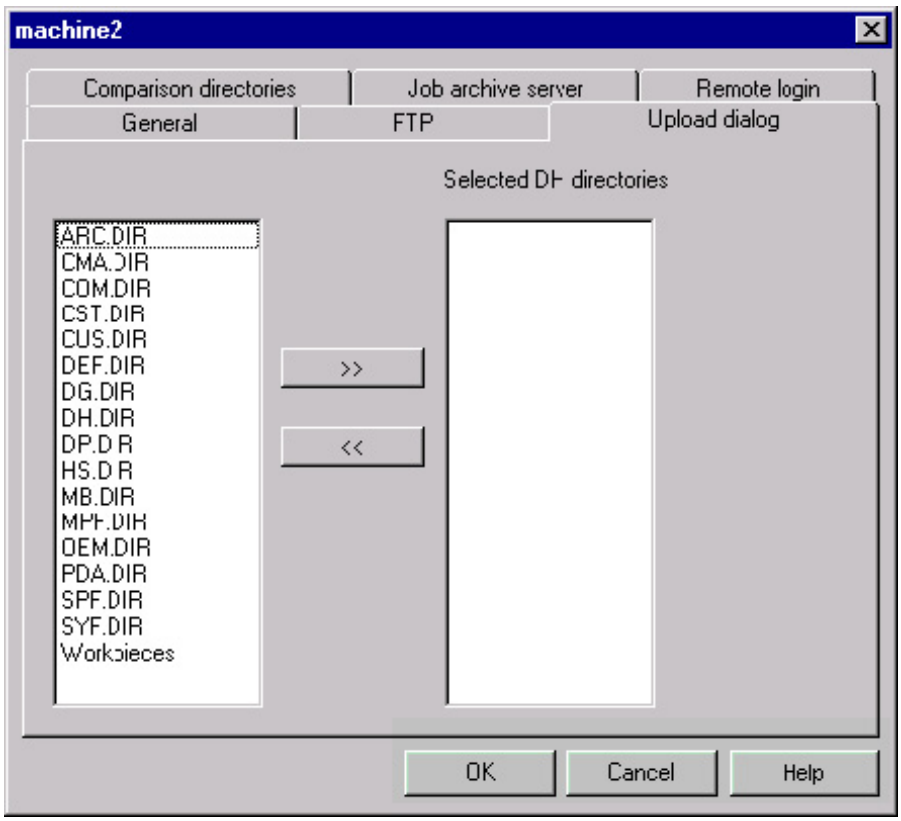

Fig. 10-16: Config dialog SINUMERIK* / Upload Dialog tab page

The list on the left contains all of the possible SINUMERIK* directories. You can use the arrow buttons to move selected directories to or delete them from the list of selected DM directories on the right.

Extract from machine configuration file:

```
DHDIR1=MPF.DIR
DHDIR2=SPF.DIR
```

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Comparison Directories tab page (SINUMERIK* machine configuration) [COMPARE]

The Comparison Directory tab page is the [COMPARE] section of the machine configuration file for SINUMERIK* machine connections.
On this tab page, you can specify the SINUMERIK* directories that are to be compared with the relevant directories in the **DNC** system.

Note

The directories specified here are used for the upload, (manual) archiving, auto archiving, and machine comparison functions.

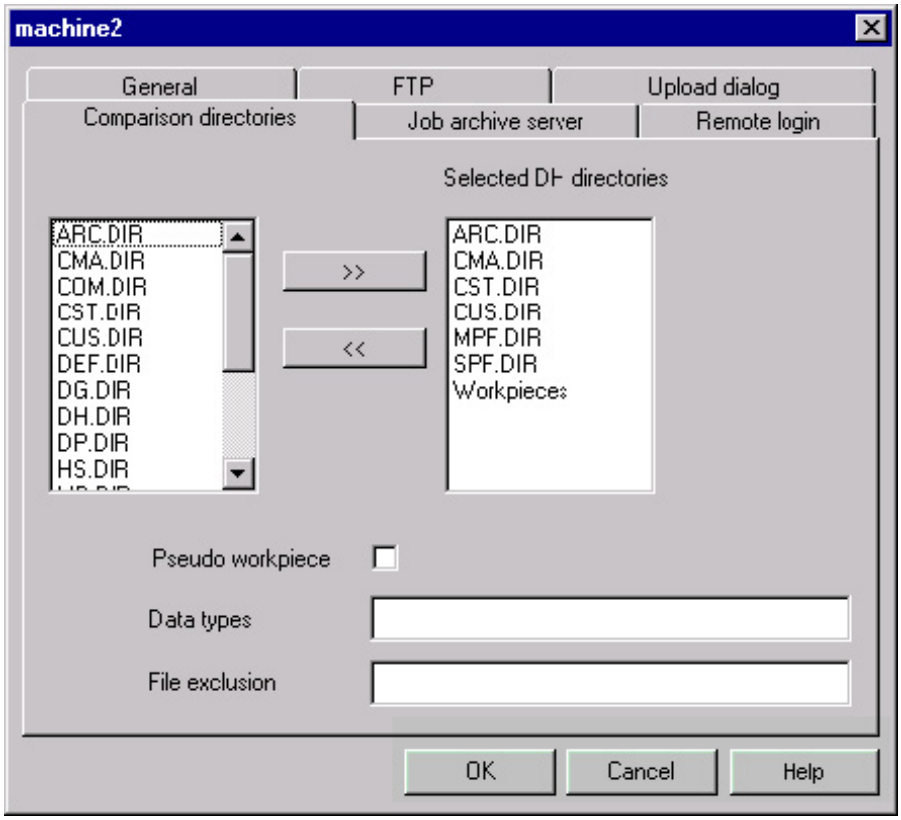

Fig. 10-17: Config dialog SINUMERIK* / Comparison Directories tab page

The list on the left contains all of the possible SINUMERIK* directories. You can use the arrow buttons to move selected directories to or delete them from the list of selected DM directories on the right.

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- **Pseudo workpiece**
  If you want to compare the data from a selected DM directory with a pseudo workpiece called name.DIR or archive it in a pseudo workpiece, you have to activate this checkbox.

Note

If you activate the Pseudo Workpiece checkbox here, it will also be taken into account when data is uploaded.
If **DNC IFC SINUMERIK** is also installed on the relevant machine, the pseudo workpiece ID must be set during configuration for the same data management directories.

0: No pseudo workpiece
1: Pseudo workpiece

- **Data types**
  In this field, you specify the data types for the selected directory that are to be taken into account when comparisons are carried out and when data is archived.

- **Exclude file**
  If files should be excluded from the comparison and the archiving, this should be specified in the Exclude file file.
  For example, EXCLUDE_MPF.DIR =Test1

  Extract from the machine configuration file:
  For example, WKS.DIR directory, (no pseudo workpiece), files of the type MPF, SPF, TOA, etc., will be considered, the WKSA1 file will be excluded

```
DHDIR1  =  WKS.DIR;0;MPF;SPF;TOA;ZOA;RPA;WPL;JOB;BMP;ARC;INI
EXCLUDE_WKS.DIR  =WKSA1
```

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Job Archive Server tab page (SINUMERIK* machine configuration) [COMPARE]

The Job Archive Server tab page is the [COMPARE] section of the machine configuration file for SINUMERIK* machine connections.
NC-active data (a subset (to be defined) of the series startup data) on the controller may need to be backed up during auto archiving. You can enter the settings required for this on this tab page.

Note

The Auto Archive and Auto Compare checkboxes in the Properties dialog for the machine must also be activated.

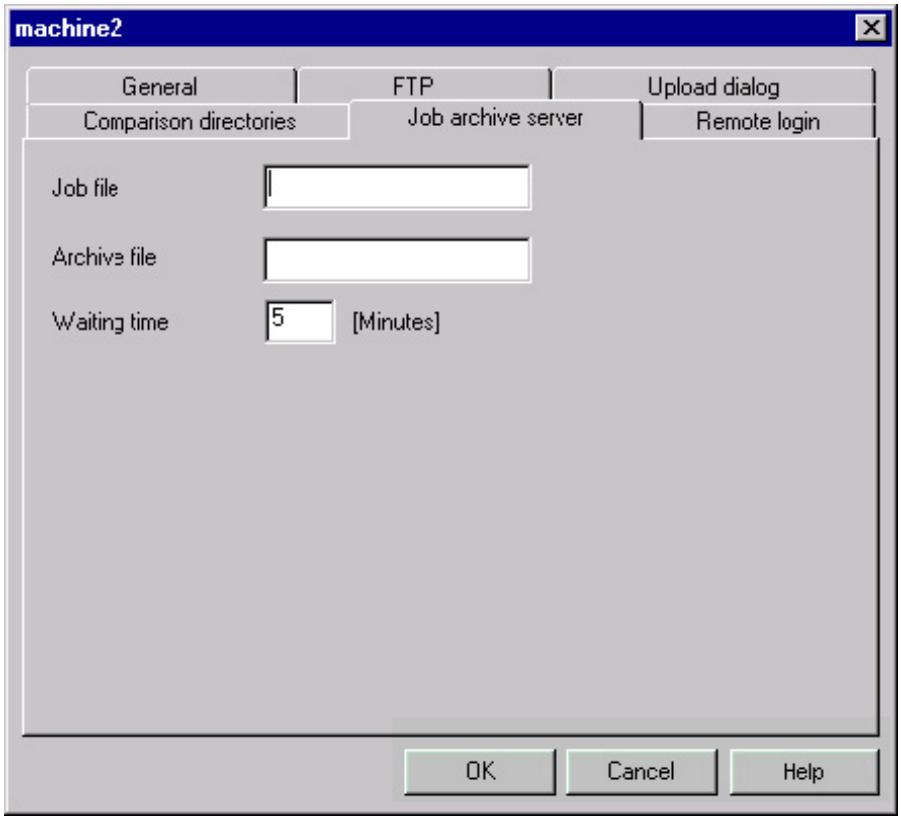

Fig. 10-18: Config dialog SINUMERIK* / Job Archive Server tab page

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- **Job file**
  The job file contains the job data for auto archiving. The file must be located in the add_on directory (same directory as DHS.EXE) on the PCU50/MMC103. You must enter the name of this file 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. The file is first created in the data management system on the machine and is then uploaded to the **DNC** system. If you do not make an entry here, the name of the job file is used as the archive file name.

  Extract from the machine configuration file:
  ```
  ARCFILE=
  ```

- **Wait time**
  Auto archiving is time-monitored, that is, if an individual archiving job is not reported as complete during the specified wait time, auto archiving continues with the next partial job. This is noted with an appropriate entry in the log file (ARSERVER.TXT in add_on\tmp).

  Extract from the machine configuration file:
  ```
  ARCTIMEOUT=5
  ```

! Important

If you have any questions about this function (particularly with regard to defining the job file), please contact the hotline.

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Remote Login tab page (SINUMERIK* machine configuration) [REMOTELOGIN]

The Remote Login tab page is the [REMOTELOGIN] section of the machine configuration file for SINUMERIK* machine connections.
A remote login is necessary for transmitting data because if transmission does not take place via FTP and although the data management directory on the controller is shared, the user logged in to the PC is not authorized to access the controller. Remote login enables the user of the **DNC** PC to log in to the controller with the name and password entered on this tab page.

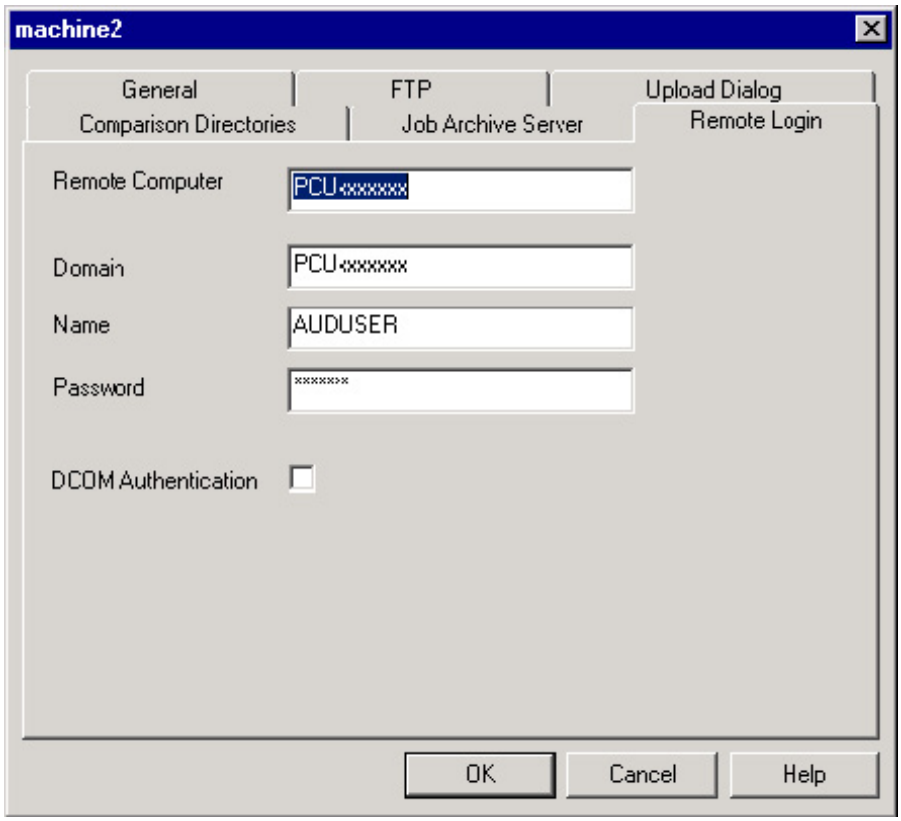

Fig. 10-19: Config dialog SINUMERIK* / Remote Login tab page

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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**
  Here, you enter the domain to which the user is assigned. This is only the same as the name in the Remote Computer field when used locally. (You have to enter the computer name here. The IP addresses are syntactically incorrect).

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

- **Name and Password**
  Here, you enter the user and password to be used to access the data management system on the controller
  (see DM Path on the General tab page - [GLOBAL] section).

  Extract from the machine configuration file:
  ```
  User=AUDUSER
  Password=*******
  ```

- **DCOM authentication**
  This checkbox must be activated if the login parameterized above (domain, name, password) is also to be used for DCOM authentication.

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Standard machine configuration file for the SINUMERIK* connection type

Table 10-12: Example of a standard machine configuration file for the SINUMERIK* connection type

```
[GLOBAL]
MachineType=SINUMERIK840D
;  NCU_Id=NCU Identifier, only for N:M functionality
;  NCU_Id=NCU_1
;  MachineIpAddress=195.212.26.xxx   (or MMC Computer name)
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!!
;
```

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```
;  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
;


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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10.5.4 Configuration for the file system connection type

The **file system** machine type can be used to transfer NC data from and to any network drives that have been released. Any network-capable controller can be connected to the **DNC** system under Windows. Two directories have to be configured for downloading and uploading NC data.
A conversion of the file type can be configured for the download or upload. This configuration can appear only in the machine configuration file.
See also: Standard machine configuration file for the file system connection type

Configuration dialog for the file system connection type

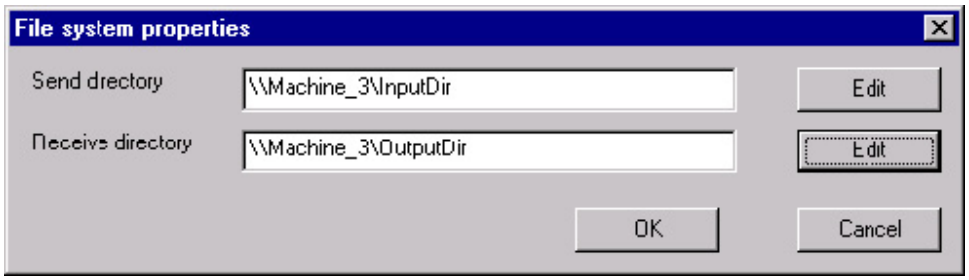

Fig. 10-20: File system config dialog

Note

Only users with the appropriate configuration authorization are permitted to define directories for the **file system** machine type.

Send directory

The send directory is the directory to which the NC data is to be downloaded.

Receive directory

When the NC data is uploaded, it is transferred to the specified receive directory in accordance with the version strategy.

Note

The directories are not specific to a particular computer when they are specified in UNC notation (e.g. \\Server1\DNC\Data).

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Standard machine configuration file for the file system connection type

Table 10-13: Example of a standard machine configuration file for the file system connection type

```
 [GLOBAL]
MachineType=filesystem
Comment=

[SEND]
DIRECTORY=C:\tmp\send
Conv1=MPF TXT
Conv2=SPF -

[RECEIVE]
DIRECTORY=C:\tmp\receive
Conv1=- SPF


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```

Rename file extension for the download

The renaming of the file extension for the download is configured in the parameters Conv*1* to Conv*4*.
In the assignment, the file extension in DNC (corresponds to NCDATATYPE) is specified first and then the new file extension for the file system.

Extract from machine configuration file:

```
[SEND]
…
Conv1=MPF TXT
Conv2=SPF NCA
```

Example:
DRILL_4711.MPF → DRILL_4711.TXT
MILL_4711.MPF → MILL_4711.TXT
DRILL_4811.SPF → DRILL_4811.NCA
MILL_4820.SPF → MILL_4820.NCA

If the files should not have any file extension after the download, the assignment must contain a minus character rather than the new file extension. In this case, the file extension (including the period) will be truncated

Extract from machine configuration file:

```
[SEND]
…
Conv1=MPF -
Conv2=SPF –
```

Example:
DRILL_4711.MPF → DRILL_4711
DRILL_4811.SPF → DRILL_4811

Rename file extension for the upload

The renaming of the file extension for the upload is configured in the parameters Conv*1* to Conv*4*.
In the assignment, the file extension for the file system is first specified and then the file extension in DNC.

Extract from machine configuration file:

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```
[RECEIVE]
…
Conv1=TXT MPF
Conv2=NCA SPF
```

Example:
DRILL_4711.TXT → DRILL_4711.MPF
MILL_4711.TXT → MILL_4711.MPF
DRILL_4811.NCA → DRILL_4811.SPF
MILL_4820.NCA → MILL_4820.SPF

If the files do not have any file extensions prior to the upload, they can only receive one file extension in DNC, because it cannot be determined which file extension was appended prior to the download.

Extract from machine configuration file:

```
[RECEIVE]
…
Conv1=- SPF
```

Example:
DRILL_4711 → DRILL_4711.SPF
MILL_4711 → MILL_4711.SPF
DRILL_4811 → DRILL_4811.SPF
MILL_4820 → MILL_4820.SPF

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10.5.5 Dialog function configuration dialog

General

To configure the dialog function, the Dialog Function checkbox on the Configuration tab page on the Machine Properties dialog must be selected. The dialog function remains active until it is deactivated again in the configuration.

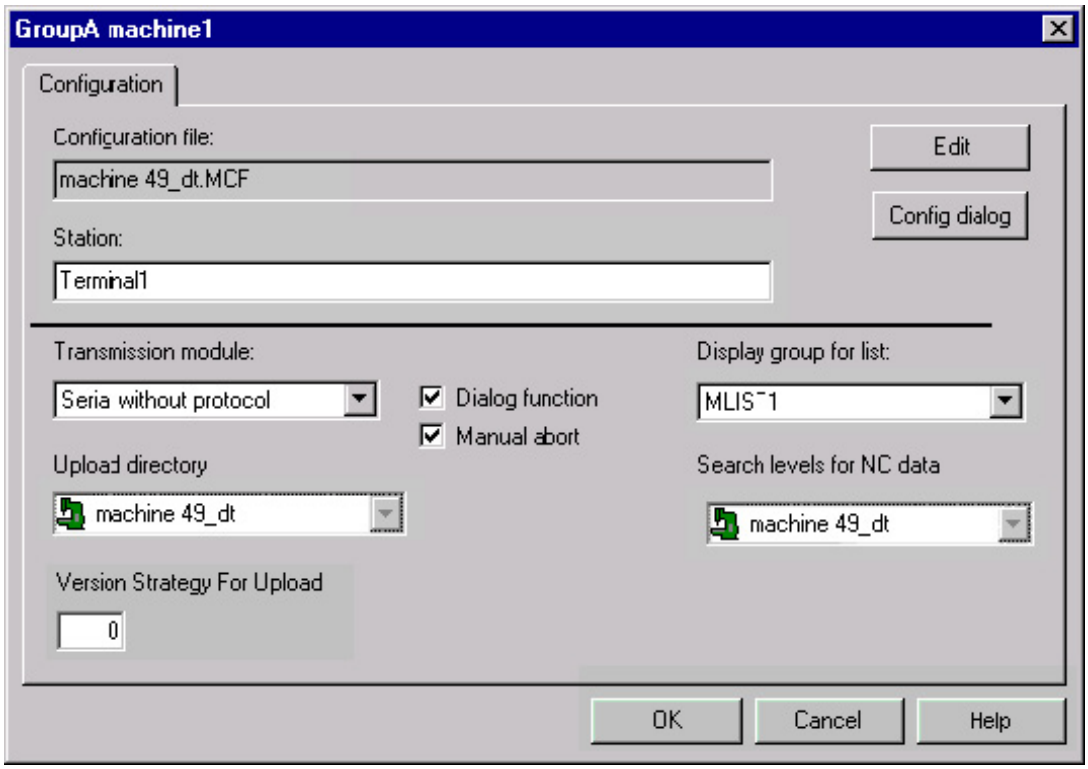

Fig. 10-21: Machine properties / Configuration tab page: Configuration

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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. 10-22: List description for dialog function lists

The list display group (MLIST1) refers to the response lists requested via the dialog function.

The **list display** of a display group can be changed in the **List Editor**. The List Editor can also create a new display group if a suitable list display is not available. The display groups are defined via the **DNCLISTDESCRIPTION** database table in **DNC**.

You can select any of the defined lists, even those that were created for the user-specific list display on the right of the interface.

Depending on the options offered by the controller editor, it may be advisable to choose short list displays for the dialog function.

Note

The display of response lists to dialog function requests for links is set permanently with:

- Name
- Size
- Changed on

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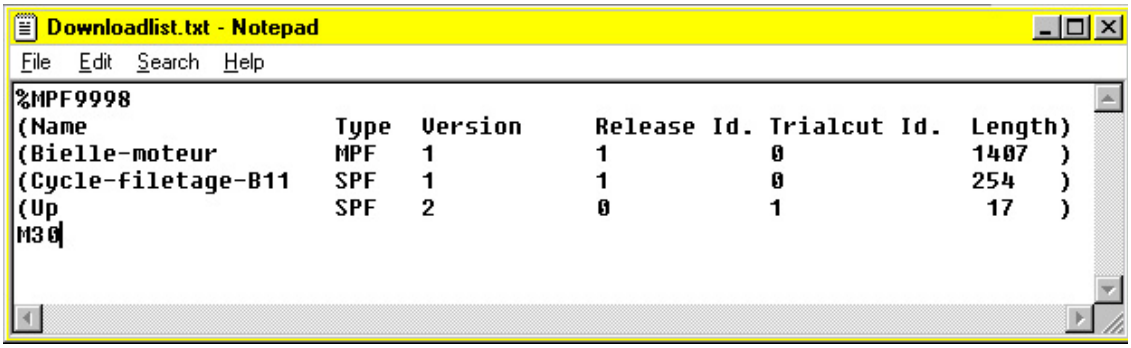

Fig. 10-23: Response list for a dialog function request

Search levels for NC data

The configured search directory in the dialog function is machine specific, that is, any program or list requested can only originate from this defined section. The configuration is performed via a combination field. The following search areas are available:

- Link (when the link is configured, a second combination field appears containing all of the links configured on the machine. You have to choose one of these links for the configuration).
- Machine
- Machine, group (search area for machine and higher-level group)

Upload directory

The configured upload directory in the dialog function is machine specific, that is, all uploaded programs can only be stored in this defined section. The configuration is performed via a combination field. The following search areas are available:

- Link (upload directory: The link assigned to the machine; the file is stored here without any administrative data).
- Machine
- Group (upload directory: The higher-level group of the machine)

Note

DNC generates administrative data for uploaded files stored in a machine or group directory. All the automatic mechanisms for version management and the release/trial cut IDs apply here.

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Errors

Configuration errors on the machine server in conjunction with the dialog function are indicated on the user interface by a red square on the machine.
Communication errors with the dialog function occur when the machine server is configured incorrectly.

A communication error on a machine when the dialog function is selected can occur in the following situation:
Machine 1 and machine 2 are both using the dialog function. The machine servers for machines 1 and 2 are also configured on COM port 1. The user interface displays a communication error on machine 2.

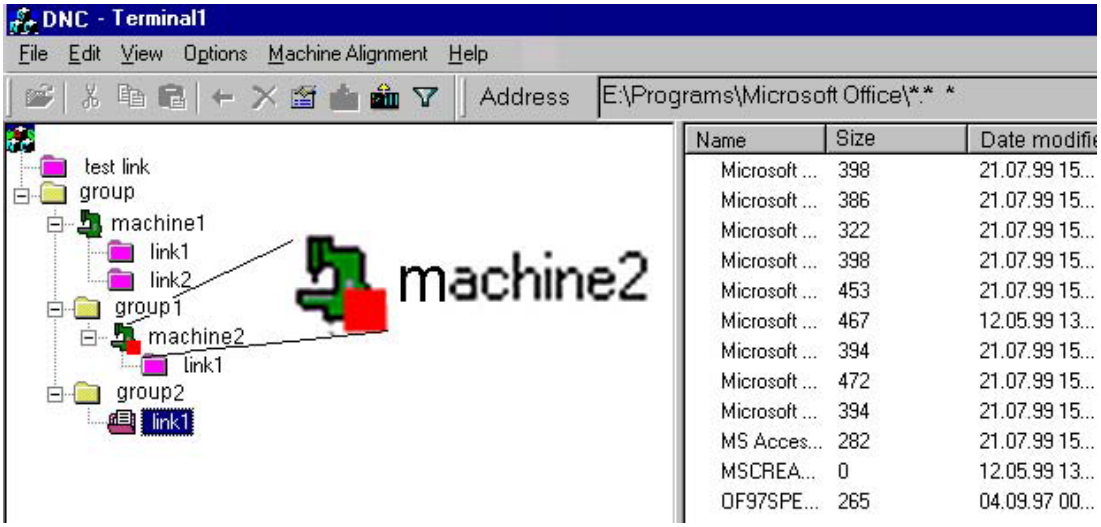

Fig. 10-24: Communication error on machine server with the dialog function

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10.5.6 Configuration dialog for the tool setting device

General

Tool setting devices are always inserted directly underneath the plant root.

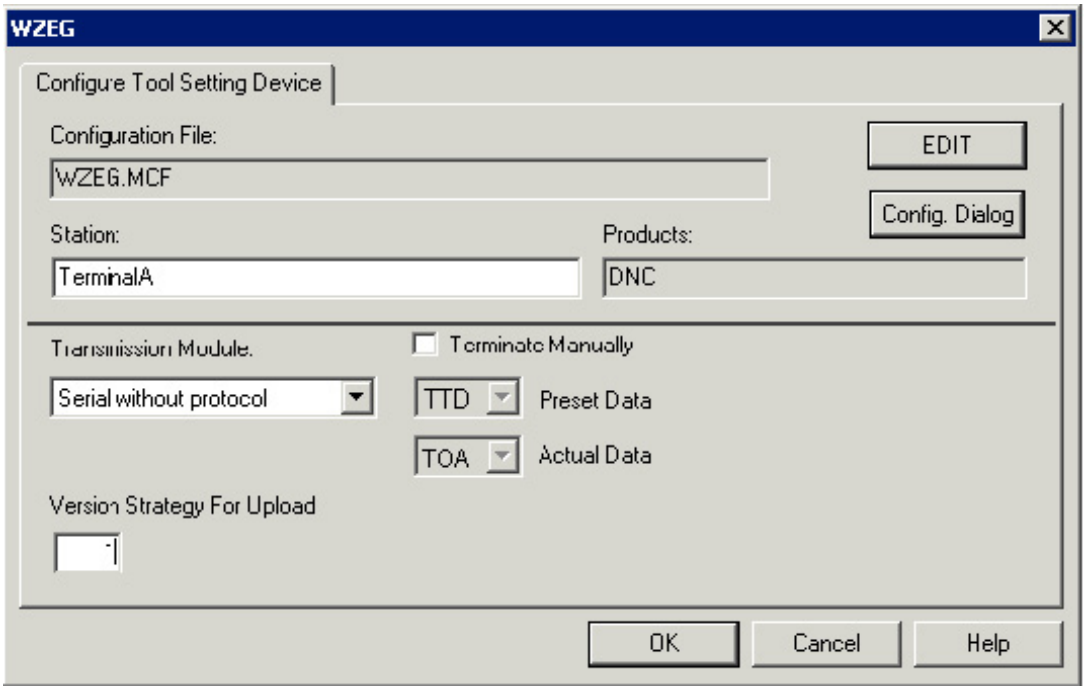

Fig. 10-25: Properties of tool setting device

Station

The assignment of a tool setting device to the HMI workstation is made via the station name, which must be unique in DNC Plant. This entry is not necessary in DNC Cell because there is only one station.

Note

The station name configured for a tool setting device must not be used for any other tool setting device or machine. When you confirm the Properties dialog, a plausibility check is carried out to determine whether the station name has already been assigned to a tool setting device or a machine. In this case, the dialog remains open until a correct station name has been entered.

Transmission module

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As with the machine types, the tool setting devices can be connected in a serial configuration or via the file system (network drive).

Preset data

Preset data is tool data that is downloaded to the tool setting device where it provides a basis for setting and calibrating the tools. The display field contains the NC data type for the preset data.

Actual data

Actual data is tool data that is generated on the tool setting device and is uploaded from here back to the **DNC** system from where it can be downloaded later to the relevant machine.

Note

Within a **DNC** plant, all the tool setting devices must use the same preset value types and actual value types. They are defined in the DNCMACFG configuration table.

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10.6 Editing database tables

The **DNC** database can be configured in **DNC Admin** by authorized users. To call up and edit the database tables, choose **Tools → Config. Tables** .
The following database tables can be modified:

- DNCGLOBALSETTINGS
  This table is used for managing all the global settings.
- DNCMACFG
  This table is used for managing machine-specific configuration parameters.

To edit the database tables, call up the relevant dialog and edit the table containing all the current parameters.
Existing data records can be changed or deleted and new ones created.

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10.7 Global settings

In the **DNCGLOBALSETTINGS** database table, the following global settings can be defined in the database fields *NAME* and *INTVAL*:

- Maximum number of possible versions (default: 5)
- Version strategy for upload (default: 1)
- Storage strategy for editing (default: 1 (new version after editing))

Maximum number of NC data records displayed in a list in **DNC HMI** and **DNC Admin** (default: 1000).

Note

To change the default setting of 1000, you may have to redefine the "ReadMaxRecords" entry.

- Maximum number of NC data records displayed in a list in **DNC IFC SINUMERIK** (default: 1000).
- Maximum number of NC data records displayed in a list on old **SINUMERIK 840D** machines (default: 1000).
- Separator and comment characters for formatting CSV files
- Defining the graphic types for the print function
- Invalid characters for the NC data designation (&`´+,;=!,(){}$ß§µ³)
- Header for list printouts
- Comments and export files in ASCII or UNICODE
- Version strategy for automatic import
- List request for dialog function
- Extent to which filters can be assigned to stations, display groups, and user names
- Identifier for **DNC Plant** and **DNC Cell**
- Further entries for special options

The key for the *NAME* field is assigned an integer value (*INTVAL*) or a string (*STRINGVAL*).

10.7.1 Maximum number of possible versions

The assignment of the maximum number of possible versions is defined via the MaxNCVersions key.

Table 10-14: Global settings for the maximum number of possible versions

***NAME* database field**	***INTVAL* database field**
MaxNCVersions	>1

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10.7.2 Version strategy for upload

The assignment of the version strategy is defined via the *VersionStrategy* key.

Table 10-15: Global settings for the version strategy for upload

***NAME* database field**	***INTVAL* database field**
VersionStrategy	1 ... 6

You can choose one of six strategies:

Table 10-16: Version strategy for the upload

Configurable numbers for version strategy	Version strategy for uploaded NC data	Release strategy for uploaded NC data	Deletion 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 change date, which has not been released, is deleted.
2	"	"	The "Delete Version Dialog" is displayed.***
3	"	The release identifier is set.**	The version with the oldest change date, which has not been released, is deleted.
4	"	"	The "Delete Version Dialog" is displayed.
5	The highest version is replaced.	The release identifier is **not** set.*	
6	"	The release identifier is set.**	

* The release identifier of an older version remains unchanged.
** The release identifier of an older version is reset.
*** For automation-related reasons, the dialog function does not support a delete version dialog. For this reason, strategies 1 and 3 are adopted for version strategies 2 and 4.

The version strategies do not apply to links because no administrative data is maintained in the database for this NC data.

Note

The version strategy is set once during installation. Subsequent changes should only be made by Siemens to prevent inconsistencies in the data management system.

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10.7.3 Storage strategy for editing

The assignment of the storage strategy for editing is defined via the *NewVersionAfterEdit* key.

Table 10-17: Global settings for the storage strategy for editing

***NAME* database field**	***INTVAL* database field**
NewVersionAfterEdit	0/1

You can choose one of two strategies:

- 0 = Unchanged versions and existing identifiers
- 1 = Next available version with the identifiers for the edited version

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10.7.4 Machine-specific version management

General

Machine-specific version management uses version zones to define the hierarchy level within which NC data with the same name, type, and version can occur. By defining a version zone, you can ensure that the same program is always used within the version zone.

Version zones are always defined at higher-level node points (groups or sub-groups). The node at which the version zone is defined and all of the subordinate nodes (groups, subgroups, machines) together form the version zone.

Note

The plant root (at the top) is a node, not a group.

You can only define the version zone at node points (groups, subgroups). Version zones cannot be defined at machine level.
When you define a version zone, this causes all subordinate objects (including the NC data directly underneath this node) to align with this node.

Note

If you do not define a version zone, **each object** (each node and each machine) is regarded as a separate version zone. This is the default setting when the system is shipped.

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When you set a version zone, all subordinate version zones are reset. You cannot set any more version zones at subordinate nodes of the set version zone.

Nodes that indicate the beginning of a version zone are displayed in the tree view by means of a white field with a "V" in the icon.

The version zone is defined via the PROCESSINGRANGEID field in the **DNCNODEINFO** table.
Here, you can enter the NODEID of the node that defines the version zone.
This means that in the PROCESSINGRANGEID field, this node and all subordinate nodes have the entry of the NODEID for the node with which the version zone is formed.

Upload

The version zone is taken into account when an NC data file is uploaded. Before an NC data file is uploaded, a check is carried out to determine whether the maximum number of versions of this NC data has already been reached within this version zone.
If this is the case, either an older version is deleted or the "Delete Version Dialog" is activated (depending on the version strategy). Users can delete older versions in this dialog.

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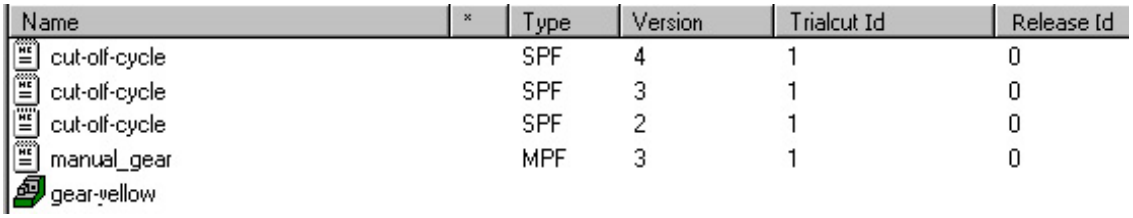
10.8 List editor

10.8.1 General

The **list display** layout is also stored in the database. This means that the list display can be configured in line with the needs of users and machines (display groups). You can create a list display in several languages for each display group.



Name	*	Type	Version	Trialcut Id	Release Id
cut-olf-cycle		SPF	4	1	0
cut-olf-cycle		SPF	3	1	0
cut-olf-cycle		SPF	2	1	0
manual_gear		MPF	3	1	0
gear-yellow					

Fig. 10-26: List display variant of the operator interface

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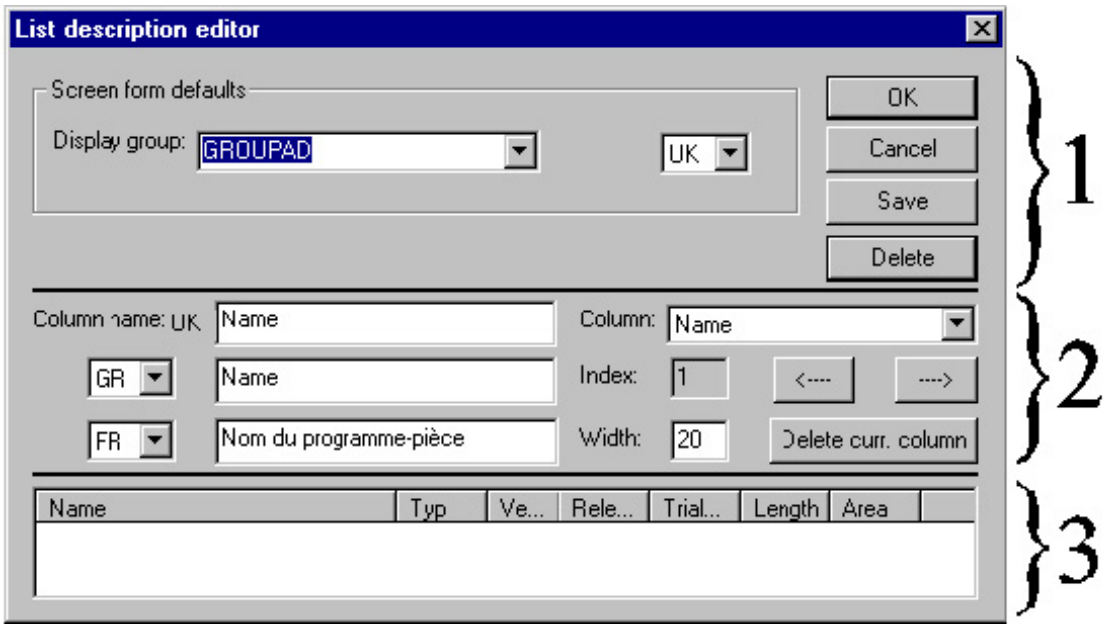

Fig. 10-27: List Editor

The List Editor is divided into 3 sections:

1st section: Defaults with buttons that refer to the complete list display for the display group in question. **Complete list display** means that **the list for all the languages** in a display group is **saved** or **deleted** or that changes are ignored (Cancel).

2nd section: Section in which data can be entered with edit buttons and input fields.

3rd section: Preview of the list display set in the defaults.

Note

Changes to the current **list display do not take effect until the next time DNC** or **DNC Admin** is started.

Not all of the available languages are shown in this dialog; not only does this ensure clarity, but it is also rarely the case that all languages supported by **DNC** are used in one plant.

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10.8.2 Description of the 1st section of the List Editor

General

The defaults determine the preview displayed in the 3rd section of the editor. The display group also determines which **complete list description** (see above) is currently being modified and will be saved.

Using the **Display Group** combination field, you can choose one of the available display groups. If you change the display group, you have to decide whether you want to save the changes made so far.

Using the **Language** combination field, you can choose one of the available languages. This field determines the language in which your preview appears.

Creating display groups

To create a new display group, you **enter the name of the new group** in the Display Group combination field. Then **save** this display group immediately.

Note

Before you create a display group, choose a display group with a list display similar to your new one. This list display is used as a basis for the new list display so that you do not need to start from scratch.

Before you can assign your **new display group** to a user, a **screen** and list description must exist for this display group.

In addition to display groups that can be named as required by the user, **DNC** contains predefined names for display groups:

- #CSV: Defines which field contents in the data records are written to the CSV file.
- #PRINTLIST: Here, you can configure which field content is displayed when the administrative data is printed or when the print preview is called up.
- DELLIST Defines the sequence of columns in the "Delete Version Dialog" in **DNC IFC SINUMERIK**.

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Deleting display groups

You can delete the **complete list display** in all languages for this display group by choosing **Delete**.

Caution

Before you delete a display group, make sure that it is not being used by any **users** or **machines** (see also: Dialog function) !

The list description for the **DELLIST display group is essential** for **DNC IFC SINUMERIK**. Do not delete the **DELLIST display group** if you want to use **DNC IFC SINUMERIK**.

The **GLOBAL** list description is used for the generic filter. If you delete this list description, the list description of the respective user currently active takes effect.

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10.8.3 Description of the 2nd section of the List Editor

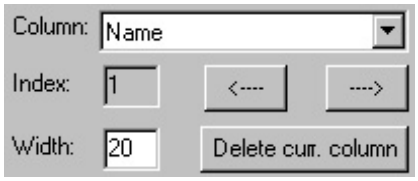

Fig. 10-28: Right-hand section of the List Editor (2nd section)

Choosing the column

In the **Column** combination field, you specify which items of administrative data for the NC data you want to display in the list display and which column is currently being edited.
You can also choose the **column** (date of administration modification) using your mouse in the preview.

Index

The **number after the index** indicates the position of this column in the list display. Using the **arrow buttons**, you can move the column further forwards or backwards.

Width

In this field, you can enter the **width** of the column to specify how it is to appear in the list **in all languages**. You can also set the width directly in the preview using your mouse. You are, however, advised to check the width because you can set it more accurately using the mouse. You can do this by entering the width again, selecting a different field with your mouse, and watching the field in question while you do this.

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Deleting a column

To delete the column currently entered in **Column**, click: **Delete current column** (see above). This column is then deleted **in all languages**!

Adding a column

To add a new column, you have to **select** a date of administration modification in the **Column** combination field. You then have to **enter** the **column names** in the appropriate language (see below). You can set the index using one of the buttons for the **index** (**arrow buttons**). You then have to specify the width after which you can view the new column in the preview.

Column name

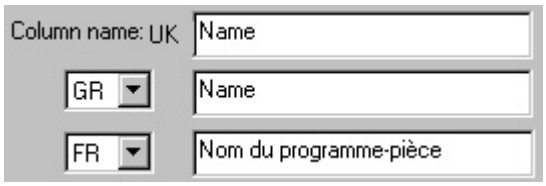

Fig. 10-29: Left-hand section of the List Editor (2nd section)

In the area shown, you can enter the name of the column for the relevant language as it is to appear in the list. The fields for the following languages can be seen here: **GR** for German, **UK** for English, and **FR** for French (See also: Languages).

In the right-hand part here (see figure above: right-hand section of the List Editor (2nd section)), you can confirm, extend, abbreviate, or rename the shown name of the column.

Note

The input fields for the languages you do not use can be left empty. It is advisable, however, to maintain these fields in your language. If the language is then changed at some later point in time, the list headers are not empty.

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10.9 Screen editor

10.9.1 General

The layout of the Properties screens for the NC administrative data is also stored in the database. This means that the screen display can be configured in line with the needs of users. You can create a screen display in several languages for each display group. The Properties screens have a fixed resolution of 360 x 160 pixels.

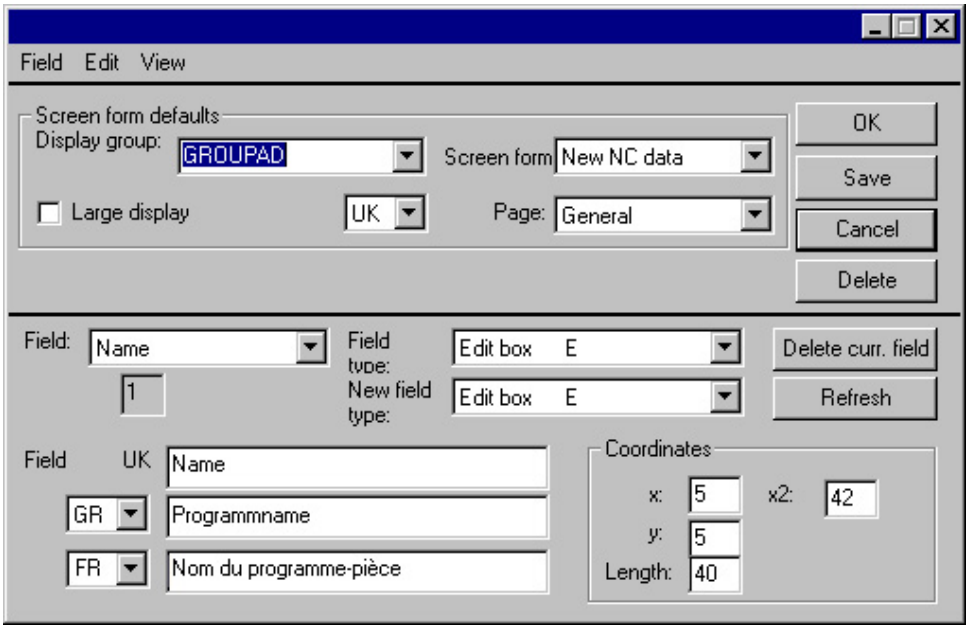

Fig. 10-30: Screen Editor

The Screen Editor is divided into 3 sections:

1st section: Defaults with buttons that refer to the complete screen display for the display group in question. The defaults also determine which preview is displayed.

2nd section: Section in which data can be entered with edit buttons and input fields for the preview to be displayed.

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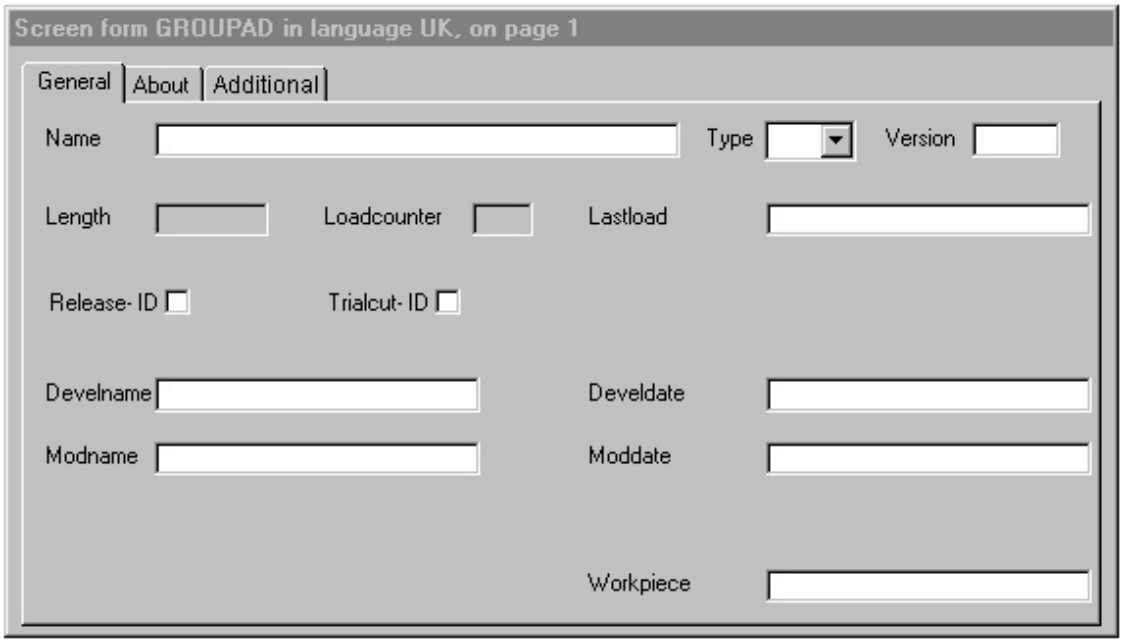

Fig. 10-31: Screen Editor preview

3rd section: Preview of the screen display set in the defaults.

Note

Changes to the screen display do not take effect until the next time **DNC** is started. Any changes made take effect immediately in **DNC Admin**.

Not all of the available languages are shown in the Screen Editor; not only does this ensure clarity, but it is also rarely the case that all languages supported by **DNC** are used in one plant.

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10.9.2 Description of the 1st section of the Screen Editor

General

The defaults also determine which preview is displayed. The **display group** also determines which **complete screen description** is currently being modified and will be saved. Complete screen description means that the screen description is saved for all the languages used.

Fig. 10-32: Screen Editor – 1st section

Using the **Display Group** combination field, you can choose the appropriate display group or create a new group. If you change the display group, you have to decide whether you want to save the changes made so far.

All the other fields are used for setting the preview.

You use the **Screen Type** combination field to specify the type of screen you want to create and display in the preview. You can use the **New NC data** option to generate the screen for creating a new NC administrative data record. Using **Display/Change**, you can configure the screen in which you can view or change existing NC administrative data.

The **Large Display** checkbox allows you to display a magnified or normal-sized version of the preview. If a large display format has been configured for the selected display group, this setting must be selected so that the screens are displayed and configured with the correct display format.

The **Language combination** field is used to change the language for the preview.

The **Page** combination field is used to change the tab page displayed in the preview.

The menu options in the **View** menu perform the same functions as the combination fields.

By choosing **Edit→Tabulator Sequence**, you can display or change the tab sequence in the relevant screen. You can then make an entry in the **Tabulator** field in the 2nd section of the Screen Editor.

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Creating display groups

To create a new display group, you enter the name of the new group in the Display Group combination field. Then save this display group immediately.

Note

Before you create a display group, choose a display group with a screen display similar to your new one. This screen display is used as a basis for the new screen display so that you do not need to start from scratch.

Before you can assign your **new display group** to a user, a **list description** must exist for this display group (see also: List editor).

Deleting display groups

You can delete the **complete screen description** in all languages for this display group by choosing **Delete**.

Caution

Before you delete a display group, make sure that it is not being used by any **users** (see also: Dialog function) !

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10.9.3 Description of the 2nd section of the Screen Editor

General

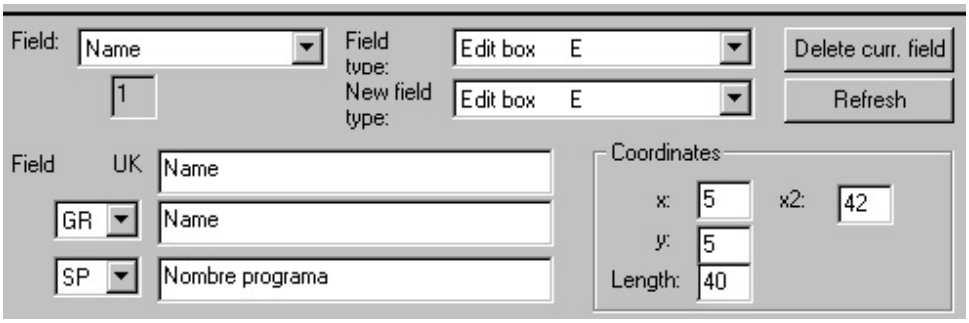

Fig. 10-33: Screen Editor – 2nd section

In the 2nd section of the Screen Editor, you can make changes to the screen display for the display group in question.

Field

In the **Field** combination field, you can specify which administrative data is to appear in the screen display and which field is currently being edited.

Delete Current Field

This button deletes the field selected in the **Field** combination field from the screen description.

Update

This button refreshes the preview.

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Field type

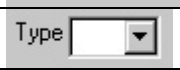
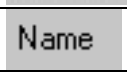
Two combination fields are available for selecting the **field type**.

The upper **Field Type** combination field is used for the **"Display/change" screen type**.

The lower **Field Type New** combination field is used for the **"New NC data" screen type**.

You can choose the following field types:

Table 10-18: Field types

Field type	Meaning	Example
Edit box	Input field	
Combo box	Combination field	
Checkbox	Checkbox	
Output field	Inactive input field	
Output field checkbox	Inactive checkbox	
Static text	Text field	

The **combination field** is used exclusively for the **program type**, since a list must exist from which data can be selected. Up to now, this was only possible with the program type.

Note that **checkboxes** can only output the values **"0" or "1"**.

The field types **edit box (input field)** and **output field (inactive input field)** can be used for any field.

Static texts (text fields) cannot output any data values. They can be used for any field.

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Tabulator

This input field, which you can edit by choosing **Edit→Tabulator Sequence**, displays the tabulator index of the field selected in the **Field** combination field.

When you open the Properties screen, the field with the lowest tabulator index is selected automatically. When you move through the fields using the tabulator, the cursor always jumps to the field with the next highest tabulator index until the field with the highest tabulator index is reached. This is followed by the buttons for the Properties screen. The cursor then jumps back to the field with the lower tabulator index.

Note

The tabulator indexes do not have to be sequential (1,2,3,4,....10). They can also contain gaps (1,3,5,6,7,10). The advantage of this is that it is not necessary to resort all of the fields if the tabulator sequence is changed.

Field Name

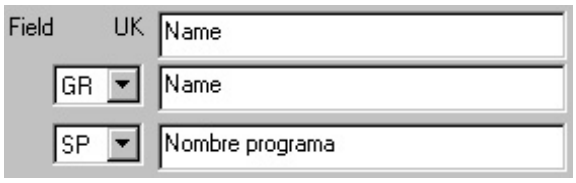

Fig. 10-34: Screen Editor – field names

In the area shown, you can enter the name of the field for the relevant language as it is to appear in the screen. The fields for the following languages can be seen here: **GR** for German, **UK** for English, and **FR** for French (See also: Languages). The name displayed in the **Field** combination field can be left as it is, extended, abbreviated, or a new name can be assigned.

Note

You are advised to ensure that the length of the names in the different languages are roughly the same because the coordinates apply to all languages used in the field. In the screenshot above, the field name entered in French was too long and has been truncated in the screen.

The input fields for the languages you do not use can be left empty. It is advisable, however, to maintain these fields in your language. If the language is then changed at some later point in time, the field names in the Properties dialog are not empty.

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Coordinates

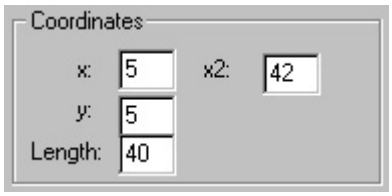

Fig. 10-35: Screen Editor - coordinates

In the area shown, you can enter the position and size of the field on the screen for each field selected in the Field combination field.

Coordinates cross:
- **x** goes from **left to right** (**1** to **350** in pixels)
- **y** goes from **top to bottom** (**1** to **150** in pixels)
- The upper left corner of the tab page represents the origin (x = 1; y = 1)

x is the horizontal starting position for the field name.

y is the vertical starting position for the field name and the input/output fields.

x2 (**1** to **350** in pixels) is the horizontal starting position for the input/output fields. The field name appears in front of this (coordinate x). x2 is only relevant for edit boxes (input fields), output fields (inactive input fields) and combo boxes (combination fields).

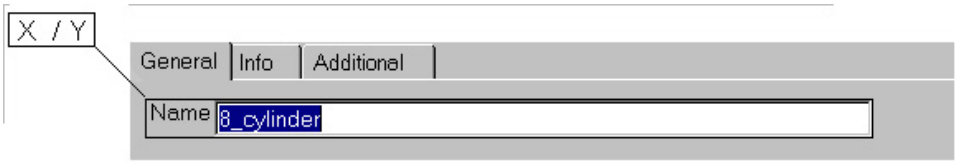

Fig. 10-36: Screen Editor – position of a screen field

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The **length** must be at least 1 (**1** to **80** approx. width of letters in normal view). In the case of edit boxes (input fields), output fields (inactive input fields) and combo boxes (combination fields), the length is the length of the input field or combination field without the field name. The length is of no importance for the other field types. (Exception: Length = 0 → the field will not be displayed)

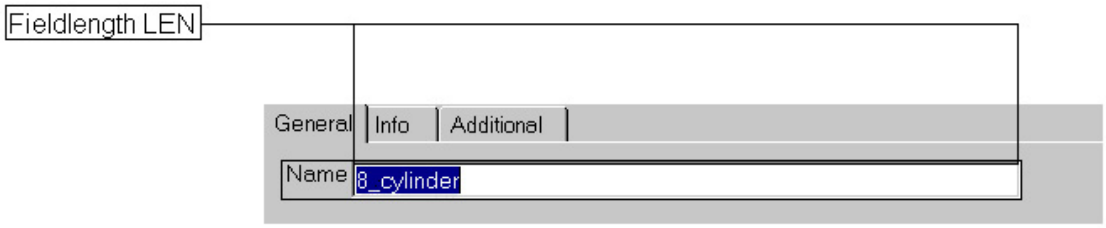

Fig. 10-37: Screen Editor - length

Note

Fields that exceed the screen border are truncated.

When you define new fields, it is useful to note the positions of the other fields. The layout of the screen can then be structured symmetrically.

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10.9.4 Saving the screen display in the database

General

The **DNCFORMDESCRIPTION** database table defines the screen display of the Properties screen for the NC data and import function. All the other screens have a predefined screen layout.

Table 10-19: DNCFORMDESCRIPTION screen definition table

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	...

DISPLAYGROUP field

DISPLAYGROUP defines the user group for which the screen display is to be valid. The name of the *DISPLAYGROUP* is user defined.

COLUMNNAME field

COLUMNNAME assigns the screen field to the field of the same name in the *DNCDATA* database table.

Note

COLUMNNAME only evaluates field names in DNCDATA.

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FIELDNAME_<LANGUAGE> field

These database columns contain the language-specific field names.

FIELDNAME_GR contains the German field name,
FIELDNAME_UK contains the English field name (and so on).

DLGORDER field

DLGORDER describes the order number of the fields in the screen output. It must be unique. The following method of assigning numbers is recommended:

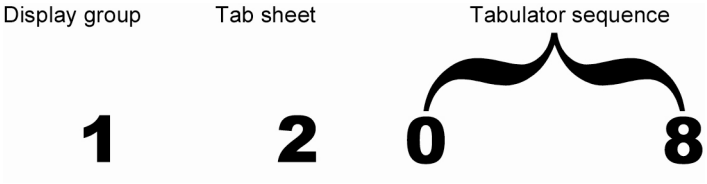

Fig. 10-38: Order number of the fields in the screen output

1208 means, therefore:

- Display group 1 → GROUPAD
- Tab page 2 → Info
- Tabulator sequence 08 → Field is reached when the tabulator is pressed eight times

PAGE field

PAGE defines the tab page on which the field is to be placed. The following assignment applies:

- 1→ tab page **General**
- 2→ tab page **Info**
- 3→ tab page **Additional**

Note

The **Comments** and **Attachments** tab pages are reserved exclusively for comments and attachments for the NC data. They cannot be configured via the *DNCFORMDESCRIPTION* table.

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X,X2 and *Y* fields

The *X* and *Y* fields indicate the pixels in the top-left of the field to be displayed and its field name.
The *X2* and *Y* fields indicate the pixels in the top-left of the field to be displayed without the field name.

LEN field

LEN indicates the length of the field in characters.

FIELDTYPE field

FIELDTYPE defines the field type of the screen field for the NC data Properties screen. The following types can be defined in **DNC**:

- Output field →O
- Edit field →E
- Combination field (combo box) → COB
- Checkboxes → CKB
- Output checkboxes → OCKB
- Static output field → STXT

FIELDTYPE_NEW field

FIELDTYPE_NEW defines the field type for entering data (import and new NC data screen).
This separate field type for entering data allows you to define
input fields that only appear as display fields in the standard Properties dialog, that is, they must not be changed after data has been entered.

- Output field →O
- Edit field →E
- Combination field (combo box) → COB
- Checkboxes → CKB
- Output checkboxes → OCKB
- Static output field → STXT

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Notes

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11

11 Error management

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11.1 General

Central logbook

DNC features a central, cross-application error evaluation function.
Log messages (errors and messages; no traces) from all **DNC** applications (**DNC IFC SINUMERIK**, **DNC Cell**, **DNC Plant**, auto archiving and auto import) are entered in a central database table. Exceptions to this include applications such as SerIntSvr (machine server) or DNCConvSvr (code conversion server), which do not have an interface with the database.
All the errors and messages that have occurred for relevant events are stored.
The memory capacity depends on the type of database on which **DNC** is based:

Table 11-1: Memory capacity of the logbook:

Database type	Memory capacity	Behavior when capacity is exceeded
SQLServer/MSDE	25.000	Delete the oldest 1000 entries
Oracle	50.000	Delete the oldest 1000 entries

Separate execution sequence log

An execution sequence log is stored in separate log files independent of the central logbook.

11.2 Functions of the central logbook

In **DNC** or **DNC Admin**, you can view the error/message entries in the database. You call this function from **Tools** → **Logbook**. You can configure the data view by defining your own filters. You can delete errors/messages in **DNC Admin** and export them to a text file.

The following activities are entered in the logbook:
- Users logging on (system message)
- Creation/deletion of users
- Creation/deletion of NC data
- Import/export of NC data
- Download/upload of NC data
- Setting/resetting of version zones
- Result of auto archiving
- Enabling of option packages
- Etc.

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11.2.1 Displaying the messages

All of the messages and errors are displayed in chronological order in accordance with the following structure:

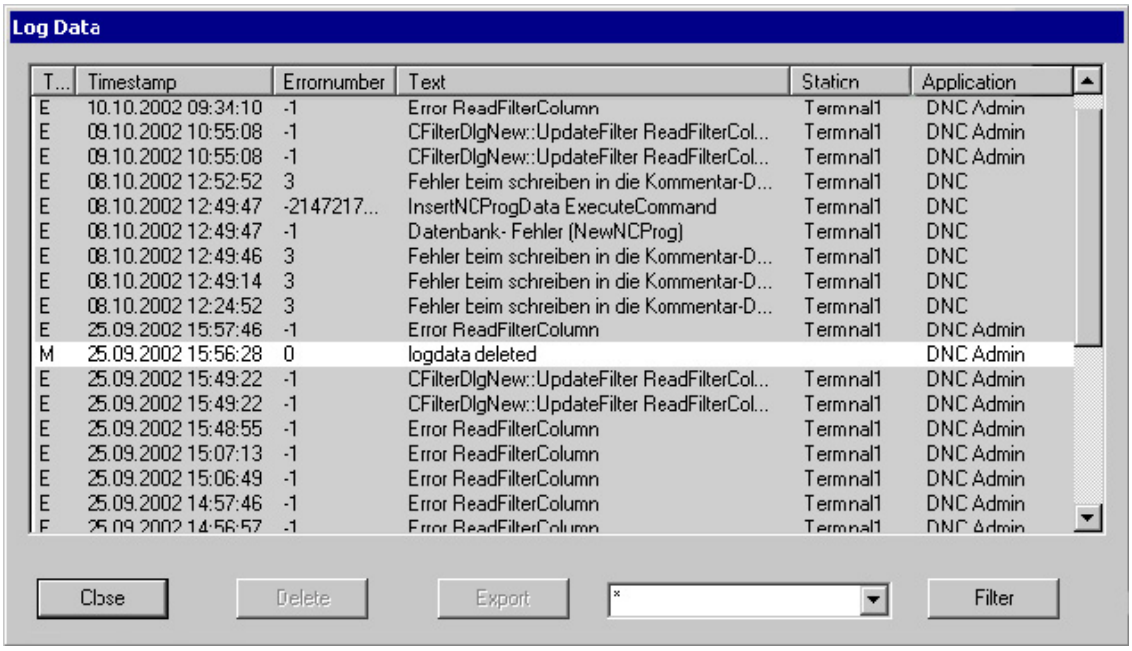

Fig. 11-1: Log file

Table 11-2: Logbook display

LED	**Description**
E / M / S	Error / message / system message
DD.MM.YYYY HH:mm:ss	Timestamp
	Error number
Text	Error text / message text
	Station
DNC IFC SINUMERIK **DNC Cell** **DNC Plant** **DNC Station** Auto archive Auto import	Application

Note

You can sort the messages in ascending or descending order in accordance with their individual meanings by clicking a column header.

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11.2.2 Filtering log data

You can call the Filter Editor by choosing **Filter**. All the filter functions in the editor are available (see also: Section 3.2). If you have selected a filter, only the filtered data is displayed.

11.2.3 Exporting errors/messages

In **DNC Admin**, the errors/messages in the central logbook can be exported to an external text file where they can be processed further if necessary. The export file created is located in ...DNC\Export.

The following requirements must be fulfilled for the export:

- The user must be authorized to export data.
- A filter must be selected before data is exported.

Note

In the standard installation, the export directory is diverted to the import directory.

File name of the export file

The name of the exported error/message file is as follows: Log*yyyyMMdd_x*.TXT (the index x is incremented by 1 if several export files are created on one day). The first file is assigned index 1).

Structure of the export file

```
....
E|2002-09-25  10:36:43.183000000|-1|Error  ReadFilterColumn|DNC  Admin|Terminal1|
....
```

The columns in the error/message display are separated by the character | in the export file.

Caution

If the display in the log file is filtered, only the data displayed is exported.

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11.2.4 Deleting errors/messages

In **DNC Admin**, users can delete errors and messages in the central logbook provided the following conditions are fulfilled:

- The user must be authorized to export data.
- A filter must be selected before data is deleted.

Note

During the deletion procedure, all of the log data displayed is deleted.

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11.3 Separate execution sequence log

Independent of the central logbook in the database, the DNC programs write to the circular execution sequence log files with the names Programmname0.trc ... Programmname9.trc located in the ...\Siemens\MCIS\Data\Trace\DNC directory.
For each start of the program and when the log file has reached the configured size, a new file with the next-higher number at the end of the file name will be begun; after 9, the numbering starts again at 0. The current log file is the file that has the most recent date.
Log files can be opened and analyzed with a text editor.
The log files of the individual clients are located on the terminal servers under the directory ...\Siemens\MCIS\Data\Trace\DNC*Client*.

The size (in KB) of the log files can be parameterized in the trace.ini file in the ...\Siemens\MCIS\Data\Trace\DNC directory.

The .ini file contains sections for all MCIS programs that should be logged.

Table 2-3: Example trace.ini

```
[GLOBAL]
Trace_Level=4
Trace_FileSize=32

[DNC_HMI]
Trace_Level=4
Trace_FileSize=32

[DNCAdmin]
Trace_Level=4
Trace_FileSize=32
```

[…]	Section with program name	
	[DNC_HMI] =	DNC program
	[DNCAdmin] =	DNC Admin program
Trace_Level	Classification of the program execution for logging	
	All specified and lower classifications will be logged.	
	0 =	No execution sequence log
	1-4 =	Trace level of all program execution sequences that should be logged. Execution sequences with a lower trace level are also logged.
FileSize	Size (in KB) of the log file	

■

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12 Auto archiving

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12.1 Function of DNC Auto Archive

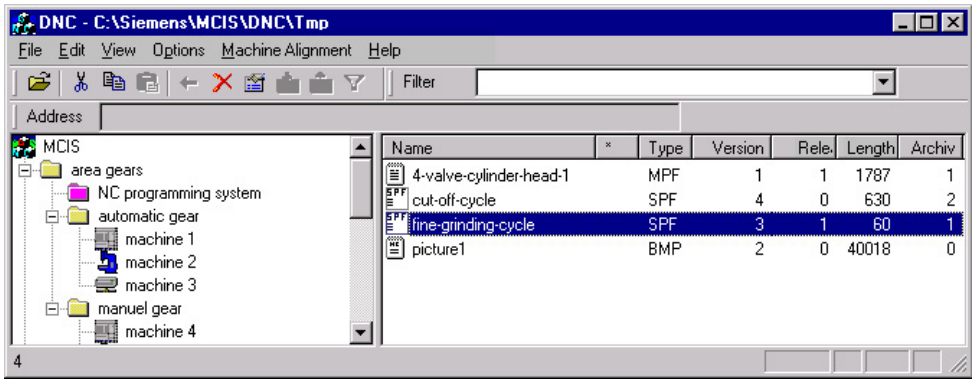

Fig. 12-1: List display with auto archive identifier

Note

The archive run can also be activated manually for a machine or machine group via the operator interface.
See also: Section 4.5 → Archiving (manual)

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12.1.1 General

The auto archive function compares NC data in SINUMERIK* machines with that in the **DNC** system and automatically downloads any differences to the **DNC** system. On the SINUMERIK* side, **DNC IFC SINUMERIK** must be installed to enable the auto archive function. The auto archive function also takes into account loaded NC data in the SINUMERIK* NC data management system.
In addition to the main/subprograms and workpieces, all the other files on the data management server and NC active data can be archived.
The **Auto archive** function downloads NC data and NC active data generated or changed in the SINUMERIK to the **DNC** server automatically where it is archived. This means that data generated or changed on the SINUMERIK (e.g. if SINUMERIK data has been lost) is always available on the server.

Note

DNC Auto Archive is available for PCU 50/70, but not for MMC 103.

12.1.2 Auto archive ID

Archived files are assigned an auto archive identifier. The auto archive identifier appears in the **DNC** list display in the **Archive** column (see Fig. 12-1).
The following auto archive IDs are supported:

Table 12-1: Auto archive ID

Auto archive ID	Description
0	The file has not been archived or archiving was set to 0 by the current archive run.
1	The file was the last one to be archived and is available on the SINUMERIK. This program is the most up-to-date version.
2	The file was archived in an earlier run, but is no longer available on the SINUMERIK.

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12.2 Configuring the auto archive function

12.2.1 General

To configure SINUMERIK* machines for automatic comparisons and archive runs, you have to set the **Auto Archive** checkbox for the machine in **DNC Admin**. The upload directory is always the machine directory.

Comparison basis for the auto archive run

NC data in the machine directory in the **DNC** system whose **auto archive identifier** is set to **1** or **2** is compared with the NC data in the machine directory on the relevant SINUMERIK*. If a version with an **auto archive identifier** is not found, released NC data at the search level in the **DNC** system is compared with the NC data in the machine directory on the relevant SINUMERIK*.

The comparison takes place on the basis of the change date and the length of the files to be compared.

For each machine, you have to configure which DM directories for the machine and which file types in these DM directories are to be compared/archived.

Auto archive time

To define the times at which the auto archive/comparison run takes place, enter **DNC Auto Archive** in the Windows task scheduler.

These configurations are explained in more detail in the following sections.

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12.2.2 Configuration in DNC Admin

You can use **DNC Admin** in configuration mode to configure the machine properties for the auto archive function.

Note

The user must be assigned the necessary authorizations for these functions.
See: User administration

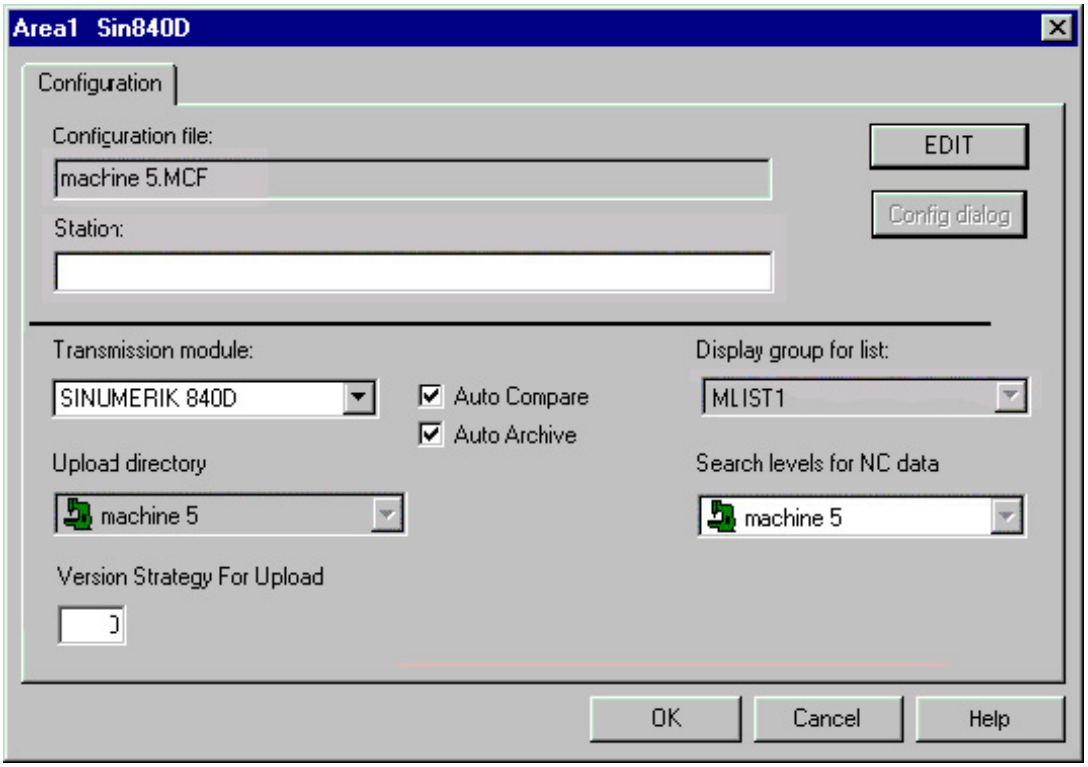

Fig. 12-2: Machine properties in configuration mode

You first have to set the transmission module "**SINUMERIK 840D** ".

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Auto Compare / Auto Archive checkbox

If only the comparison function is required, activate the **Auto Compare** checkbox.

If you want to archive NC data on the machine in the **DNC** system, activate the **Auto Archive** checkbox.

Note

Do not activate both the **Auto Compare** and **Auto Archive** checkboxes at the same time because otherwise the comparison will be carried out twice before the data is archived.

The **upload directory** is set automatically to **Machine** when you select **Auto Archive**; the **search level of the NC data** for the machine can be changed as required.

Special features of the NC data search level

The configured search level is machine specific. It determines the search levels at which the system searches for NC data for the comparison.

Note

Workpieces are considered only in the machine directory. In the **log database** and the **log trace file** , however, you are informed if a workpiece with the same name is located within the search level. This prevents "half-finished" workpieces from being generated in the machine directory, which would then result in separate versions of the program being created.

The configuration is performed via a combination field. The following search areas are available:

- Machine
- Machine, group (search area for machine and higher-level group)

Note

The **upload directory** must be located **within** the **search level** otherwise a new version of the same program would be created each time data is archived.

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Special features of the auto archive function

If **workpieces** are included in the auto archive run, they are uploaded to the machine directory even if the search level contains identical workpieces (but not in the machine directory). The reason for this is that half-finished workpieces are not created in the upload directory.

Depending on the **version strategy** (see "Configuration"), the archived NC data is either **released** or not. Its version is then determined. To allow the auto archive function to run without any user intervention, the "Delete Version Dialog" is not displayed. The version strategy is, therefore, converted automatically from 2 → 1; from 4 → 3 in the **DNC Auto Archive** function.

The configuration is performed via a combination field. The following directories are available:

- Machine
- Group (upload directory: The higher-level group of the machine)

Note

DNC creates administrative data for uploaded files. All the automatic mechanisms for version management and the release / trial cut identifiers in **DNC** apply here.

The auto archive run also sets the auto archive identifier of archived files to 1. If the machine directory already contains NC data with the same name and type, the auto archive identifier of this data may be reset to 0.

If the machine upload directory contains NC data that was not found on the machine, the auto archive identifier of this data (which was previously released or assigned auto archive ID 1) is set to 2.

The **auto archive identifier** for the NC data is only set/reset within the **machine directory** because it could otherwise be set/reset by more than one machine, which means that the assignment would no longer be clear.

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12.2.3 Configuration in the machine configuration file

General

Machines should be configured in **DNC Admin**. To do so, enter **configuration mode** in **DNC Admin**, choose the required machine, and open the **Machine Properties dialog**. To fetch the required **machine configuration file**, choose **Edit**. If this machine does not yet have a configuration file, you can create and open one containing the standard parameters for the SINUMERIK transmission module.

The **[COMPARE]** section is reserved for the auto archive. Here, you can specify the DM directories that are to be compared with the **DNC** system during the archive run. For each DM directory, you can also decide whether files in the directory are to be archived in a pseudo workpiece with the workpiece name *.DIR and which file types are included in the archive run. You can also exclude individual files in each DM directory from the comparison and archive run.

The parameters in a DM directory are separated by means of "**;**".

Note

The auto archive function is **station dependent**, which means that only machines in one particular station are compared and archived.

DHDIR...

Here, you can define up to 30 DM directories for each machine (DHDIR1 ... DHDIR30).

The numbering dictates the sequence in which the DM directories are compared and archived.

The numbering can contain gaps.

Extract from machine configuration file:
DHDIR1 = MPF.DIR;0; MPF
DHDIR3 = SPF.DIR;0; SPF

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DM directory name

The first entry after the equals sign contains the name of the **DM directory** that is to be compared/archived.

Extract from machine configuration file:
DHDIR1 = **MPF.DIR**;0; MPF

Note

If the DM directory contains another **subdirectory**, the subdirectory is **not** included in the comparison/archive run.

Pseudo workpiece

The **pseudo workpiece** decision identifier is then set to specify whether or not this DM directory is to be compared/archived in a pseudo workpiece. This is necessary if the various DM directories to be archived contain files that have the same name and type. Pseudo workpieces allow a clear association to be established with the source directory of the data. They also prevent the number of versions from increasing dramatically.

Pseudo workpieces can be identified by their name, which corresponds to the DM directory (***.DIR workpiece ID**)

Range of values:
0 ; FALSE : Files are sent directly to the upload directory

1 ; TRUE : Files are sent to a pseudo workpiece with the name of the DM directory in the upload directory and the system searches for them in the **DNC** system in order to compare them.

Extract from the machine configuration file:
```
DHDIR5 = CST.DIR;TRUE; AWB;COM;SPF
```

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File types

The pseudo workpiece decision identifier must be followed by the file types that are to be compared/archived for this DM directory. The file types are also separated with ";".

Note

Note that you can only select file types that are also entered in the **DNC** database table DNCDATATYPE.

Extract from machine configuration file:
DHDIR3 = WKS.DIR;0; **MPF;SPF;TOA;ZOA;RPA;WPL;JOB;BMP;ARC;INI**

Excluding files

For each DM directory, you can specify files that are to be excluded from the auto compare/archive run. The syntax comprises the key word: "**EXCLUDE_**" and the DM directory.

Extract from machine configuration file:
DHDIR1 = MPF.DIR;0; MPF; CEC
EXCLUDE_MPF.DIR = Test; Test1

Test.mpf, Test.cec; Test1.mpf, and Test1.cec are excluded (provided that they exist in the DM directory MPF.DIR).

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12.2.4 Backing up NC active controller data

NC active data

The auto archive function can only archive controller data that can also be saved in a file in the file system at the operator interface. The **Backup NC active data** function can be used to partially rescind this restriction.
Data that is located exclusively in the NCU/NCK is stored in a data archive that is regenerated by **DNC** during each archive run and saved there in ASCII format. This data, which cannot be entered individually (e.g. drive data or GUD variables), is called **NC active data**.

During the auto archive run, a data archive containing the NC, PLC, and file system data can be created prior to the archive run using a predefined subset. This archive is stored in the archive directory of the data management system (ARC.DIR) and archived too via the auto archive mechanism.
One archive file, which is created in the archive directory prior to the archive run, can be defined for each machine. If it already exists, it will be overwritten.
An input file is used to define which data is included in this archive file.

Settings for this function must be made both on the controller and on the **DNC** master computer.

This function allows you to create standard archive files.
You can define which sub-areas of the NC active data are to be taken into account and then read and stored in the archive file via the **DNC Cell/Plant** auto archive function.

This function is based on the service server interface (ARServer.EXE).

Note

You cannot create a series startup archive or an upgrade archive.

Important

The **Backup NC active data of the controller** function is realized only for PCU 50.

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Creating the input file for the auto archive run from the determined data

The PCU50 services function can be used to create the input file for generating an archive manually.
You can use the Select button to select the required data areas (e.g. "Machine data channel 1", "Setting data axis 2", and "Tool offsets").
An archive is then created "manually" ("Archive" pushbutton).
Once the archive has been created, an input file (ARCHIVXX.IN) in which the parameters for creating this archive are entered is stored in the F:\tmp directory. This file can now be copied 1:1 to the F:\add_on directory and, if necessary, renamed to something more meaningful (e.g. NCACTDATA.IN). This name must be entered in the ARCJOB parameter in the appropriate machine configuration file (see also: Section 10.4.5 - Configuration dialog for the SINUMERIK* connection type).

Note

If you have any further questions about the services server, contact the hotline.

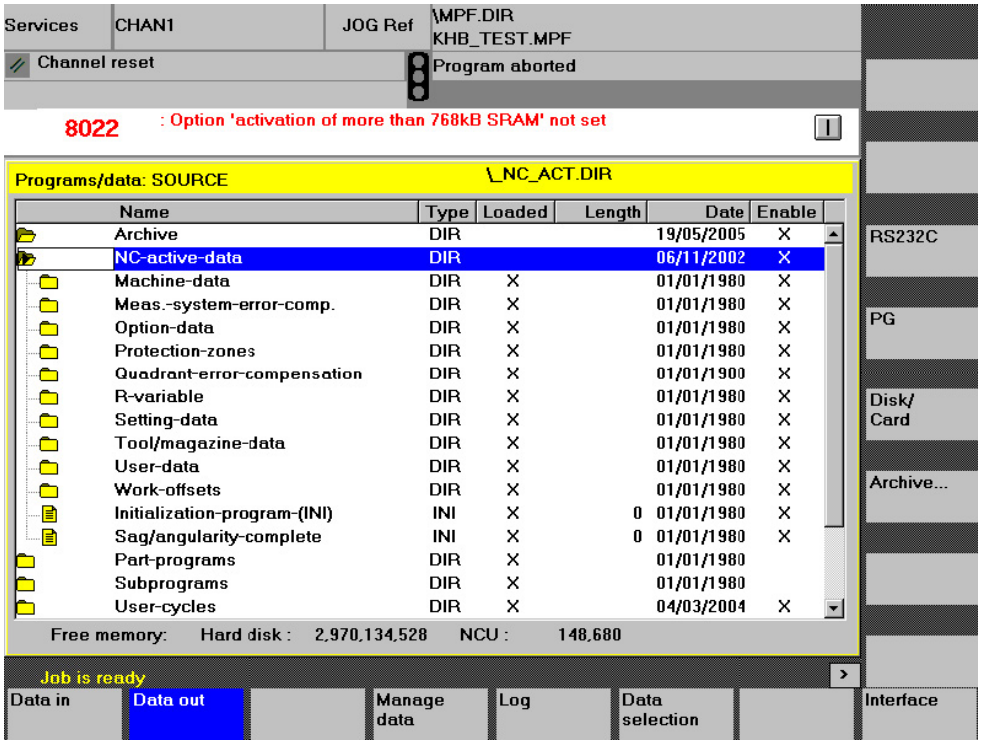

Fig. 12-3: Dialog for selecting data areas

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Settings on the master computer

Settings on the master computer can be made on the **Job Archive Server** tab page (SINUMERIK* machine configuration) in the configuration dialog for the SINUMERIK* connection type (see also: Section 10.4.5 - Configuration dialog for the SINUMERIK* connection type).

Controller settings

Data that is located in the NCU or in the controller PLC only and that cannot be loaded to the hard disk without an archive file being created should also be backed up using the auto archive function.

This includes data from the following areas:

- GUD data (Global user data)
- TEAdata (Axis machine data)
- R parameters
- Work offsets
- Compensation data
- Option data
- Setting data

You are advised not to back up all of the data in the areas above. Instead, only data that could change during operation should be backed up in an archive file. Data generated automatically by setting devices or tool offsets does not need to be backed up.

Data that has a fixed directory on the hard disk of the controller and that, if necessary, can also be loaded from the NC to the hard disk does not need to be backed up in this way either. It is better to archive this data via the standard auto archive function for unpacked data. This includes the following data and directories:

MPF.DIR	(part programs)
SPF.DIR	(subprograms)
WCS.DIR	(workpieces)
CUS.DIR	(user cycles)
CMA.DIR	(manufacturer cycles)
CST.DIR	(standard cycles)

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12.2.5 Start parameters for auto archive

The auto archive function has two start parameters.

ONLYCOMP

This parameter determines whether the setting for the machines is to apply for the archive run, or whether the archive run is to be skipped and just the comparison carried out.

Without the start parameters, the archive function is carried out depending on how the machine has been set.

When the "**ONLYCOMP**" start parameter is set, only the comparison function is carried out on all the machines for which "Auto Compare" is configured, regardless of whether the "Auto Archive" function is also configured.

Call:
DNCAArch.exe **ONLYCOMP**

SHOW_FILESONDNC

This parameter determines whether the NC data found in the **DNC** system only is to be displayed in the comparison results.

Without this parameter, this NC data is not displayed in the comparison results because it is usually of little relevance for the auto archive function.

This NC data is displayed if the start parameter "**SHOW_FILESONDNC**" is set.

Call:
DNCAArch.exe **SHOW_FILESONDNC**
DNCAArch.exe ONLYCOMP **SHOW_FILESONDNC**

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12.2.6 Starting the auto archive function automatically

The Windows task scheduler (service: Task Scheduler) can be used to start the auto archive function automatically at set times.

To do so, the **task scheduler** must be running and AT commands must be used to determine at what times **DNC** Auto Archive is to be started.

Example:

```
C:\>  AT 01:00 /every:Mo,Tues,Wed,Thur,Fr,Sa,Sun "C:\Siemens\MCIS\DNC\DNCAArch.exe"
```

Auto Archive started each weekday at 01:00 a.m.

```
C:\>  AT
```

Shows the list of scheduled commands:

```
Status ID   Day                     Time          Command row
-------------------------------------------------------------------------------
       1    Every Mo Tues Wed Thur Fr...01:00 AM     C:\Siemens\MCIS\DNC\DNCAArch.exe
```

Note

For more help on using the task scheduler, see the Windows help function (Start→Help and Support) under: **Task scheduler - at command** (scheduled tasks and the AT command).

The activation can also be started **under Insert Control Panel / Scheduled Task**.

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12.3 Comparison results

When the auto archive run is started, it creates or replaces a file with the comparison results for each archived machine. These files are located in the **DNC** data directory in the **CmpResult**, with the **name of the machine** and additional "**_AArch.txt**" attachment.

The files are in English.

The files contain the following information:

1. Group and machine name (below each other)
2. Date (at start and end)
3. An area entitled "**NC Data in machine only**" in which files are listed that were only found on the machine.
4. An area entitled "**different NC data**" in which files on the machine are listed that differ from those in the **DNC** system.
5. An area entitled "**NC Data in DNC system only**" in which files are listed that were only found in the **DNC** system. This section is created with only the start parameter "**SHOW_FILESONDNC**". The NC data located in this section and in the upload directory is assigned the auto archive identifier "2".
6. The final result is specified at the end. This indicates whether errors occurred during the auto archive run and how many files were archived. If no errors occurred and this machine has been configured for archiving, all the above files must be archived. This means that no differences are found during the next **DNC** auto archive run provided that the data on the machine has not been changed again by this point.

12.4 Tracking auto archive actions

Since the auto archive function does not have a user interface, its progress can only be tracked via the central logbook.

The **comparison results** can also be used for this purpose. Note that these are regenerated at the start of each auto archive run, which means that no history function is available. The system always displays the last actions for each machine.

SINUMERIK*:	SINUMERIK 810D SINUMERIK 840D SINUMERIK 840Di PCU50 under Windows with SINUMERIK 840D sl

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Motion Control Information Systems

SINUMERIK 840D/840Di/810D/PCU50 on Windows and SINUMERIK 840D sl
NC Program Management DNC

DNC IFC SINUMERIK - Downloading NC Data via a Network (FBDN2)

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1

1 Introduction

The DNC IFC SINUMERIK software is used to connect CNC machines with SINUMERIK* (PCU50/70 and MMC103) to the NC program management DNC Plant or DNC Cell via the Ethernet network.
DNC IFC SINUMERIK provides user interfaces on the SINUMERIK operator panel to request NC data, such as NC programs, workpiece data (e.g. in graphical form) from the **DNC Cell/Plant** archive. NC data, e.g. optimized NC programs, can also be uploaded to the DNC archive.
In this way, any required NC data and information (also in graphical form) is available quickly and up-to-date on the **SINUMERIK**.

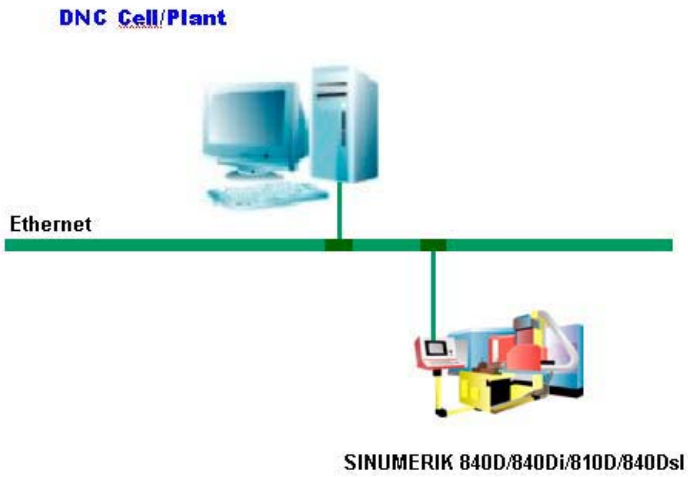

Fig. 1-1: SINUMERIK with **DNC IFC SINUMERIK** connection to DNC via an Ethernet network

SINUMERIK*:	SINUMERIK 810D SINUMERIK 840D SINUMERIK 840Di PCU50 under Windows with SINUMERIK 840D sl

■

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Notes

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2

2 System requirements on SINUMERIK

2.1 Hardware 2-8

2.2 Software 2-8

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2.1 Hardware

DNC IFC SINUMERIK can run on **SINUMERIK*** with the following hardware:

- **PCU 50/70 with OP 010/012/015, TCU, HT8**
- **MMC103 with OP 031/032**
  and additionally:
  - PCI/ISA adapter
  - Ethernet network interface

2.2 Software

The following **SINUMERIK** software is required for **DNC IFC SINUMERIK**:

- **HMI software as of SW Version 6**
  under **Windows NT/XP** on PCU 50/70
- **MMC software as of SW Version 4.04.17**
  (only possible on request for a specific project)
  under **Windows 95** on MMC 103

Note

There are function restrictions when using MMC 103 (e.g. no archiving, no quick filter).

SINUMERIK*: SINUMERIK 810D
SINUMERIK 840D
SINUMERIK 840Di
PCU50 under Windows with SINUMERIK 840D sl

■

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3

3 Operator interface

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DNC IFC SINUMERIK is integrated in **SINUMERIK HMI** and can be called via the **DNC IFC** function key.

3.1 User interface of DNC IFC SINUMERIK on the SINUMERIK

The following basic user interface is available:

- **DNC administration**
  to display the NC programs available in the **DNC** archive **DNC Cell/Plant** and to download the NC data to the **SINUMERIK**
- **Data management**
  to display the NC programs available in the **SINUMERIK** data management and to upload the NC data to the **DNC** archive **DNC Cell/Plant**
- **Logbook**
  to display, for example, NC program downloads as well as various system messages
- **Filter**
  to select and change filters for the NC data in the **DNC** archive **DNC Cell/Plant**

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3.2 Structure of the user interface

3.2.1 General

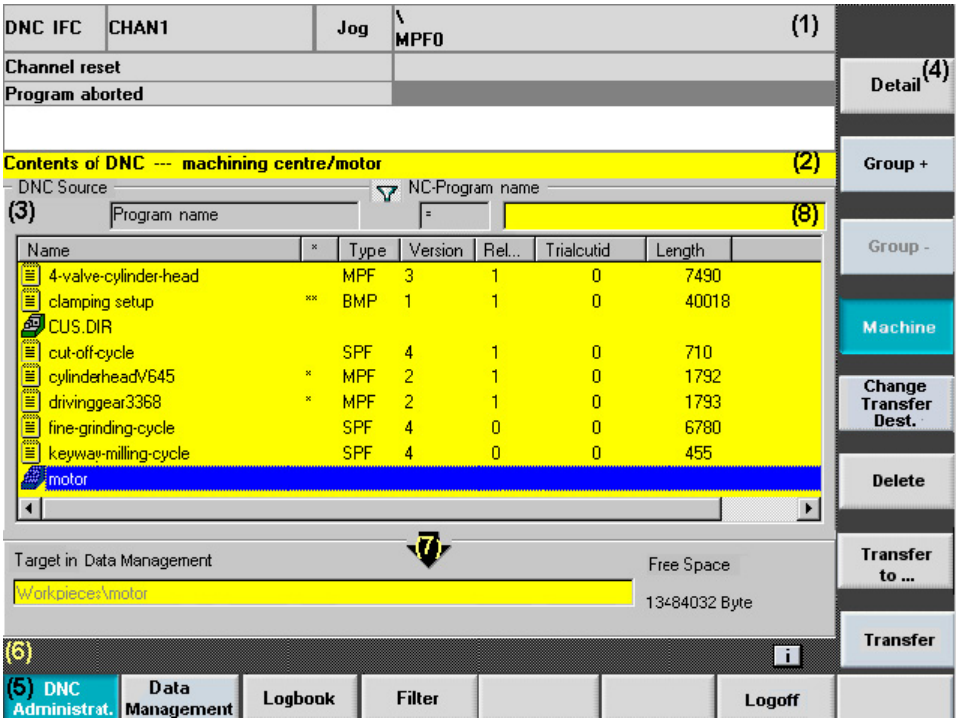

Fig. 3-1: DNC IFC SINUMERIK **user interface**

Structure

The **DNC Administration** screen is divided into the following areas:
(1) SINUMERIK HMI **header**
(2) Title bar
(3) DNC IFC SINUMERIK **screen contents**
(4) Vertical softkeys
(5) Horizontal softkeys
(6) Message line
(7) Transfer direction
(8) Quick filter

Header (1)

The header is part of the **SINUMERIK HMI**. The most important machine states, the status of the NC and alarms from the alarm server are displayed here.

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Title bar (2)

The title of the respective screen window is displayed in the title bar. The NC data storage structure of the machine in the **DNC** archive is also displayed. In the above example, the data is managed in the **DNC** archive in the **area motors** group, of the **group 6 cylinders** subgroup and the **machining centre** machine.

Note

The NC data structure of the machine is performed in the configuration program (DNC_IFC.INI) on the PCU 50/70 / MMC 103.

Screen contents of DNC IFC SINUMERIK (3)

The contents consist of a source and target area. The data management of **DNC** is always displayed in the upper part of the screen; depending on the screen, it is the target or the source.
DNC IFC SINUMERIK has two views of the NC data available in the system:

- DNC administration
- Data management

The selected NC programs can be downloaded via softkeys.

Further functions can also be selected via softkeys:

- Logbook
- Filter
- Detail view of NC data

Message line (6)

Error and operation messages (e.g. for the download) are displayed in the message line.
The i icon is on the right to call the online help.

Transfer arrow (7)

A direction arrow is displayed at the interface between the upper and the lower screen areas which indicates the direction for the transfer of the NC data.

Quick filter bar (8)

The quick filter function allows you to change a filter value without having to call up the filter selection.
Once you have selected a filter, the first filter condition of the current filter is displayed in three fields in the toolbar area. The first two fields contain the field name and operand, while the third field, which can be edited, contains the current filter condition value.

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Note

The value of the filter condition is treated in the same way as a value with a wildcard, although the wildcards are not displayed in this field.

Examples:
Program name = A
means that the system filters according to program names that contain "A"
e.g. Program1, Appl_1, 135_A_xzy

Program name = A*
means that the system filters according to program names
that begin with "A"
e.g. Appl_1

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3.2.2 Refreshing the displayed NC data

During active system operation, new NC programs are accepted, released, deleted, etc. in the **DNC** archive by NC programmers. In order that these changes in the **DNC** archive are also displayed in **DNC IFC SINUMERIK**, the display is refreshed:

- Automatically when **DNC IFC SINUMERIK** is switched to the foreground
- Cyclically when this has been set in the configuration user interface. The time between the last operator action and the first refresh as well as the time between two refresh cycles, can also be set.

3.3 Online help

The online help for operator support of the **DNC IFC SINUMERIK** software can be called via the Information key. The online help contains information on the current operator control screen as well as on the system operation.

3.4 Languages

If the language is changed on the controller, **DNC IFC SINUMERIK** automatically adjusts to the new language when the language is available for **DNC IFC SINUMERIK**.
DNC IFC SINUMERIK is supplied in the languages: German, English, French, Spanish, Italian, Chinese and Russian. The online help is available in the languages: German, English (for English, Chinese and Russian DNC IFC SINUMERIK), French, Spanish and Italian.

■

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4

4 Functions

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4.1 Connection to DNC Cell/Plant

DNC IFC SINUMERIK is used to access NC data that is archived and managed in **DNC Cell/Plant**. **DNC IFC SINUMERIK** allows the user to download or upload NC data via an Ethernet network from the controller.

4.2 NC data download from DNC Cell/Plant to the SINUMERIK

4.2.1 View of the data management of DNC Cell/Plant

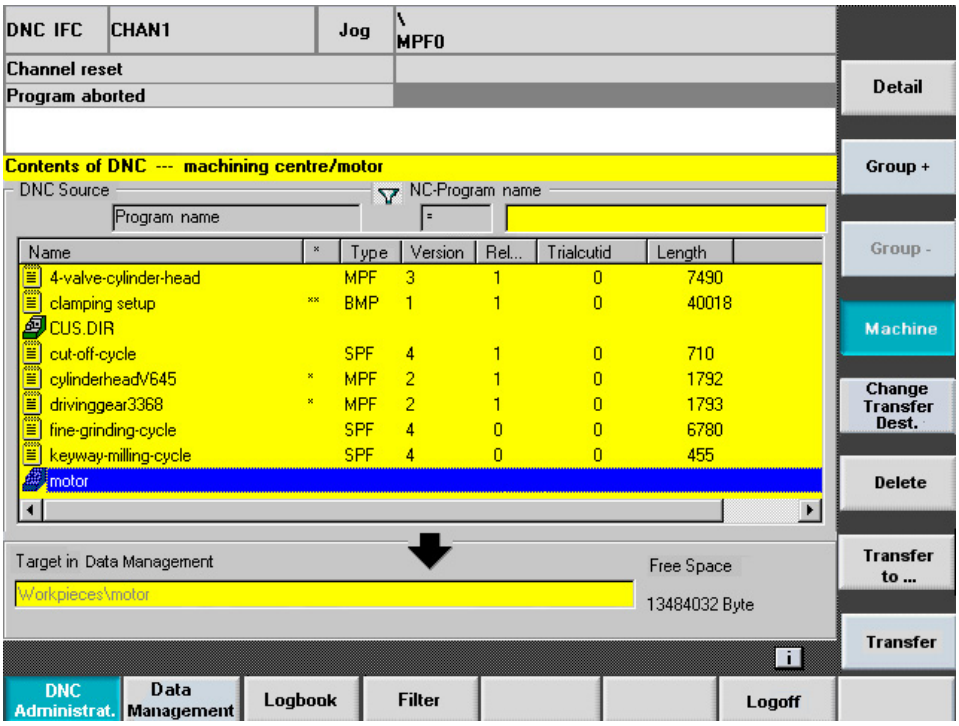

Fig. 4-1: DNC administration

General

The DNC Administration screen provides the machine operator with a user interface to view the available NC programs and for the NC data transfer.

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Selection of the hierarchy level of the plant topology in DNC

In the **DNC Cell/Plant** archive, the NC data can be stored in several hierarchy levels (group, subgroup, machine, etc.) depending on the plant topology. You can navigate on these hierarchy levels with the relevant vertical softkeys and display the NC data of this hierarchy level and the ones above.
The hierarchy affiliation of the NC data in the plant topology of **DNC Cell/Plant** is documented in the * column. The following assignment applies:

Table 4-1 Assignment of the NC data in the DNC plant topology

* column	Description
	Machine
* **	Group Higher-level group

Source

In the upper area of the screen, NC data is displayed in the form of a tabular list view, which is available on the higher-level **DNC Cell/Plant** for the SINUMERIK. The list displays all the available NC data and workpiece directories of **DNC** in alphabetical order.

Table 4-2 Identifiers of the DNC data management in **DNC IFC SINUMERIK**

Identifiers	Description
	Symbol for NC data
	Symbol for workpieces / pseudo workpieces

Target

The standard download target is displayed in the lower part of the screen. Depending on the configuration of **DNC IFC SINUMERIK**, the download is performed:

- With the **Transfer** softkey (target in file system)

or

- With the **Transfer & load** softkey directly into the NCK (target in NCK).

Except for workpieces and pseudo workpieces, the target path results from the NC data type.

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4.2.2 NC data transfer (standard)

NC data can be selected in the source area and downloaded to the **SINUMERIK**. The NC data can be:

- Stored on the operator panel with integrated PC (PCU or MMC) (**Transfer** softkey)

or

- Loaded directly into the NC area (NCK = NC kernel) (**Transfer & load** softkey).

The preset download target, file system or NCK, can be changed when the select key **Change transfer target** (configurable on the configuration user interface) is available.

Individual NC data files from the **DNC** source are downloaded to the relevant type directory of the data management. NC data that belongs to a workpiece is also downloaded to the relevant workpiece directory in the controller, irrespective of their data type. Copying procedures in progress are displayed in the message line.

Table 4-3 Correlation between the NC data type in DNC and the target path of the file system or the NCK

NC data file type in DNC	**Target directory in the file system or in the NCK**)*
.MPF	Part programs
.SPF	Subprograms
.ARC	Archives
NC data in workpieces	Workpieces

)* If no pseudo workpiece has been defined. Files from pseudo workpieces are downloaded to the respective data management directories of the same name.

If a type conversion is configured in the **DNC IFC SINUMERIK** configuration user interface, the file types for the download to the file system or NCK are changed in accordance with the conversion tables.
The download from **DNC** to the controller is performed irrespective of the plant topology in **DNC**.

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4.2.3 NC data transfer (with change of target, name, type)

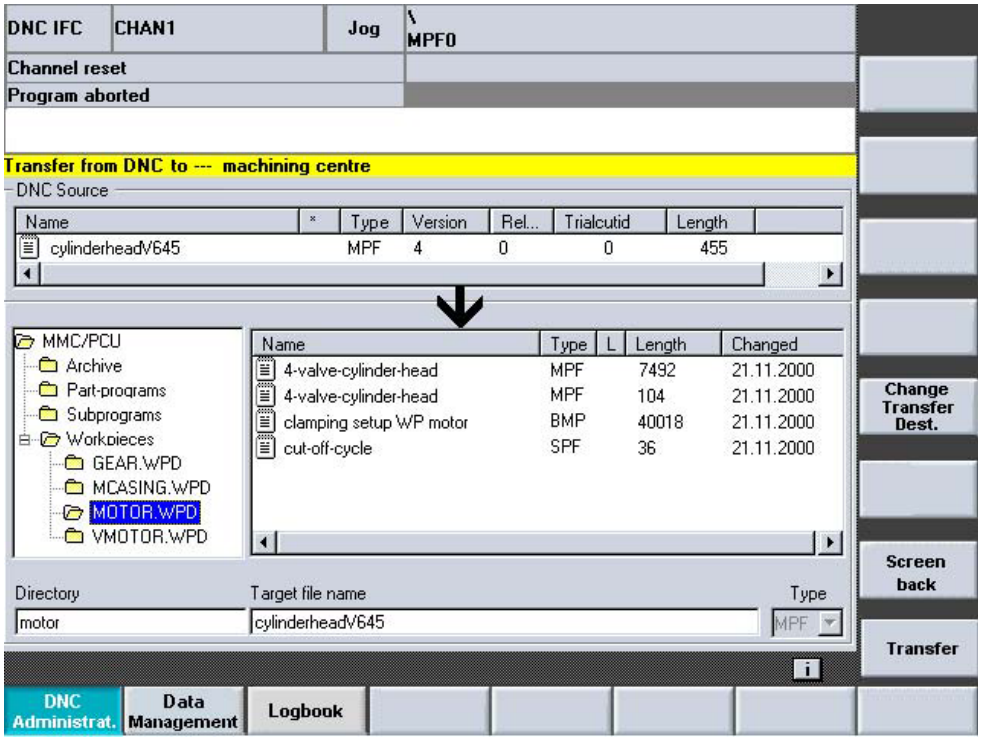

Fig. 4-2: Downloading NC data to a selectable target of the SINUMERIK (a workpiece directory in this case)

General

The following can be performed during the transfer with this function (**Transfer to** softkey):

- The name of the target file can be changed.
- The type of the target file and the target directory can be changed.
- The NC file can be stored in a workpiece directory.
- Changing of the workpiece name in the target system.

The NC data can be downloaded to the file system and also directly into the NCK as with the standard download.

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4.2.4 Delete

With the **Delete** softkey, NC data files that have not been released can be deleted from the **DNC Cell/Plant** archive when the user has the appropriate rights.

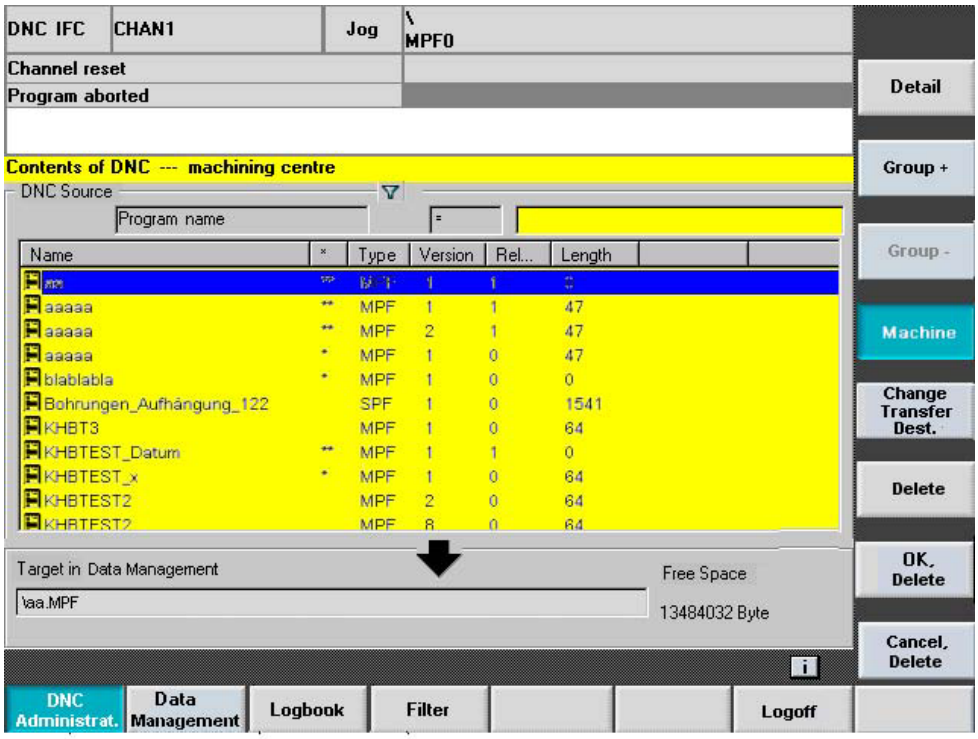

Fig. 4-3: Delete NC data

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4.3 NC data upload from the SINUMERIK to DNC Cell/Plant

4.3.1 View of the data management

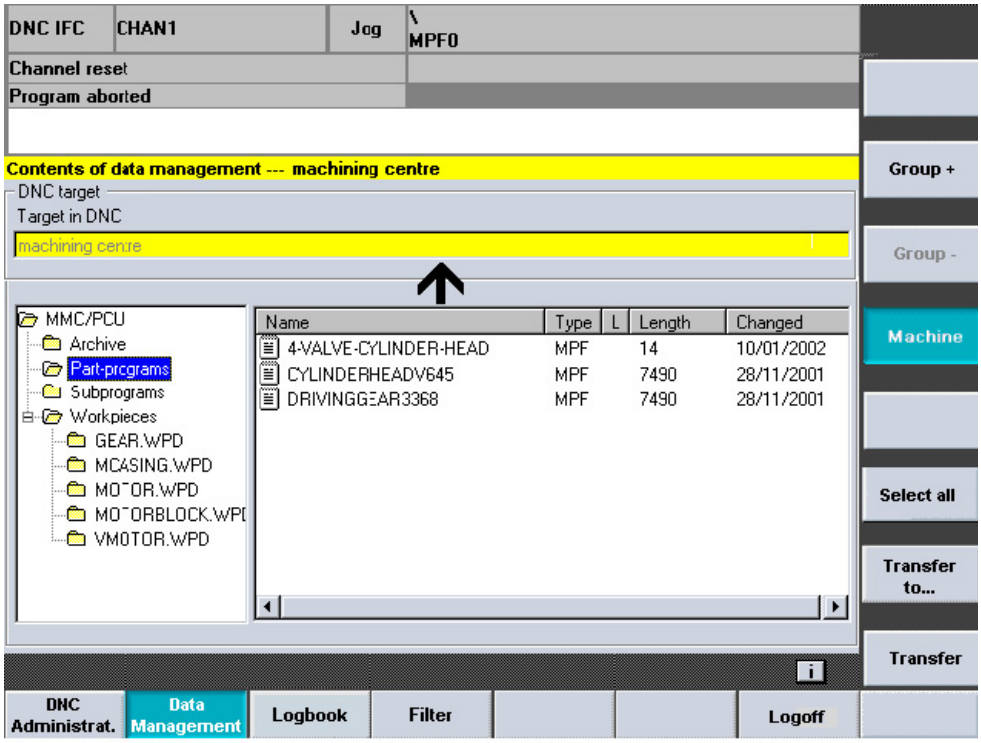

Fig. 4-4: Data management

General

The Data Management screen provides the machine operator with a user interface to view the NC programs available in the **SINUMERIK** and for the NC data upload.

Target

In the upper area of the screen, the target in the **DNC Cell/Plant** archive is displayed.
This target area (group, machine) is set in the configuration user interface.

Source

The lower area of the screen contains the contents of the data management in a tree view and list view.

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4.3.2 NC data upload (standard)

NC data (e.g. optimized NC programs) can be selected in the source area and uploaded to the target area of the **DNC Cell/Plant** archive.
This target area (group, machine) is set in the configuration user interface.
NC data that belongs to a workpiece is also uploaded to the relevant workpiece directory of the configured hierarchy level (group, machine) in the **DNC** archive, irrespective of their NC data type.
NC data from data management directories for which a pseudo workpiece is configured in **DNC**, is uploaded to the relevant pseudo workpiece.

If a type conversion is configured in the configuration file, the file types for the upload to the **DNC** are changed in accordance with the conversion tables.

The copying procedures in progress is displayed in the message line.

Before an NC data file is uploaded, a check is made to determine whether the maximum number of versions of this NC data has already been reached in the **DNC** archive. If this is the case, an automatic deletion is performed before the upload or the **Versions Deletion dialog** is activated and the user prompted to delete one of the available old versions, depending on the version strategy. After the deletion, the operator can decide whether to continue with the upload or cancel it.

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4.3.3 NC data upload (with change of target, name, type)

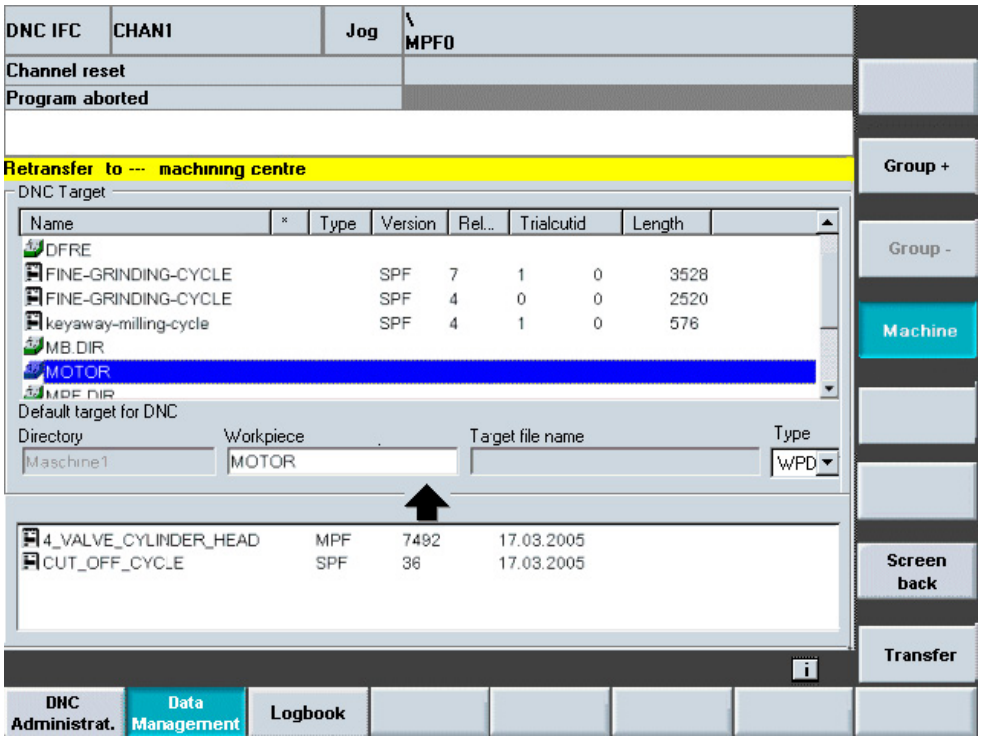

Fig. 4-5: Uploading NC data to a selectable target in DNC (target workpiece MOTOR in this case)

General

The following can be performed during the transfer with this function (**Transfer to** softkey):

- The name of the target file can be changed.
- The type of the target file and the target directory can be changed.
- The NC file can be stored in a workpiece directory.

The NC data upload can be performed at an arbitrary position in the plant topology (group, machine).

Changing the workpiece directory via an entry field in the target directory

With a new workpiece, this does not exist in the plant topology of the **DNC-** archive and is not displayed in the list view. The new workpiece name must be entered.

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4.4 NC data detail view

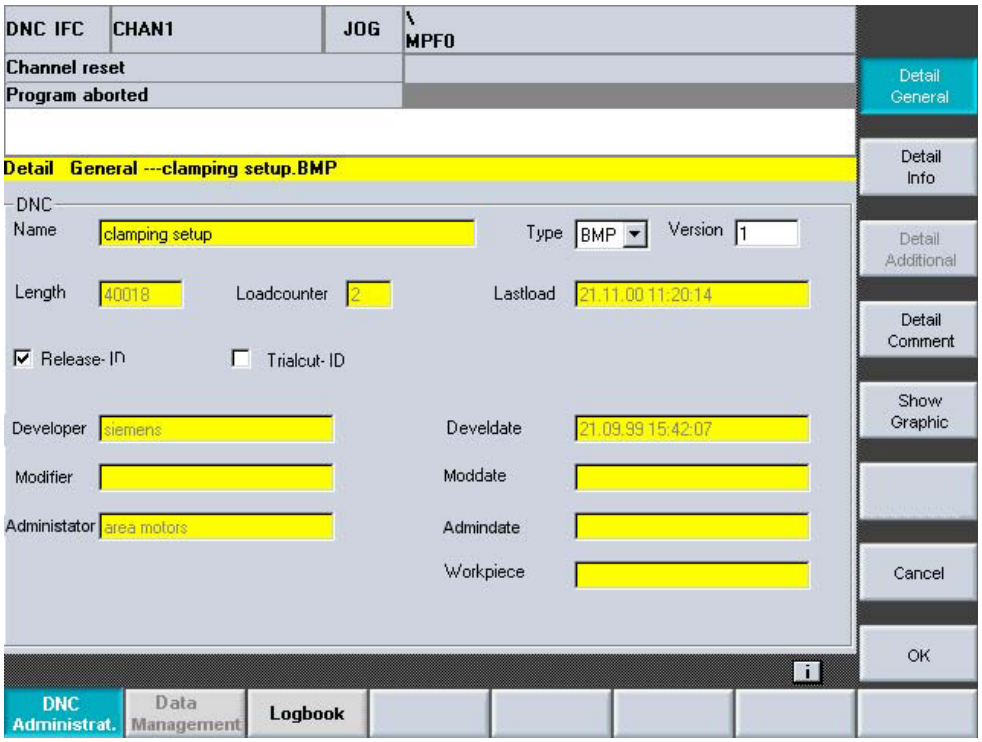

Fig. 4-6: Detail dialog

General

In addition to the program name for each NC program there is further administration/detail information that can be displayed in **DNC IFC SINUMERIK**.

The screen structure is user-dependent as for **DNC Cell/Plant**. The screen description is managed by **DNC Cell/Plant**.
The Detail dialog can contain up to four detail screens that are called via the vertical softkeys.

The administration information that has been released for editing, can be changed.

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Display graphic

Graphics, such as graphical information for the workpiece machining, can be displayed via the **Display graphic** softkey.

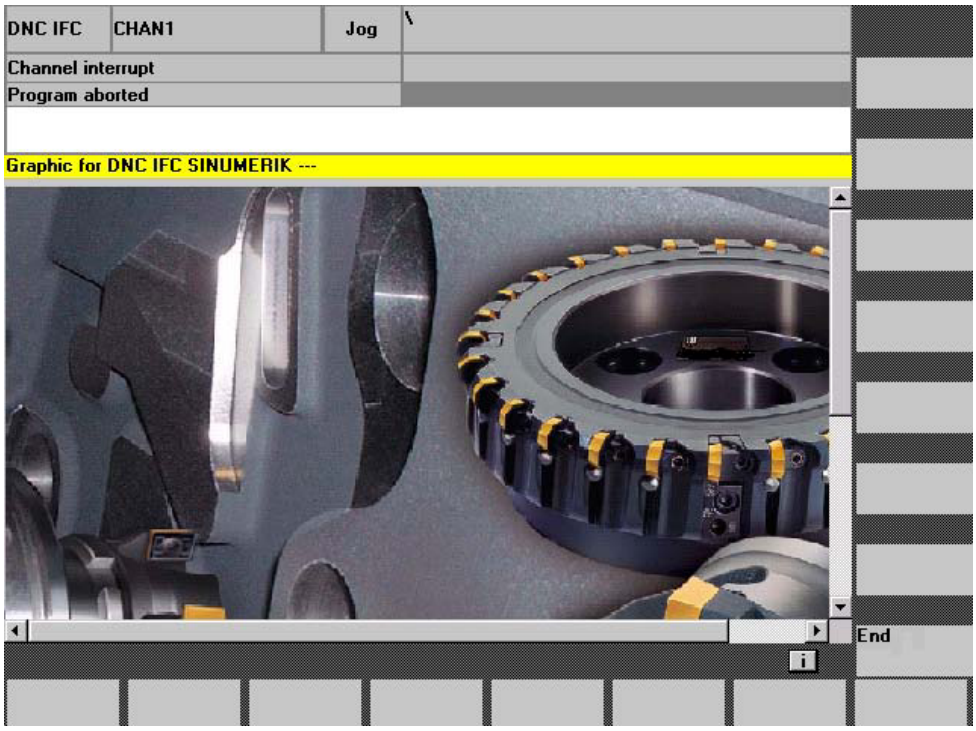

Fig. 4-7: Display of a graphic in the detail view

Note

Graphics can only be displayed with PCU and access via network drives (not in conjunction with FTP protocol).
All graphic types that are supported by the Internet Explorer can be displayed (e.g. BMP, JPG). Further graphic types can be displayed when the appropriate plug-ins are installed. The graphic types must be entered in the configuration user interface.

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4.5 Filter function

The filter function provides the user with a filtered view of the **DNC Cell/Plant** archive. When the filter is activated, the user only sees the data that corresponds to the filter conditions.

Note

Filters for **DNC IFC SINUMERIK** are created and assigned in **DNC Cell/Plant**.

In the DNC Administration and Data Management screens, the following filter functions are available via the **Filter** softkey:

- Filter on/off
- Edit current filter
- Filter selection

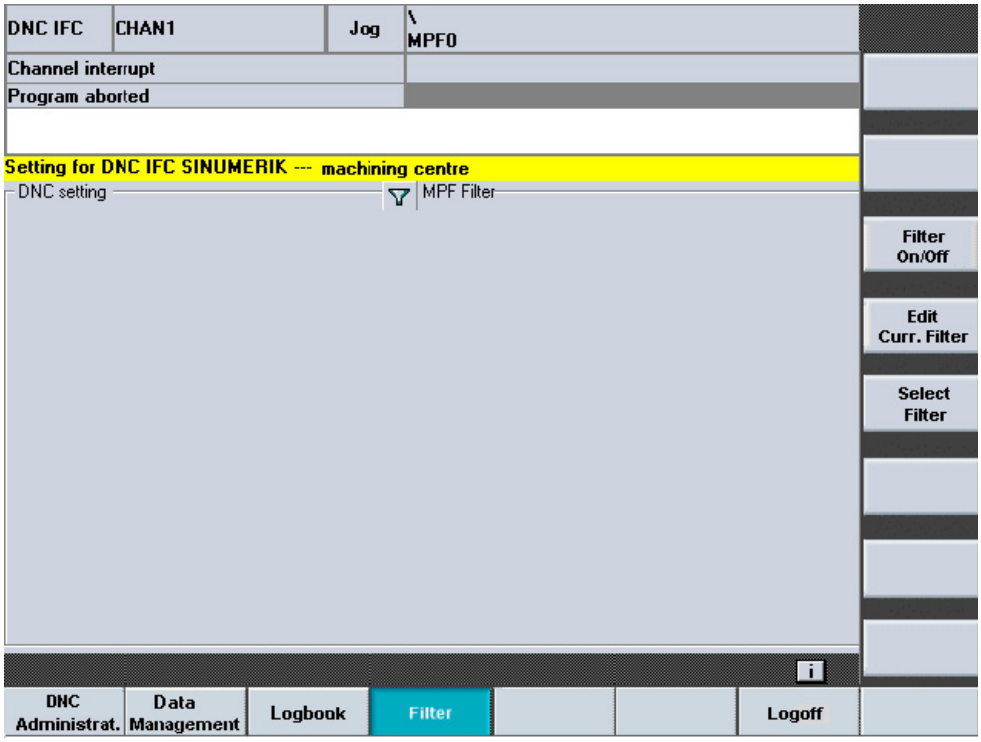

Fig. 4-8: Filter settings

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Switching filter on/off

The name of the current filter is displayed below the header line in the Filter screen.

The filter symbol indicates whether the filter is switched on or off

Filter switched on	Filter switched off

The current filter can be switched on or off via softkey (F3).

Edit current filter

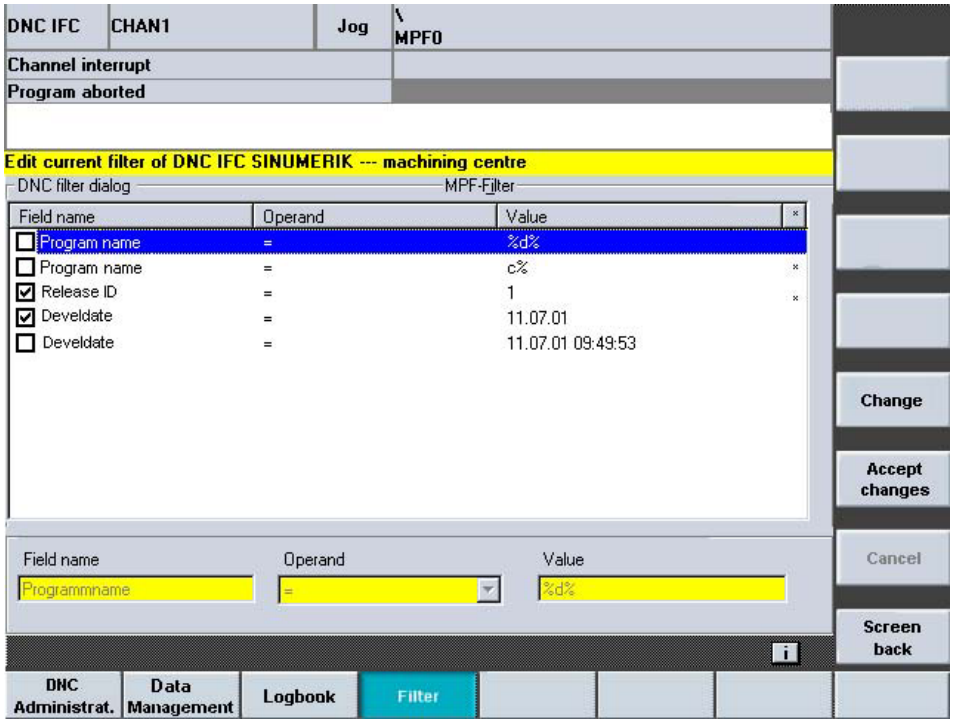

Fig. 4-9: Dialog for changing a filter

The Filter dialog displays all the filter criteria of the current filter. Activated checkboxes in front of the filter criteria indicate the active criteria.
The respective filter criterion can be activated or deactivated via the checkbox.
Operand and value of the respective filter criterion can also be changed with **Change** and **Accept changes**.

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Directly editing filter criteria

It is possible to directly edit filter criteria in the relevant screen line without having to use **Change** and **Accept changes**. Which criteria can be directly edited is indicated in the * column (* in the line of the respective filter criterion means that it can be directly edited). Two preconditions must be satisfied for this:

1. The following parameter must be set in DNC_IFC.INI:
   [GLOBAL]
   …
   FilterInlineEdit =1
2. The **Editable** button must be activated in DNC when creating the filter criteria.

If the first criterion is not satisfied, the * column is not displayed.

Note

Expansions or deletions of filter criteria are not performed in **DNC IFC SINUMERIK**, but in **DNC Cell/Plant**.

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Filter selection

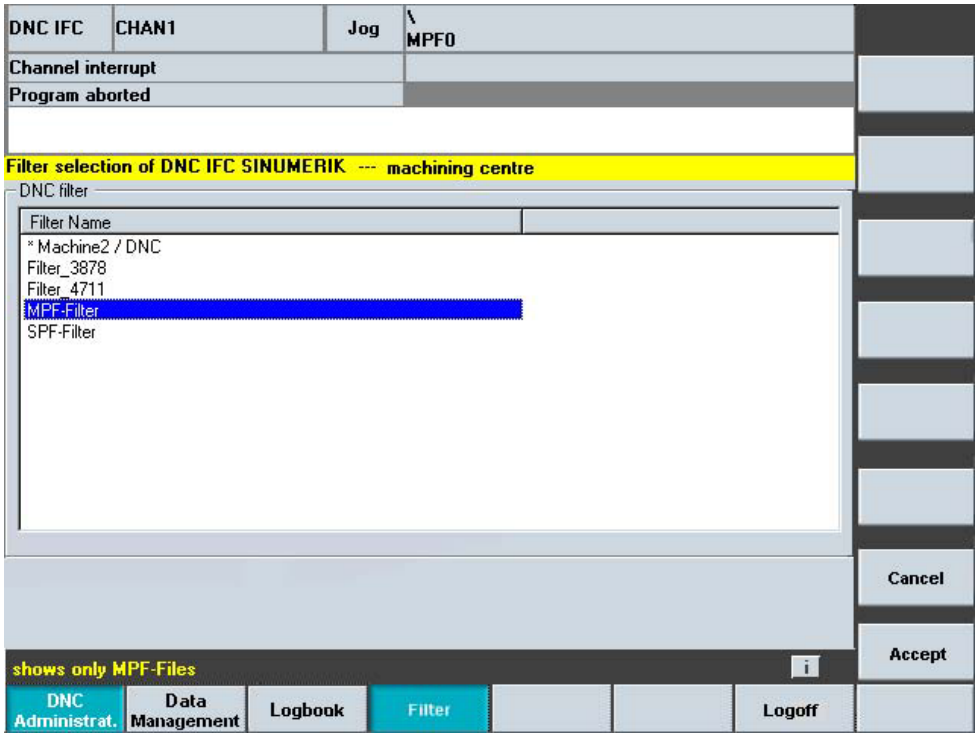

Fig. 4-10: Filter Selection dialog

All filters available for the machine and user are listed in the Filter Selection dialog. The message line contains a comment on the selected filter.

Note

If a filter is marked with *, this is a machine and user-specific filter. The filter name contains the machine and user name for which this filter is valid.

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Quick filter

Fig. 4-11: Quick filter

The following precondition must be satisfied for the quick filter to be displayed:
The following parameter must be set in DNC_IFC.INI:
[GLOBAL]
…
Quickfilter =1

The quick filter function allows you to change a filter value without having to call up the filter selection.
Once you have selected a filter, the first filter condition of the current filter is displayed in three fields in the toolbar area. The first two fields contain the field name and operand, while the third field, which can be edited, contains the current filter condition value.
If another condition is to be displayed in the quick filter, the order of the conditions must be changed in the filter editor of DNC Cell/Plant.

Note

The value of the filter condition is treated in the same way as a value with a wildcard, although the wildcards are not displayed in this field.

Examples:
Program name = A
means that the system filters according to program names that contain "A"
e.g. Program1, Appl_1, 135_A_xzy

Program name = A*
means that the system filters according to program names
that begin with "A"
e.g. Appl_1

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4.6 Logbook

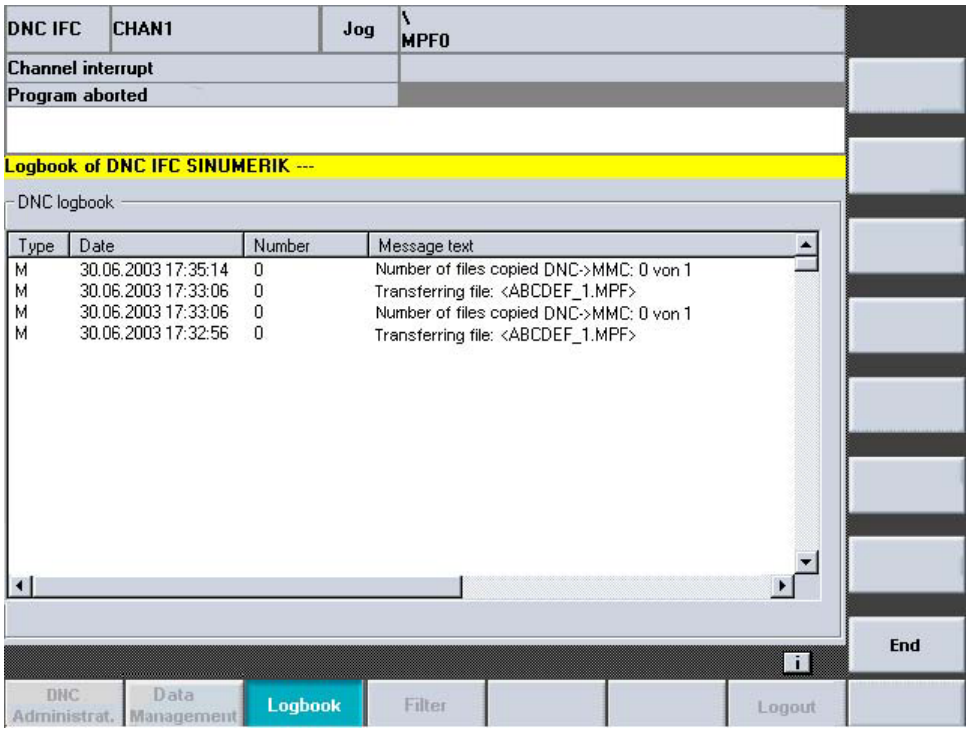

Fig. 4-12: Logbook

General

The logbook contains all the errors and messages that were displayed in the message line with data and time. This enables operations such as downloads, uploads, deletions, user logins and logouts, etc. and any errors that have occurred, to be traced.
The logbook can be displayed from any screen via the **Logbook** softkey.

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4.7 Login

General

DNC IFC SINUMERIK normally starts with an automatic login, i.e. work is performed with the user and his/her rights that are entered in the configuration file. Further options for the login can be set.

- If different users with different rights are to be able to log in, this must be set manually in a Login dialog.
- It is also possible to work with the user rights that correspond to the current protection level of the **SINUMERIK** or the key-operated switch position.

The login procedure (automatic or manual login) can be set in the DNC_IFC.INI configuration file or via the Configuration dialog.

■

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5

5 Configuration file

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5.1 General

The settings of **DNC IFC SINUMERIK** are configured using a configuration program. This is started in the Windows service mode of the SINUMERIK 840D with PCU50 at f:\Add_on\DNC_IFC, or with MMC103 at c:\Add_on\DNC_IFC, by double-clicking the DNC_IFCCFG.exe file. The configuration performed with the configuration program is then 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 be activated for a detailed recording
      ; Only change temporarily during troubleshooting!
TRACE =1

      ; IP address or DNS 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=On/N=Off)
      ; Note:  DriveInternPath cannot be set to 1 or 2 if
      ; DataTypeChange=Y
DataTypeChange =N
HWSystem =32

      ; Default transfer target switchable via Select softkey
      ; (Y=Softkey available / N=Softkey not available)
ToggleSK =Y

      ; Default transfer target
      ; (MMC=Transfer to MMC / NCK=Transfer to NCK)
      ; Switchable via softkeys (MMC_NCK=Transfer to MMC or NCK ->
ToggleSK=Y set)
DefaultTransfer =MMC_NCK

      ; Standard directory when starting DNC IFC:
      ; (0=Machine / 1=Group / 2=Higher-level group)
StartupLayer =0

      ; Job interfaces mode
      ; (0=Interactive / 1=Automatic)
AuToDownLoad =0

      ; Time in minutes after which an unfinished job is deleted
DeleteTime =60

AutoResolution =Y
SwitchLanguage =
      ; FontName =Arial Unicode MS -> only relevant for languages with
special characters (such as Russian, Chinese)
FontName=

; 0 = Do not overwrite, 1 = Overwrite
; The check as to whether an NC program is already available only functions
correctly with DriveInternPath = 0
OverwriteNCData = 1
```

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```
[FTP]
      ; FTP parameters (only for FTP protocol = 1/2) relevant.
FTP-HOST =DAISY
FTP-User =A99399958D9895928F
FTP-PW =A98CA48E93A092C79EA8A18E8FD59A96A1A696

; Transfer mode (1=ASCII/2=Binary)
FTP-Mode =2

[DCOM]
      ; DCOM configuration:  Login
DOMAIN =DNC_DOM
USER = John Do
PASSWORD = A98CA48E93A092C79EA8A18E8FD59A96A1A696

[REMOTELOGIN]
REMOTELOGIN=0

[PATHS]
      ; Path names without final backslash
MMCIniDrive =F:

      ; Data directory of MCIS DNC for access to the NC data
      ; The drive specification must be from the DNC IFC viewpoint
      ; Either connected network drives (1.) can be specified
      ; or computer and path in UNC notation (2.)  When using
      ; FTP (3.), the path must be specified in the notation required
required
      ; by the FTP server
      ;  (1.)  N:  Is connected to DNC\Data on the MCIS DNC server
      ;WorkPathDNC =N:
      ;  (2.)  UNC notation
      ;WorkPathDNC =\\DAISY\DNC$\Data
      ;  (3.)  Path specification for the FTP server
      ;WorkPathDNC =/DNC/Data
WorkPathDNC =\\DAISY\DNC\Data

      ; DHSTempPath for the temporary storage of files during transfer 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 first header
/ 2= Evaluate all headers)
      ; Caution:  If DataTypeChange=Y -> DriveInternPath cannot be set to 1
or 2
DriveInternPath =0
   ; If DriveInternPath =2 and DIPNoWP =1, then the file compiled ;from all
   workpieces in the upload directory, is not stored in ;a workpiece, but
   directly in the upload directory.
DIPNoWP=1

[FILES]
LogFile =DNC_IFC.log
ErrLogLen =10

[MACHINE]
      ; Station name in MCIS DNC
MACHINE = PCU50_840D

      ; Path for upload
      ; 0= Machine / 1= Group / 2= Main group
DefUpload =0
```

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```
[USER]
      ; Define the type of login:
      ; 0= No dialog, Name= and Password= is used
      ; 1= User and password must be entered
      ; 2= Login with parameter ACCESSLEVEL= assigned user
      ; 3= Login with parameter ACCESSLEVEL= assigned user or dialog
Login =0

      ; Because of the display group assignment by MCIS DNC, the user name
must be entered
      ; device-specifically for the same user, depending on the screen
resolution
Name =DNC
Password =DNC

      ; Access levels according to SINUMERIK HMI Advanced commissioning user
interface
ACCESSLEVEL0 =HMISystem
ACCESSLEVEL1 =HMIManufacturer
ACCESSLEVEL2 =HMIService
ACCESSLEVEL3 =HMIUser
ACCESSLEVEL4 =HMIKeyPosition3
ACCESSLEVEL5 =HMIKeyPosition2
ACCESSLEVEL6 =HMIKeyPosition1
ACCESSLEVEL7 =HMIKeyPosition0

[TIME]
      ; Wait time influences the duration of the display of the time-
controlled messages
MessageTime =1000

      ; Wait time for VB functions
SysTime =500

      ; Timer controls the delay of the list view display when scrolling in
the tree view
DelayTime =700

      ; Time during which the transfer of a program can be aborted
BreakTime =500

[REFRESH]
      ; Refresh list view regularly (Y=On/N=Off)
Refresh =N

      ; Values in seconds
      ; Time between last actuation and first refresh
RefreshDelay =10

      ; Time between two refresh operations
RefreshInterval =60

[GRAPHICTYPE]
      ; Permissible graphic types (in upper case letters)
TYPE1 =GIF
TYPE2 =JPG
TYPE3 =PDF

[DHDIR]
      ; Selectable view on DM directories (in upper case letters)

      ; xxx.DIR = DM directory name
      ; ;0= Do not create a pseudo workpiece
      ; ;1= Pseudo workpiece will be 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 machine ID
MaschineID1 =Maingroup\Group\PCU50_840D
```

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```
NCDataDescription_1]
D1 =NCDATANAME
D2 =NCDATATYPE
D3 =RELEASEID

[NCDataDefaultvalue_1]
D1 = SPF
D2 =1

[DNCMMCTypeTab]
      ; Data types from MCIS DNC are converted to data types on MMC/PCU
      ; Number of types for conversion
DNCMMCTypeCount=2

      ; Conversion types (e.g. convert TXT to MPF)
DNCMMCType1 =TXT MPF
DNCMMCType2 =DOC INI

[MMCDNCTypeTab]
      ; Data types from MMC/PCU are converted to   data types on DNC
      ; Number of types for conversion
MMCDNCTypeCount =2

      ; Conversion types (e.g. convert MPF to TXT)
MMCDNCType1 =MPF TXT
MMCDNCType2 =INI DOC
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```

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5.2 Configuration program

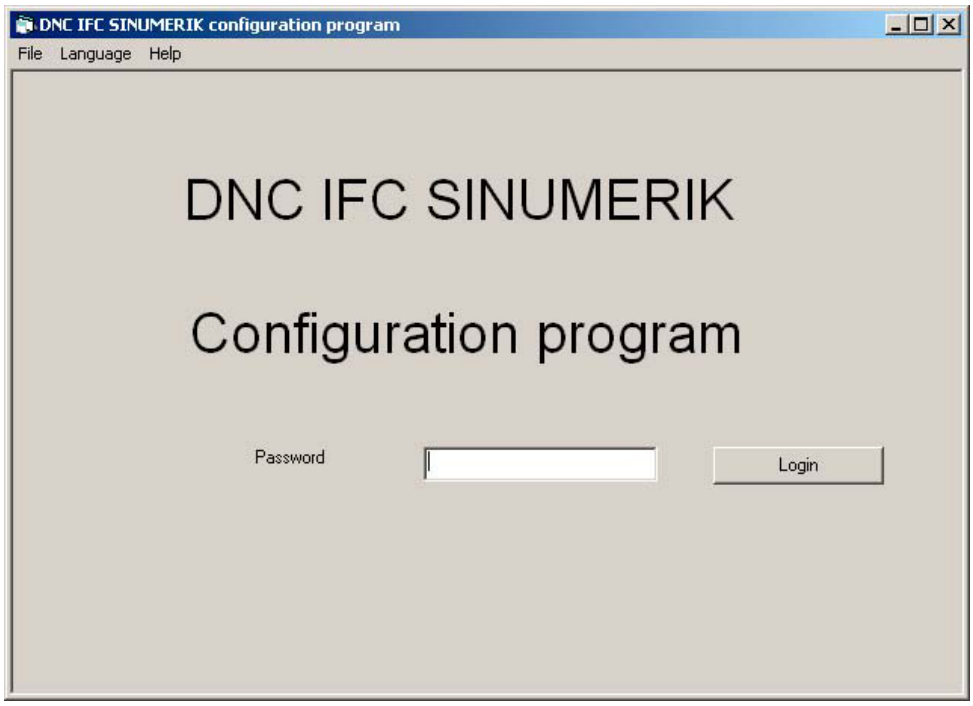

Fig. 5-1: Login screen of the configuration user interface

Enter your password and then click the **Login** button to open the configuration program.

The following menus are available in the configuration program:

- File
  - Save
  - End
- Language
  - German
  - English
- Help
  - Help topics
  - About

The configuration program is exited via the menu **File** → **End**.

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After logging in, a configuration dialog opens with six tabs:

- Basic settings
- DNC
- FTP interface
- Graphics
- Login
- Job interface

This configuration dialog can be exited either by clicking the **Cancel** button or by pressing the **Esc** key and on the operator panel with the **CANCEL** key. The login screen of the configuration user interface then appears again.
Configured data can be saved either by clicking the **Accept** button or by pressing the **Ctrl+S** keys and on the operator panel with the **CTRL+S** keys.

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5.2.1 Basic settings

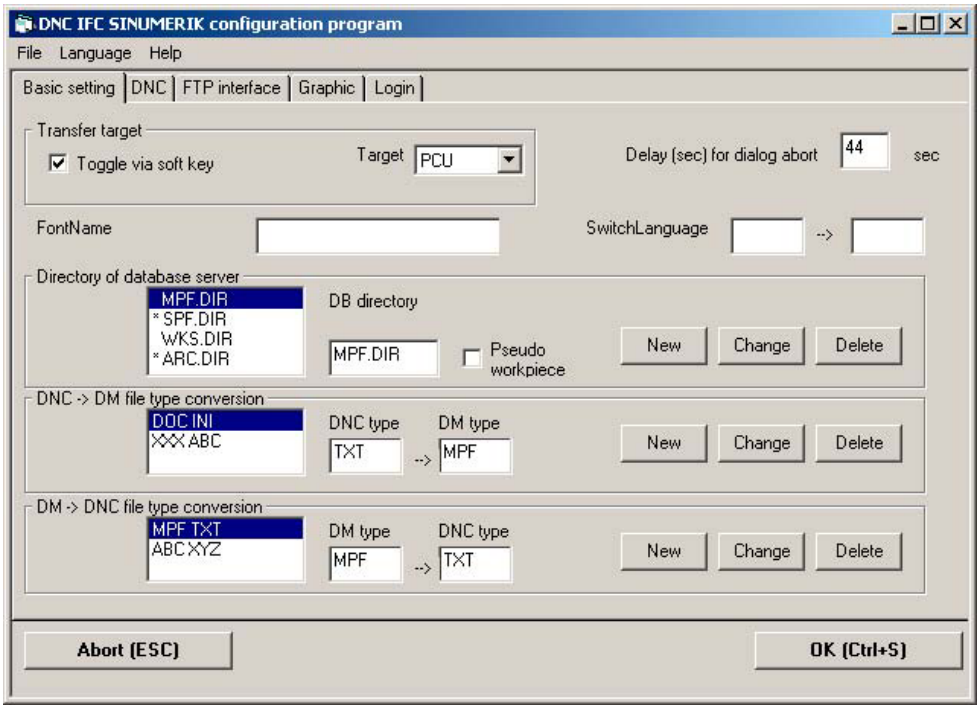

Fig. 5-2: Configuration user interface / Basic settings

The basic settings for the download or upload and operation on the PCU are defined in the **Basic settings** tab.

Transfer target switchable via softkey

This parameter specifies whether the default transfer target for the download from **DNC** can be switched via a Select softkey:
Checkbox activated = Select softkey available → `(Y)`
Checkbox deactivated = Select softkey not available → `(N)`

Extract from the configuration file:

```
Section [GLOBAL]
ToggleSK = Y
```

Target

This parameter specifies the default transfer target for the download from **DNC**:
PCU = The NC data is transferred to the file system
NCK = The NC data is transferred to the NC and loaded

Extract from the configuration file:

```
Section [GLOBAL]
DefaultTransfer = PCU
```

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Wait time for dialog abort

The key parameter specifies the time in seconds during which the transfer of a program can be aborted.

Extract from the configuration file:
The entry in the configuration file is made in ms!

```
Section [TIME]
BreakTime = 5000
```

Font

This parameter specifies the font for **DNC IFC SINUMERIK**.
If no font is specified, the standard system font is used.
A font must be specified for languages that require a special font for correct display of the (special) characters. This is the case, for example, in Asian and Cyrillic languages. **Arial Unicode MS** must then be entered.

Extract from the configuration file:

```
Section [GLOBAL]
FontName  =Arial Unicode MS
```

Language switching

This parameter specifies the internal parameter for **DNC IFC SINUMERIK**, mainly for the English area.
The system language is entered in the first entry field.
The language used internally is entered in the second entry field.
Example:
UK → US
The system language of the computer is UK English.
US is selected from the DNC IFC SINUMERIK internal language list as American English is to be displayed.

Extract from the configuration file:

```
Section [GLOBAL]
SwitchLanguage  =UK,US
```

Directories of the data management server

New directories can be created for the data management server, existing directories deleted or renamed in the **Directories of the data management server** frame. The directories displayed in DNC IFC can be selected.

Note

The directory names must be specified in upper case letters.

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Pseudo workpiece

A pseudo workpiece is an organizational unit that is required, in particular, during automatic archiving, in order to draw conclusions about the source directory of a file.
Activation or deactivation of the **Pseudo workpiece** checkbox specifies whether the NC data is to be stored in a pseudo workpiece in **DNC**.

! **Important**

The **Pseudo workpiece** checkbox may not be activated for WKS.DIR!

Extract from the configuration file:

```
Section [DHDIR]
DHDIR1 =MPF.DIR;0
DHDIR2 = SPF.DIR;0
...
```

Note on the DNC_IFC.INI configuration file

In the configuration file, the digit (0 or 1) behind the directory name specifies whether the NC data is to be stored in a pseudo workpiece.
0 = No pseudo workpiece
1 = Store NC data in pseudo workpiece
Only 0 is permitted for WKS.DIR! (WKS.DIR is already a workpiece!)

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DNC → DM file type conversion

In the **DNC → DM file type conversion** frame, the conversion of file types from the **DNC system** to the **Data management server PCU/MMC** can be specified, or existing conversions deleted or changed. The conversion is performed with the download of the data from the DNC system to the data management server of the SINUMERIK 840D.

Important

The conversion is only performed when the **Evaluation of the internal PCU path** is not performed in the **DNC** tab. Selection: **No evaluation.**

Only specify file types that are known in the **DNC** system (DNCDATATYPE table) as **DNC type**.

Extract from the configuration file:

```
Section [DNCMMCTypeTab]
DNCMMCTypeCount = 2
DNCMMCType1=TXT MPF
DNCMMCType2=DOC INI
```

Note

The conversion only takes effect with `DriveInternPath=0`.
`DNCMMCTypeCount`= contains the number of file types that are converted.

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DM → DNC file type conversion

In the **DM → DNC file type conversion** frame, the conversion of file types from the **Data management server PCU/MMC** to the **DNC system** can be specified, or existing conversions deleted or changed. The conversion is performed with the transfer of the data from the data management server to the DNC system.

! **Important**

The conversion is only performed when the **Evaluation of the internal PCU path** is not performed in the **DNC** tab. Selection: **No evaluation.**

Only specify file types that are known in the **DNC** system (DNCDATATYPE table) as **DNC type**.

Extract from the configuration file:

```
Section [DNCMMCTypeTab]
MMCDNCTypeCount = 2
MMCDNCType1=MPF TXT
MMCDNCType2=INI DOC
```

Note

`DNCMMCTypeCount`= contains the number of file types that are converted.

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5.2.2 DNC

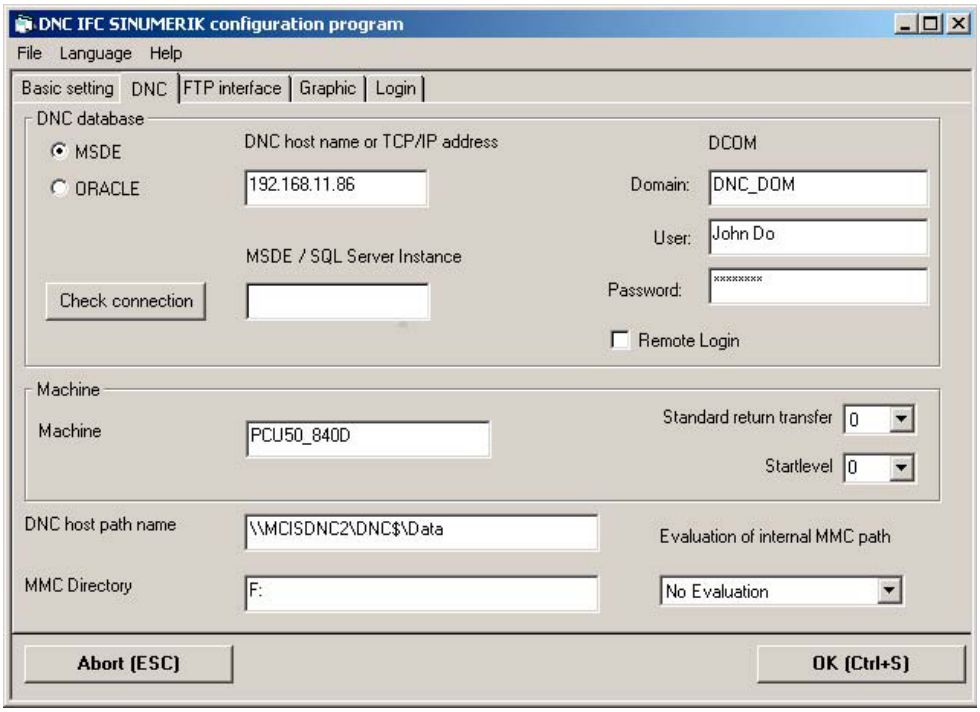

Fig. 5-3: Configuration user interface / DNC

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 option button is used to select the database that will be used in the DNC system:

- 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 the computer name of the DNC host (**DNC CELL** or **DNC PLANT**) is entered in the entry field. A connection test can be performed by clicking the **Test connection** button.

Extract from the configuration file:

```
Section [GLOBAL]
DNC-HOST =192.168.1.100
```

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MSDE / SQL server instance

The entry field is only relevant and sensitive for MSDE databases. The instance of the MSDE database (SQL Express) must be entered in the entry field. If no instance has been assigned for the database, the field must remain empty.

Extract from the configuration file:

```
[SQLSERVER]
INSTANCE=MCIS
```

DCOM

Domain, user name and password on the DNC server are defined in the entry fields at the top right for the DCOM connection.

Extract from the configuration file:

```
Section[DCOM]
DOMAIN =DNC_Dom
USER = John Do
PASSWORD =******
```

Remote login

The definitions for the domain, user name and password of the DCOM connection are also used for the remote login when this checkbox is activated.

Extract from the configuration file:

```
[REMOTELOGIN]
REMOTELOGIN=1
```

Machine

Machine is for the assignment to a machine (controller) configured in DNC. The machine name of the machine assigned in DNC is entered in the **Machine** entry field.

Extract from the configuration file:

```
Section[MACHINE]
Machine = PCU50_840D
```

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Standard upload

The hierarchy level in which the NC data is uploaded to DNC is specified here.
0 = Standard upload to the machine directory.
1 = Standard upload to the group directory (father) that is at a higher level than the machine directory.
2 = Standard upload to the group directory (grandfather) that is at a higher level than the group directory of the machine directory.

Extract from the configuration file:
```
Section[MACHINE]
DefUpload = 0
```

Start of the view

This parameter specifies the standard directory at the start of DNC IFC.
0=Machine
1=Group
2=Higher-level group

Extract from the configuration file:
```
Section[GLOBAL]
StartupLayer =0
```

DNC host path name

The drive specification for **DNC host path names** must be specified from the **DNC IFC SINUMERIK** viewpoint.
It is the specification of the directory in which the NC data can be found on the networked DNC computer.

Note

The path specification for Windows computers or UNIX/LINUX computers with Samba:\\DNC computer name\DNC data directory.
Option for swapping out the NC data on a UNIX system:
The path specification is, for example, for UNIX/LINUX computers with FTP:
/DNC computer name/DNC data directory.

Extract from the configuration file:
```
Section[PATHS]
WorkPathDNC=\\MCISDNC2\DNC$\Data
```

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PCU directory

The key parameter describes the drive or path of the SINUMERIK software.

Important

F: Is the drive of the PCU 50/70.
C: Is the drive of the MMC 103.

The drives are mandatory and can only differ for the installation on a PC. The path in which the SINUMERIK software is expected, must then be specified.

Extract from the configuration file:

```
Section[PATHS]
MMCIniDrive = F:
```

Evaluation of the internal PCU path

This parameter controls the evaluation and generation of a header with an internal path (Siemens program header) in the NC data file.

- No evaluation (0)
- Evaluation of a 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

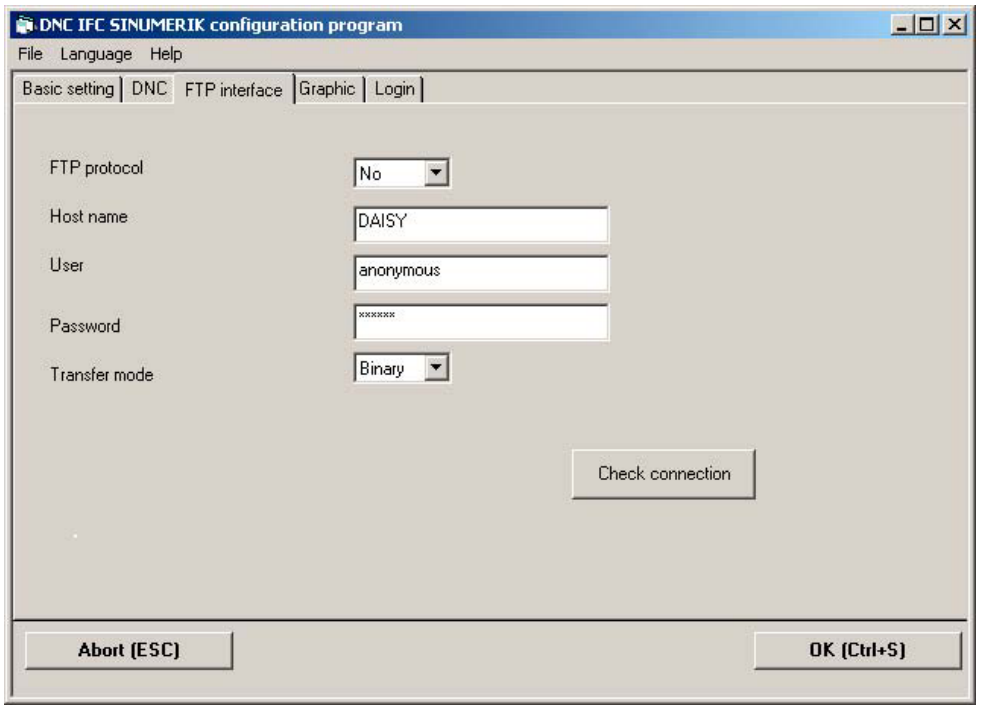

Fig. 5-4: Configuration user interface / FTP interface

The FTP interface to the higher-level DNC system is defined in the **FTP interface** tab. The configuration is only required when the transfer between the machine and the higher-level DNC system is to be performed by means of FTP.
A connection test can be performed by clicking the **Test connection** button.

Note

Usually transfer by means of FTP should be avoided as the data is not encoded for transmission via the network.

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FTP protocol

- **No (0):**
  Operation without FTP:
  Transfer is via the Microsoft network. The **DNC host path name** in the **DNC** tab must therefore refer to a released network drive with the data directory of DNC.
- **Yes (1):**
  Operation with FTP:
  DNC_IFC.EXE and DNC_IFCDB.EXE access the NC program files via FTP.
  DNC host path name in the **DNC** tab must contain the path used to switch to the data directory of DNC after the FTP connection has been established.

Extract from the configuration file:

```
Section[GLOBAL]
FTP-Protocol =0
```

Computer name

This parameter designates 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 designates 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
```

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Password

This parameter designates the password for the specified 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

The **Binary mode** is recommended as transfer mode for the FTP connection between DNC and **DNC IFC SINUMERIK**!

Extract from the configuration file:

```
Section[FTP]
FTP-Mode = 2
```

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5.2.4 Graphics

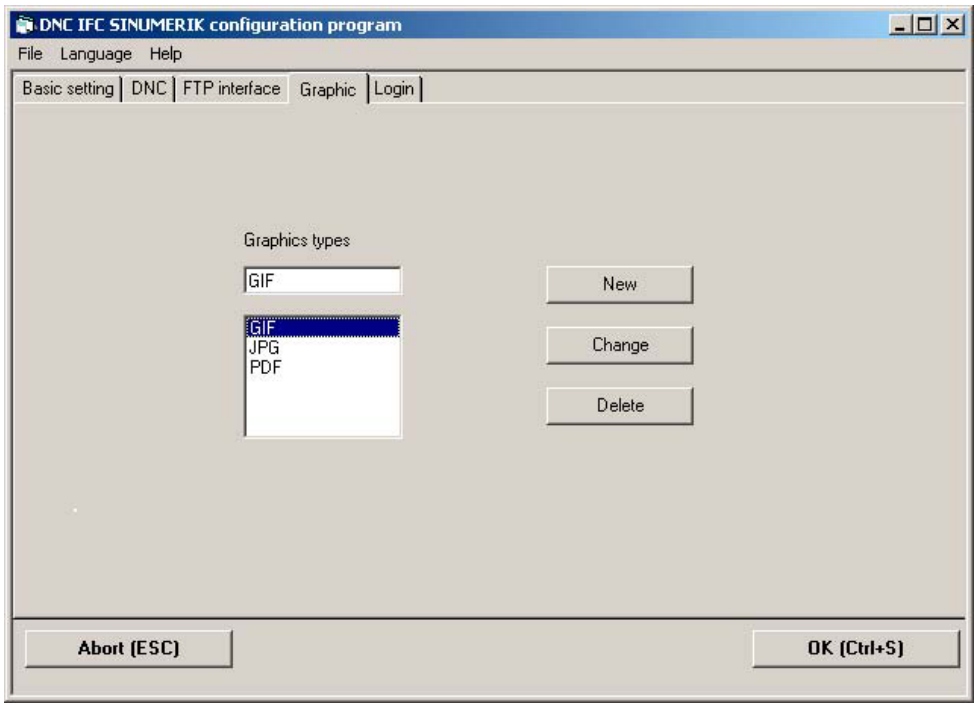

Fig. 5-5: Configuration user interface / Graphics

The graphic types permissible for display in the screen **Detail Dialog → Display Graphics** are specified in the **Graphics** tab.

Graphic types

All graphic types that are supported by the Internet Explorer can be displayed (e.g. BMP, JPG, GIF). If further graphic types are to be displayed, the necessary plug-ins must be installed.

Note

Graphics can only be displayed with PCU and for operation without FTP protocol. The type must be specified in upper case letters.

Extract from the configuration file:

```
Section[GRAPHICTYPE]
TYPE1 =GIF
TYPE2 =JPG
TYPE3 =PDF
```


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5.2.5 Login

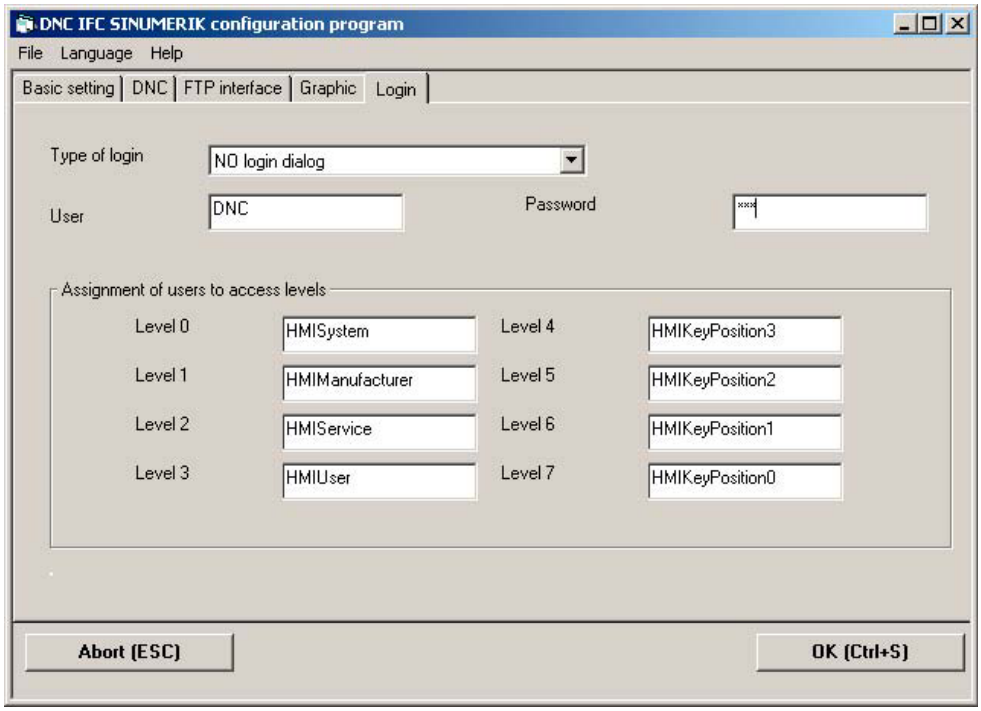

Fig. 5-6: Configuration user interface / Login

The login procedure to start DNC IFC SINUMERIK is configured in the **Login** tab.

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Type of login

This parameter specifies the procedure to start **DNC IFC SINUMERIK**.

- **No login dialog** (default setting) (0):
  DNC IFC SINUMERIK is started with the access entered in **User** and **Password**. No other login is possible.
- **Login dialog** (1):
  The user must log in with name and password in a Login dialog when starting DNC IFC SINUMERIK.
- **Login via protection level** (2):
  DNC IFC SINUMERIK is started with the user specified via **Assignment of users to protection levels** of the current **SINUMERIK** protection level. A DNC user with certain rights, which can also be adapted in the user management of DNC Admin, is assigned to each protection level.
- **Login via protection level or Login dialog** (3)
  The login to DNC IFC SINUMERIK is performed as with the **Login via protection level** (2), however a Login dialog appears if a user has not been assigned or the user is not in the DNC user administration.
  After a successful login, the softkey **Logout** is displayed 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 the automatic login (type of login: No Login dialog).

Note

The user DNC with password DNC is defined in **DNC IFC SINUMERIK** as default setting. After installation of DNC, the preset user should be deleted and replaced by your own user ID, as the DNC user has administration rights per default. The preset user should then also be replaced by a user configured in DNC in **DNC IFC SINUMERIK**.

Extract from the configuration file:

```
Section[USER]
Name = DNC
Password =DNC
```

Assignment of users to protection levels

A user can be assigned to each of the eight protection levels 0-7 in accordance with **SINUMERIK HMI Advanced**. Depending on the current **type of login**, it is therefore possible to start **DNC IFC SINUMERIK** with the rights of one of the entered users.

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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5.3 Further configuration options via DNC_IFC.INI

Configurations on the following parameters must be made directly in the DNC_IFC.INI configuration file:

Section [GLOBAL]

`DataTypeChange =`

N = When transferring to a selectable target (Transfer to), it is not permitted to change the file type.

Y = When transferring to a selectable target (Transfer to), the file type can be changed by the user. This also applies when conversion tables are configured in the sections [DNCMMCTypeTab] and [MMCDNCTypeTab]. The **DataTypeChange=Y** parameter acts only if **DriveInternPath =0**.

`OverwriteNCData =`

0 = Existing NC data files of the same name are not overwritten on the controller.

1 = Existing NC data files of the same name are overwritten on the controller (default).

Warning

The check to determine whether an NC data file already exists on the controller can only be carried out correctly when the parameter DriveInternPath=0 is parameterized.

Section [PATHS]

`DhsTempPath =`

DhsTempPath describes the directory for temporary files. If the parameter is not set, the temporary directory (temp) is used by Windows.

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Section [TIME]

`MessageTime =`

The key parameter controls the dwell time (in ms) of the displayed messages of **DNC IFC SINUMERIK**.

`SysTime =`

The key parameter controls the wait time for VB functions.

Warning

The parameter may only be changed during commissioning or after consultation with the hotline!

`DelayTime =`

The key parameter controls the delay (in ms) of the list display of directories when scrolling through the tree view of **DNC IFC SINUMERIK**.

Section [REFRESH]

`Refresh =`

N = Switch off automatic refreshing of the screen content
Y = Switch on automatic refreshing of the screen content

`RefreshDelay =`

Time between last operator action and first refresh

`RefreshInterval =`

Time in seconds between two refresh cycles

■

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Notes

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■ Notes

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A

A Appendix

A.1 DNC Glossary

Abbreviation	Description
ASCII code	**American Standard Code for Information** 7-bit code
BMP	**BitMaP** Graphics file for clamping sketches, etc.
CNC	**Computerized Numeric Control** Numeric controller with microprocessors
DNC	**Direct Numeric Control** System with which several CNC machines are coupled with a central computer using bidirectional data exchange
DNC IFC SINUMERIK	**Direct Numeric Control InterFace Client** System with which several CNC machines are coupled with a central computer using bidirectional data exchange. The download to SINUMERIK 840D is made using a network.
FTP	**File Transfer Protocol**
EIA code	**Electronic Industries Association** Although 8-track paper-tape code corresponds to the ISO code, it has an even number of holes per character
HMI	**Human Machine Interface**
ISO code	**International Organization for Standardization** 8-track paper-tape code
ISQL	**Interactive Structured Query Language** Possibility of the interactive database access
MDA Machine SINUMERIK	**Machine Data Acquisition** Stand-alone for SINUMERIK / PC, incl. machine data acquisition / process data acquisition evaluation
MDA	**Machine Data Acquisition** Process data acquisition and evaluation on SINUMERIK 840D
MPF	**MainProgramFile** Main NC program
MMC	**Man Machine Communication**
OCX	**OLE Custom Controls**
OLE DB	**Object Linking and Embedding DataBase** Database access functions using OLE/COM
OLE/COM	**Object Linking and Embedding / Component Object Model** Object-oriented program model for defining the object behavior, also over process boundaries

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Abbreviation	Description
PCU	**PC Unit**
SINUMERIK*	**SINUMERIK 810D**, **SINUMERIK 840D**, **SINUMERIK 840Di**, PCU50 under Windows with **SINUMERIK 840D sl**
SPF	**SubProgramFile** NC subprogram
SQL	**Structured Query Language** Database query language
SQL-net	**Structured Query Language-net** Interface for the database access over the network
TCP/IP	**Transmission Control Protocol / Internet Protocol**Transmission protocol
TDI Machine	**Tool Data Information Machine** Information about the provision and handling of tools.
TOA	**ToolOffsetActive** Tool offsets
WPL	**WorkPLan** ASCII file for tool plans
ZOA	**ZeroOffsetActive** Zero offset

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