

# Rexroth MTC200/ISP200/TRANS200 MTGUI User Interface

**298459**  
Edition 01

Application Manual



**Title** Rexroth MTC200/ISP200/TRANS200  
MTGUI User Interface

**Type of Documentation** Application Manual

**Document Typecode** DOK-CONTRL-MTGUI\*\*\*V23-AW01-EN-P

**Internal File Reference** Document Number 120-0401-B309-01/EN

**Purpose of Documentation** This documentation provides an overview of operating the user interface for machine tools and describes the menus.

**Record of Revisions**

Description	Release Date	Notes
120-0401-B309-01/EN	09.2003	Valid from version 23

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**Published by** Bosch Rexroth AG  
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# 1 Overview of Machine Tool Graphic User Interfaces

## 1.1 Abbreviations Used

In addition to product names and system designations, the abbreviations listed below are used in this documentation.

Abbreviation	Explanation
TM	Tool Machine
MTGUI	Machine Tool Graphical User Interface
M keys	Configurable machine keys
F keys	Configurable function keys

Fig. 1-1: Abbreviations used

## 1.2 General Information About the MTGUI System

Bosch Rexroth MT interfaces (MTGUI = **M**achine **T**ool **G**raphic **U**ser Interface) enable users of machine tools and transfer machines to:

- operate
- configure
- parameterize and to
- program.

### Bosch Rexroth Control Systems with MTGUI

Bosch Rexroth control systems, such as

- MTC200
- ISP200
- TRANS200 and
- MTA200

can be uniformly configured and operated to a great extent with the MTGUI.

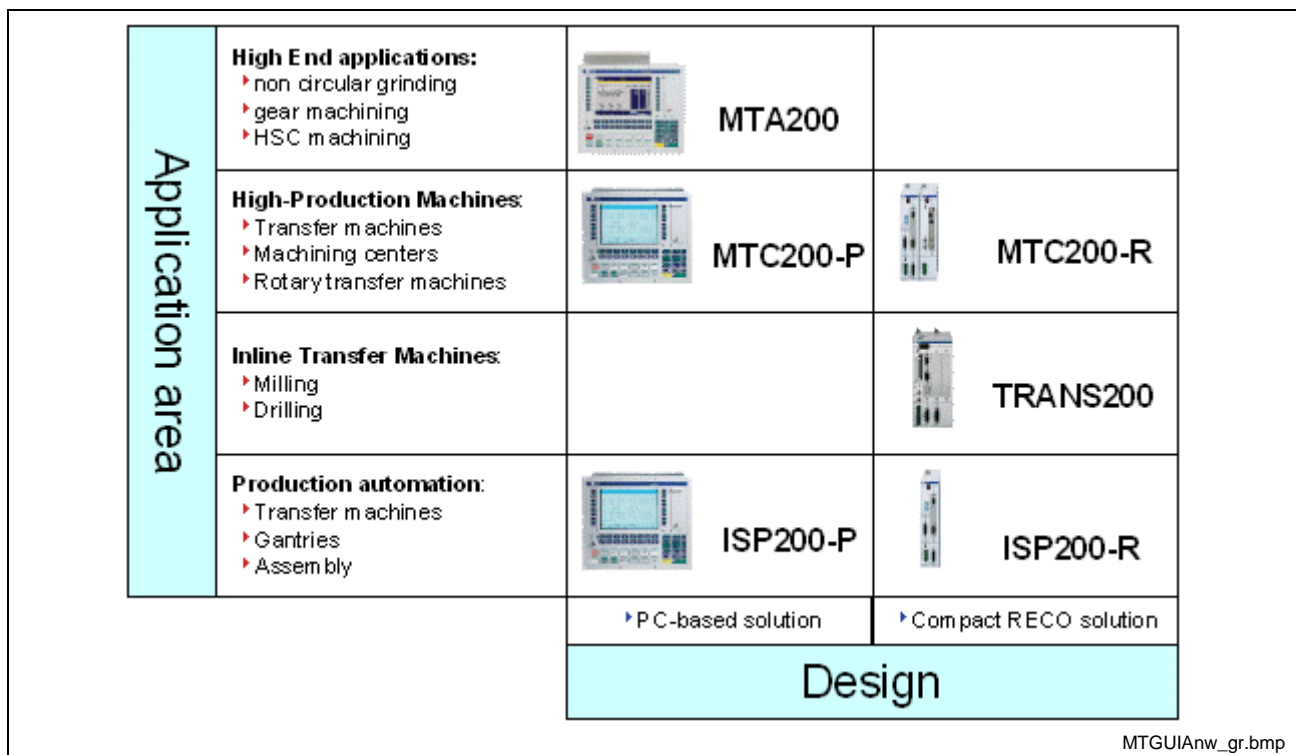


Fig. 1-2: Bosch Rexroth control systems

## Characteristics of the MTGUI System

- Standard user interface, standard configuration tool (look & feel) with simple and comprehensive keyboard operation
- Use of Windows as the global standard for PC systems
- Configurable interface
- Integration of external components (open interfaces, 3rd party software)
- Operating system platforms: WinNT, Windows2000, (Win95/Win98)
- Modularization to create project-specific interface versions at application level
- Standard user interface, even in a heterogeneous production environment
- Up-to-date Windows concepts for editing and commissioning
- Support of distributed systems (network of PCs)
- Multilingual user text (e.g. program comments)
- Reduced application, service and training costs

**Advantage** Thanks to the standard MT interface, the user can quickly learn how to operate various Bosch Rexroth controls.

## Concept of MT Interfaces

The MTGUI system contains subdomains for the expansion of an MT interface, which enables the applications for the **MTGUI** system to run in various desktops.

The modular character of the application software means that various control systems can be combined.

At the maximum expansion level of the MTGUI system, applications can be run with four desktops.

- During runtime, all applications are distributed between 4 desktops
- It is easy to switch between all 4 desktops; they can be active at the same time
- Each desktop contains a corresponding set for applications, such as all NC functions
- Distribution to several desktops improves the overview as corresponding window groups, e.g. in WinPCL, can be displayed separately in the desktop. Particularly in window mode, it is otherwise difficult to gain an overview of operating situations.
- The desktop offers openness for 3<sup>rd</sup> party software

**MT Interfaces for MTC200**

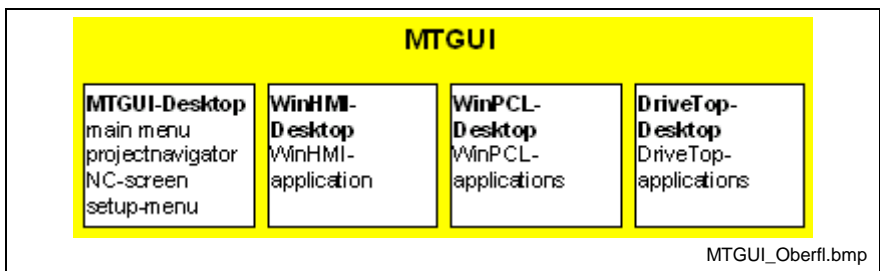


Fig. 1-3: Applications for the MTGUI system for MTC200

**MT Interfaces for TRANS200**

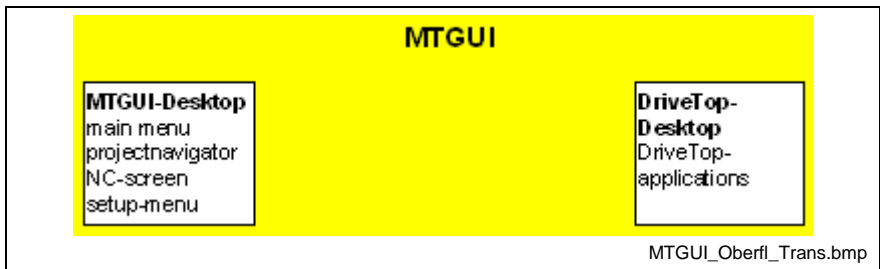


Fig. 1-4: Applications for the MTGUI system for TRANS200

The TRANS200 MTGUI system does not have a WinHMI or WinPCL desktop.

### Application Areas for MT Interfaces (MTC200)



- (1): WinMTC, see chapt. "MTGUI Desktop"
- (2): WinHMI, see chapt. "WinHMI Desktop (MTC200 Only)"
- (3): WinPLC, see chapt. "WinPCL Desktop (MTC200 Only)"
- (4): Project Navigator, see chapt. "General Information About Project Navigator"
- (5): Drive Top, see chapt. "DriveTop Desktop"

Fig. 1-5: Examples of desktops in the MTGUI system for MTC200

### Operating Philosophy

The operation of MT interfaces in the MTGUI system offers the following features:

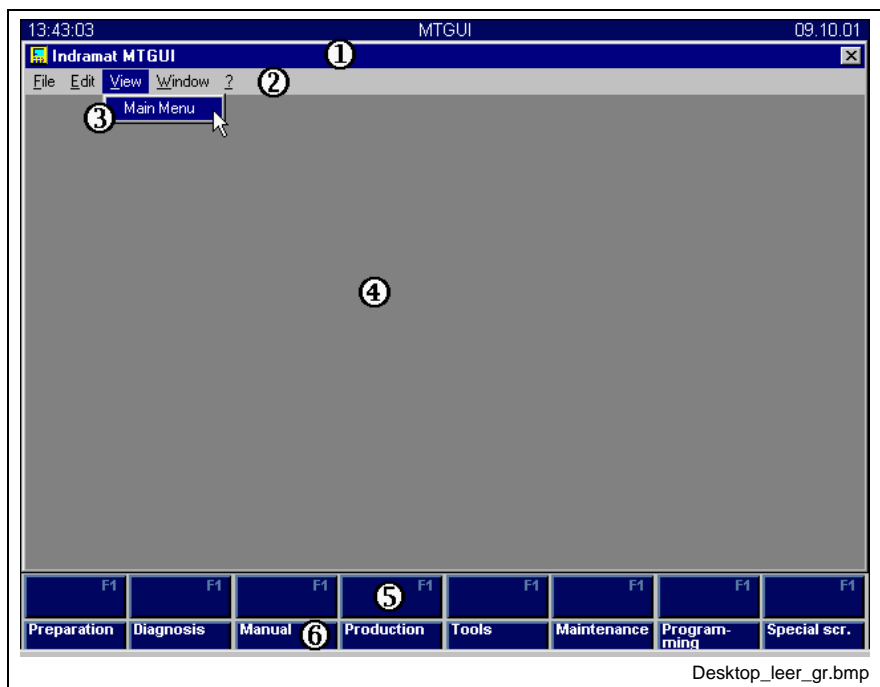
- Global use of keys on all desktops (does not apply to TRANS200, which does not have any <OP> keys)  
The <OP> keys for WinHMI can also be used in the MTGUI desktop. This means that WinHMI applications can be started from the MTGUI desktop.
- Desktop operation via function keys
- Menu bars in the desktops
- Pop-up menus for quickly selecting menu commands

- Global user management
- Operational support from a help system
- Access to applications via main menu

## Screen Layout

The **MTGUI** desktop system ensures that applications have a standard screen layout. The operating elements and their operation are identical.

The figure below shows the various areas of the MTGUI desktop. In order to show this clearly, an application is not displayed in the application area (4). The method for opening the application **Main Menu** via the **View** menu item is also shown:



- (1): Header line
- (2): Main menu bar
- (3): Menu command
- (4): Application window
- (5): Function keys
- (6): OP keys (not available for TRANS200)

Fig. 1-6: MTGUI desktop without application

- Header line (1)** The title in the header line comprises the desktop name (**Indramat MTGUI**) and the name of the application.
- Main menu bar (2)** The main menu bar contains standard menus with specific menu commands (figure above). It is usually extended with menus and functions for the specific application.
- Menu command (3)** The individual menus (and submenus) contain menu commands which trigger functions.  
The MTGUI desktop with no application is set up for opening the main menu (figure above).
- Application window (4)** The application runs in this area of the window. It also influences the assignment of (1), (2), (3) and (5).

**Function keys (5)** Function keys <F2> - <F9> are used by the dialog windows of the active application. They are used to execute functions in the application. In an "empty" desktop, the keys do not have a function and are not labeled (except <F1>, see figure above).

**OP keys (6)** The availability of the OP keys depends on the control unit type used. The TRANS200 control does not have any <OP> keys.

If WinHMI is installed on the control unit, the <OP> keys are linked to WinHMI applications. It is possible to switch from applications in the MTGUI desktop to WinHMI applications.

**Special function of <OP8>** The <OP8> key (Programming) has a navigator function.

If an application in the HMI desktop is active, you can switch to the main menu of the MTGUI desktop by pressing the <OP8> key.

## Supported Monitor Resolutions

The MTGUI supports the screen resolutions listed below. Generally, a proportional representation is used; the 640 x 480 screen resolution on a 10" screen is used as the basis.

Size	Screen resolution
10"	640 x 480
12"	800 x 600
15"	1024 x 768

Fig. 1-7: Assignment of resolution to screen size

**MTGUI** MTGUI is configured in such a manner that it covers the entire screen, regardless of the resolution.

**WinTRANS** WinTRANS is configured in such a manner that it uses a resolution of 640 x 480.

The WinTRANS interface can be moved and dragged using the mouse.

**DriveTop** DriveTop supports only the resolution 640 x 480.

## Main Menu

The applications in the desktop can be called via the main menu.

### Main Menu (MTC200)

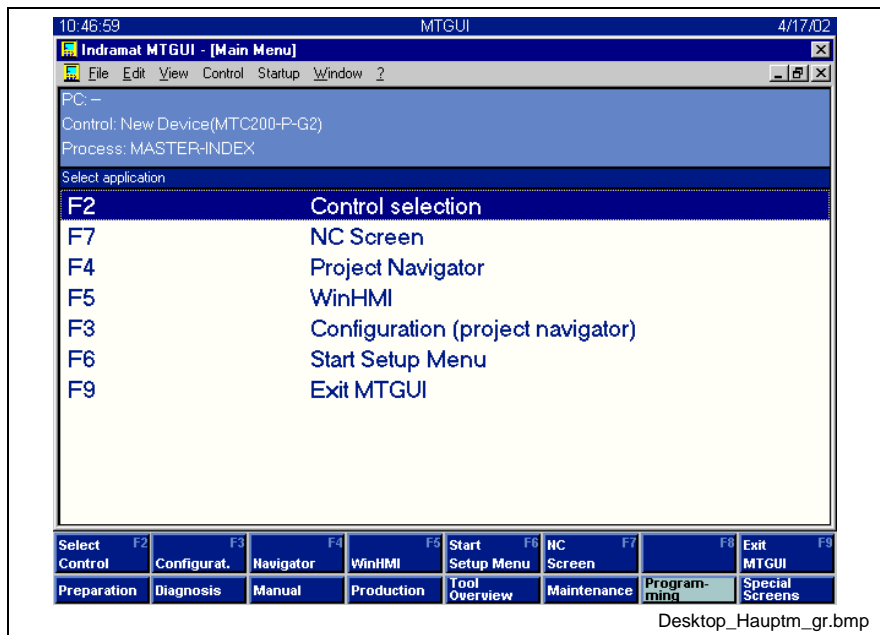


Fig. 1-8: Main menu for MTC200

The main menu (see Figure above) shows the menus of a maximum expansion level for an MTC200.



The main menu can be called from all applications (excluding DriveTop) within the **MTGUI** desktop system via the **<PROG>** key. Does not apply to TRANS200.

The main menu is itself an application of the MTGUI desktop.

Characteristics:

- The main menu combines all the main application areas
- Each application can be started from the main menu
- The main menu consists of a unique display for the selected PC, device, module and process as well as a function selection list that can be freely selected
- If no application is active in the "control" area, the main menu is displayed after the "Programming" OP area is selected in WinHMI.

#### Calling applications

The functions in the function selection list can be started in various ways:

1. Highlighting the desired function using the <Cursor down> and <Cursor up> keys, then pressing <Enter>
2. Direct selection of the selected <F> keys, such as  
Call NC Screen with:  
<F7> key
3. Via menu commands in the menu bar:
  - In the menu bar, press the <Alt> key to highlight a menu item, then press the <Cursor right> key
  - Use the <Cursor right> and <Cursor left> keys to select a menu
  - Use the <Enter> key to open a menu window

- Select a menu command with the <Cursor down> and <Cursor up> keys
- Press <Enter> to start the menu command

## Main Menu (TRANS200)



Fig. 1-9: Main menu for TRANS200

### Calling applications

The functions in the function selection list can be started in various ways:

1. Direct selection of the selected <F> keys, such as  
Call NC Screen with:  
<F5> key
2. Via menu commands in the menu bar:
  - In the menu bar, press the <Alt> key to highlight a menu item, then press the <Cursor right> key
  - Use the <Cursor right> and <Cursor left> keys to select a menu
  - Use the <Enter> key to open a menu window
  - Select a menu command with the <Cursor down> and <Cursor up> keys
  - Press <Enter> to start the menu command

## Single and Multiple Window Operation

The MTGUI desktop can contain several applications. Multiple window operation enables the tracking of processes that are controlled or monitored in different applications.

### Multiple Window Operation for MTC200

In the following example, three applications are open and displayed next to one another:

- Main Menu
- NC Screen
- Project navigator

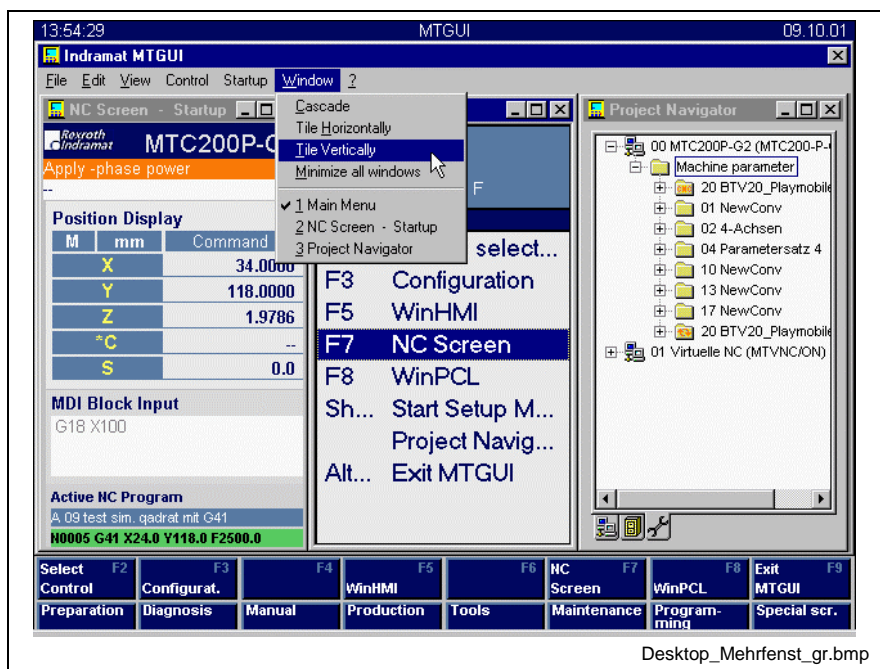


Fig. 1-10: Multiple window operation for MTC200

The **Window** menu contains a list of active applications. The **Tile Vertically** menu command displays these applications in the above layout.

### Multiple Window Operation for TRANS200

In the following example, three applications are open and displayed next to one another:

- Project Navigator
- NC Screen
- Control 1 (NC Assistance)

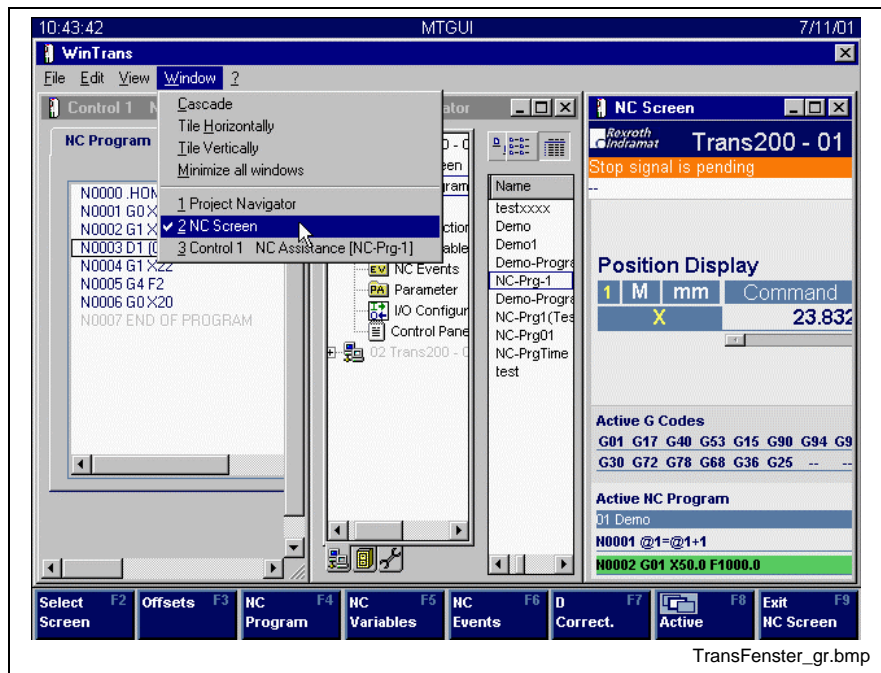


Fig. 1-11: Multiple window operation for TRANS200

### 1.3 Starting the MT Interface

The MTGUI system must be installed on a PC with WinNT or Windows2000.

#### Start for MTC200

MTC200 can be started via the icon in the Windows interface



or from the Windows Start menu:

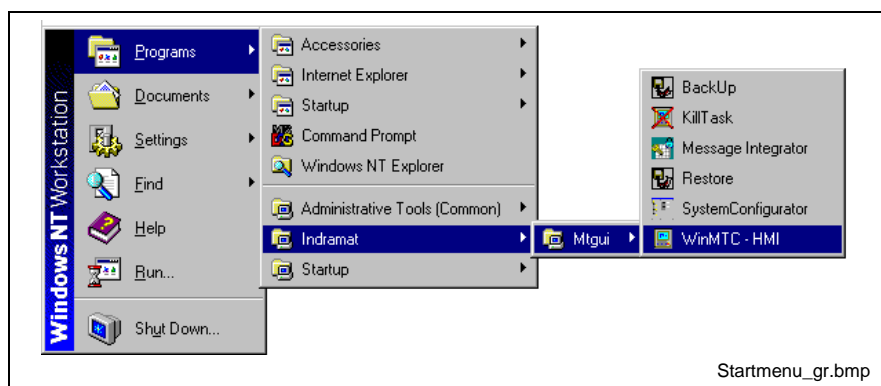






Fig. 1-12: Starting the MTGUI desktop for MTC200

When opened, the MTGUI desktop contains the "Main Menu (MTC200)" as the application.

The MTGUI desktop is the framework for various applications in the MTGUI system. The name of the application is displayed in the header line of the desktop.

- Main menu  
 **INDRAMAT MTGUI – [MAIN MENU]**
- NC Screen  
 **INDRAMAT MTGUI – [NC SCREEN - STARTUP]**
- Setup menu  
 **INDRAMAT MTGUI – [SETUP MENU]**
- Project Navigator  
 **INDRAMAT MTGUI – [PROJECT NAVIGATOR]**

## Start for TRANS200

TRANS200 can be started via the icon in the Windows interface



or from the Windows Start menu:

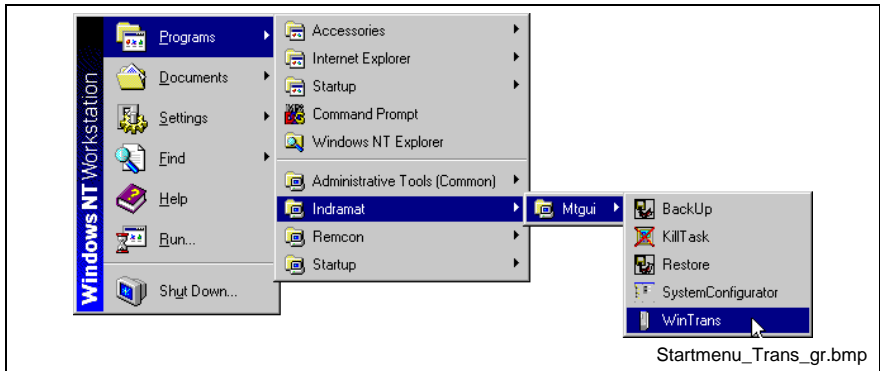


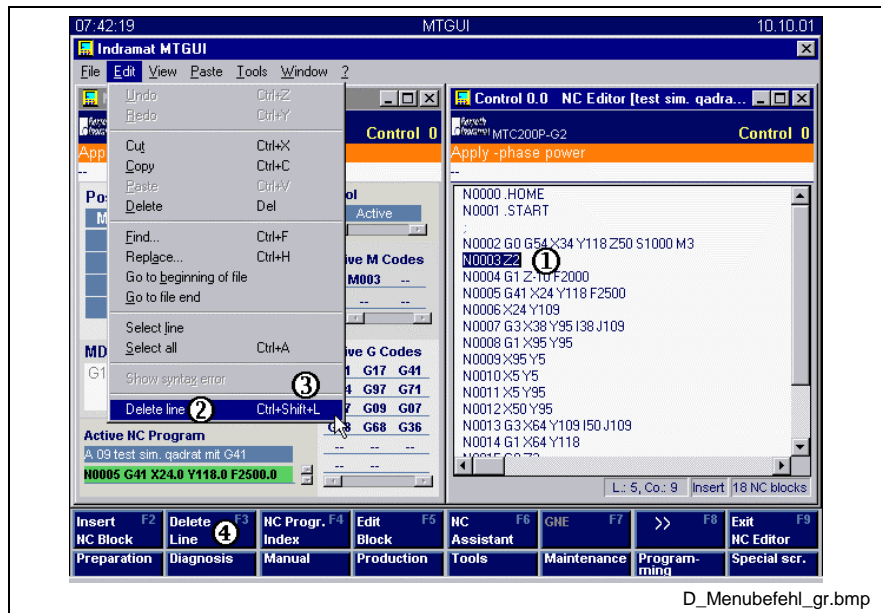
Fig. 1-13: Starting the MTGUI desktop for TRANS200

When opened, the MTGUI desktop contains the "Main Menu (TRANS200)" as the application.

## 1.4 Calling Functions

The execution of commands or functions for desktop applications can be started in various ways:

The different call options for the **Delete line** command are shown in the NC Editor:



- (1): NC Editor is active, cursor in a line
- (2): Edit menu \ Delete line
- (3): <Ctrl>+<Shift>+<L> shortcut
- (4): <F3> key: Delete Line

Fig. 1-14: Example: "Delete line" command for both MTC200 and TRANS200

(The <OP> keys are not available for TRANS200.)

**Requirement:** (1): In the MTGUI desktop, the NC editor has the focus, since the last action was to highlight a line with the cursor.

1. Executing the function from the menu bar  
The **Edit** menu contains the **Delete line** menu command. When the command is highlighted (2), the line is deleted by pressing <Enter>.
2. Executing the function using shortcuts  
The <Ctrl>+<Shift>+<L> key combination is the shortcut for the **Delete line** menu command (3). If this key combination is executed, the line will be deleted.
3. Executing the function using <F> keys  
The line is deleted by pressing the <F3> key (4).
4. Executing the function from the pop-up menu:



Fig. 1-15: Pop-up menu

In accordance with the above requirement, a pop-up menu is opened via:

- Right mouse button, or
- <Shift>+<F10> shortcut

The pop-up menu contains the **Delete line** menu command.

When the command is highlighted (see figure above), the line is deleted by pressing <Enter>.

**Note about highlighting**

There are three ways of highlighting a menu command in a menu window:

1. The highlight in a menu is moved down with the <Cursor down> key and up with the <Cursor up> key.
2. The so-called access keys (key combinations with the <Alt> key: <Alt>+<2nd key>) can also highlight commands. The second key is indicated by an underlined character in the command word.  
Example: The access keys for the **Delete line** command are <Alt>+<L>
3. Mouse click

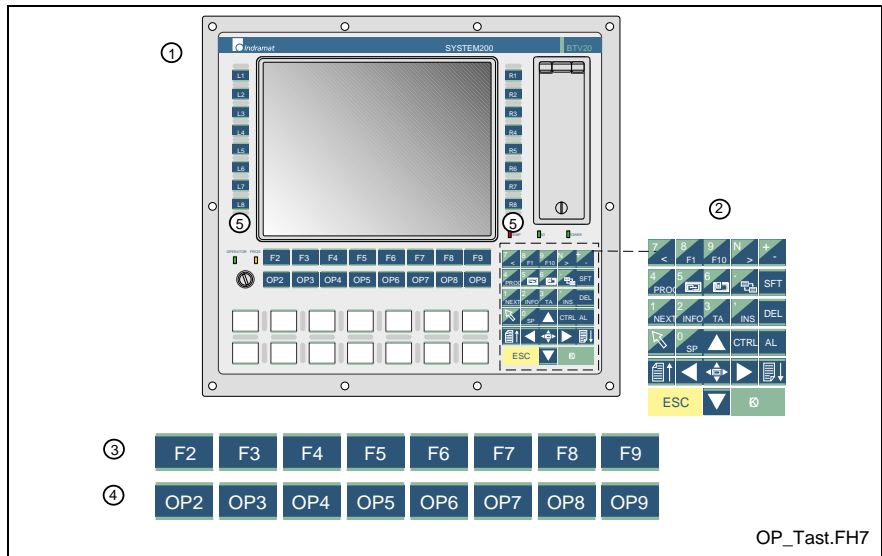
**User management**

Certain functions are protected by User Management.

The functions are available only if the user has the associated authorization, see User Management.

## 1.5 Standard Operation of the MTGUI Desktop

The keyboards of the MTGUI interface are shown using a BTV20.3 as an example:



- (1): Overall view
- (2): Keypad
- (3): F key row
- (4): OP key row
- (5): Machine keys

Fig. 1-16: Operating keys on the BTV20.3

### Keypad

BTV20 keypad		=> Standard keyboard	Key functions of 1st level
<b>A B C D E</b>	1A	< ; >	Semicolon
<b>1</b>	1B	< F1 >	Assigned to the active application
	1C	< F10 >	Assigned to the active application
	1D	< : >	Colon
<b>2</b>	1E	< - >	Minus sign
	2A	< Ctrl > + < Shift > + < Alt > + < Q >	Opens the main menu
	2B	no corresponding key	not assigned
	2C	< Alt >	Sets focus on the menu bar
	2D	< Ctrl > + < F6 >	Switches windows
<b>3</b>	2E	< Shift >	< Shift > function of the standard keyboard
	3A	< Ctrl > + < Shift > + < Alt > + < N >	Switches controls in WinHMI
	3B	no corresponding key	Calls the Information window
	3C	< Tab >	Switches the focus in the active application
	3D	< Ins >	Switches between Insert => Overwrite
	3E	< Del >	Delete
<b>4</b>	4A	no corresponding key	Switch (together with 2 <sup>nd</sup> key) to 2 <sup>nd</sup> level Example: Key < 7 > = key < 1A > + key < 4A >
	4B	< Space >	Moves highlight downwards
	4C	< Cursor up >	Moves highlight upwards
	4D	< Ctrl >	< Ctrl > function of the standard keyboard
	4E	< Alt >	Sets focus in the menu bar
<b>5</b>	5A	< Page up >	Moves highlight to top
	5B	< Cursor left >	Moves highlight to left
	5C	no corresponding key	Maximize window
	5D	< Cursor right >	Moves highlight to right
	5E	< Page down >	Moves highlight to bottom
<b>6</b>	6AB	< Esc >	Removes highlight in menu bar and window
	6C	< Cursor down >	Moves highlight downwards
	6DE	< Enter >	Activates the highlighted command

Fig. 1-17: BTV20 keypad

**Dual assignment of BTV20 keyboard (MTC200)**

Keys with a green/black diagonal division have a dual function:

- Black field: First function
- Green field: Second function

Use the <arrow> key to switch between fields:


Key on the BTV20.3	Standard keyboard	Meaning
	No equivalent key	The second function can be triggered by pressing the <arrow> key at the same time.

Fig. 1-18: "Arrow key"

**Calling Desktop Applications**

The first function (black background) of the dually assigned keys is described in the following table.








Key on the BTV20.3	Standard keyboard	Meaning
	<CTRL>+<SHIFT>+<ALT>+<F2>...<CTRL>+<SHIFT>+<ALT>+<F9>	The keys call applications (including different desktops).
	<F2> - <F9>	The keys are assigned to the active application in the desktop.
	<F1>, <F10>	The keys are assigned to the active application in the desktop.
	<CTRL>+<SHIFT>+<ALT>+<Q>	The key opens the main menu.
	<ALT>	The key moves the focus to the menu bar.
	<CTRL>+<F6>	Switch windows.
	<TAB>	The key changes the focus in the active application.




Fig. 1-19: Keys for navigation

**Entering numeric values**

An external keyboard is required to edit an NC program (or similar).

Numeric values can be edited with the restricted character set of the BTV keys. It is also possible to select set numbers for an NC program (N).

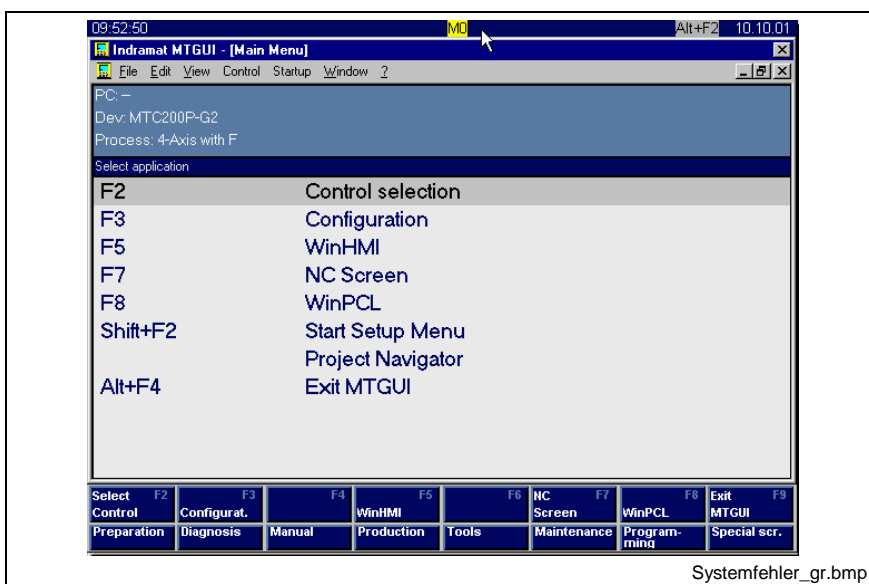
The second function of the dually assigned keys is described in the following table.

Key on the BTV20.3	Standard keyboard	Meaning
 +  ... 	<Arrow key>+<1> - , <9>	Input of numbers <1>, ... , <9>

## 1.6 System Error Display

The system error display shows current system errors and current local mechanism errors. The mechanism errors always relate to a device, e.g. M0 indicates one or more mechanism errors in control 0, and C1 indicates a system error in control 1.

The header line of the MTGUI desktop contains the current system and mechanism errors for all connected devices.



- (1): System errors and mechanism errors
- (2): Open the system error display with <Alt>+<F2>

Fig. 1-20: System error display

The errors are shown in an error display (1) in the MTGUI desktop (see figure above):

- C error      System error (red)
- M error      Mechanism error (yellow)

The error number corresponds to the device address or control number.

The error dialog box can be opened by pressing the <Alt>+<F2> keys (2). This is possible only if an error exists. Here the user is provided with additional information about the displayed error code:

<Alt>+<F2>

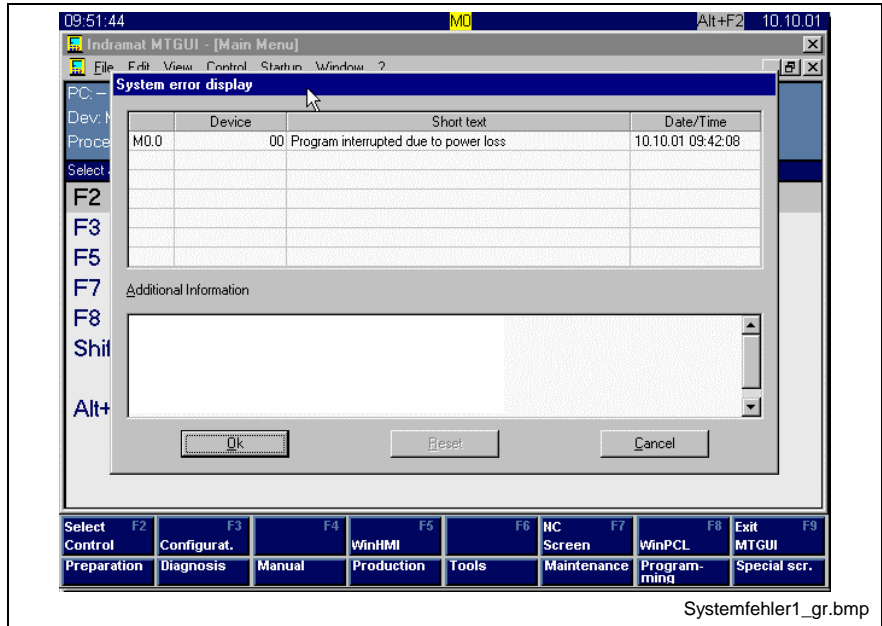


Fig. 1-21: System error display dialog box

The columns in the table contain the following information:

- Error type
- Device or device name
- Short description of the error
- Time the error occurred

Additional information (if available) is displayed when the error is highlighted in the table:

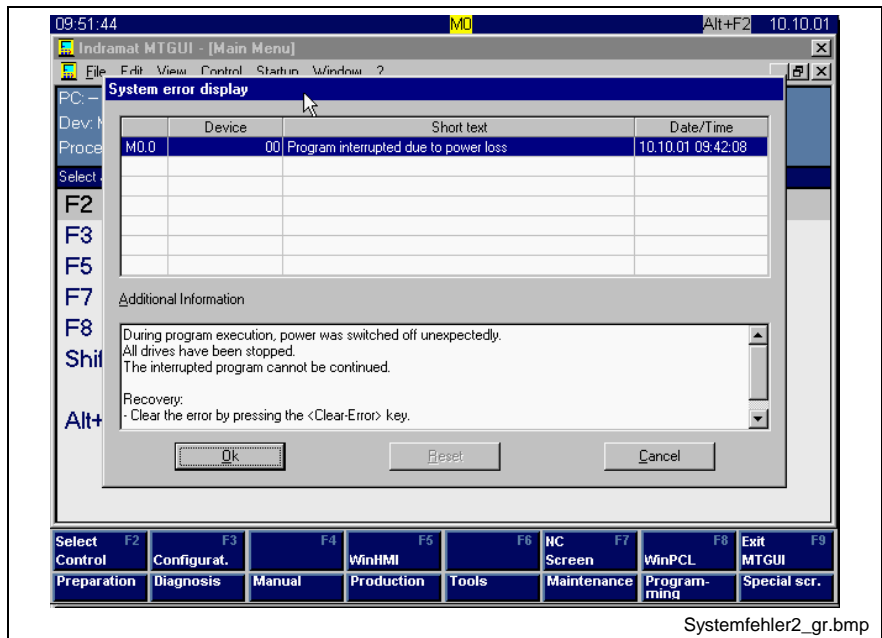


Fig. 1-22: Additional error description

# 1.7 Header

Information about the control selected in the control selection and about the process is displayed in the header above the application area.

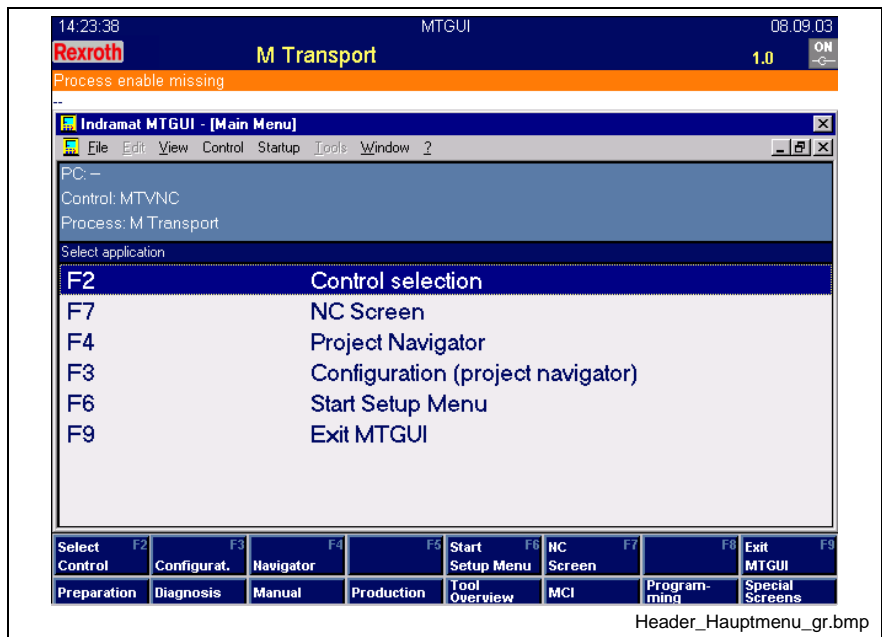


Fig. 1-23: Main menu with header

The appearance of the header depends on the type of control selected and can be configured separately for every type.

**Predefined headers**

The following headers, which are adapted to the corresponding control type, are available:

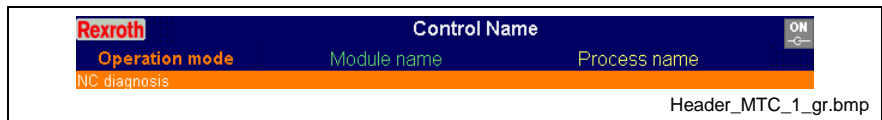


Fig. 1-24: MTC\_Header\_1



Fig. 1-25: MTC\_Header\_2

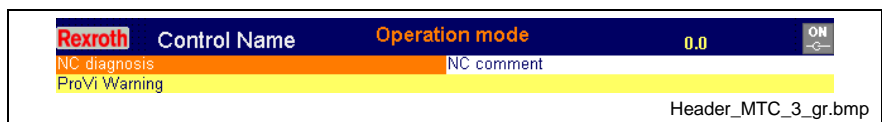


Fig. 1-26: MTC\_Header\_3

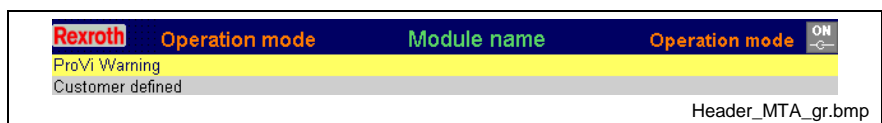


Fig. 1-27: MTA\_Header

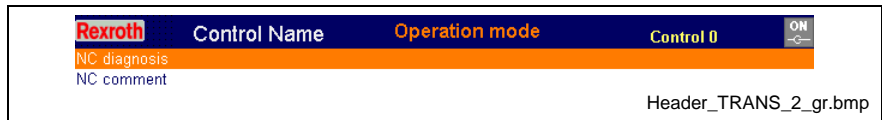


Fig. 1-28: TRANS\_Header\_2

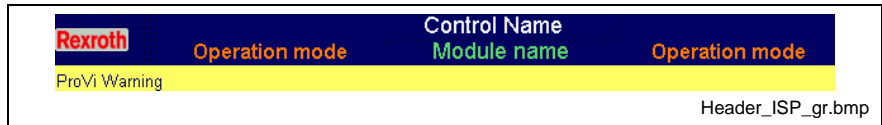


Fig. 1-29: HMI\_Header

**Connection status**

The connection status is indicated by a bitmap in the top right corner of the header. Three states are possible:

Online		Control is in online mode Communication is possible
Offline		Control is in offline mode
Connection Interruption		Control is in online mode Communication is interrupted

Fig. 1-30: Connection status bitmaps

**Control number**

The control number and the process number, separated by a period (0.0), are displayed in headers "MTC\_Header\_2" and "MTC\_Header\_3".

**MTA header**

The NC notes of the MTA are displayed in the user-defined area of the MTA\_Header.

**Assignment of the control type header**

The header that is displayed depends on the control type. The following assignment applies:

- MTC200: MTC\_Header\_2
- TRANS200: TRANS\_Header\_2
- MTA200: MTA\_Header
- ISP200: HMI\_Header
- MTVNC: MTC\_Header\_2

If another control type is now selected from the control selection, the header that is displayed also changes.

**Editing the header**

The header can be edited only with the NC screen of the MTC. The header can not be configured for TRANS, ISP and MTA. For further information on editing the header, see the description "NC Screen", section "Configuration of NC Screen and Header".

## 1.8 Offline Operation

Offline operation is required mainly in the program development and commissioning phases of the machine, less often in the production phase of the machine.

Offline operation permits certain interface functions to be used without requiring a control unit.

- Creating and editing user data such as NC programs, I/O configuration, etc.
- Designing and configuring interface functions.

---

**Note:** For this, a parameter record must be active. The parameter record provides the axes, limit values, etc. that are required for the machine.

---

**Characteristics of offline operation** When the control unit is switched to offline operation, the communication to the control unit is switched off. States and data from the control are no longer displayed. Only selected functions are still available.

**Switching** The control unit selector is used to switch between online and offline operation.

**Identification of offline operation** In offline operation, there is an error message with No. 2011651159.  
In offline operation, the data records that were last preselected or active are indicated by dimmed CNC symbols.

- Dimmed CNC symbols in the tree and list of the Project Navigator, e.g. for the active parameter record.
- Dimmed CNC symbols in the editors for indicating the online files for offsets, NC variables, NC events and D corrections.

## 1.9 Language Switching

See chapt. "Setup Menu: Language Selection" in "Setup Menu".

## 1.10 Connection Interruption

An interrupted connection is an erroneous state. This state occurs when the control is disconnected from the interface in online operation, e.g. when the serial connection to the PC is disconnected in the case of a RECO control unit.

**Features** When a connection is interrupted, there is no communication between the control and the interface. States and data from the control are no longer updated or displayed. Only selected functions are still available.

**Indication of the connection interruption** System error No. xxx exists in the case of a connection interruption.  
When a connection is interrupted, the data records that were last preselected or active are indicated by dimmed CNC symbols. Also see Offline Operation.

**Elimination of the connection interruption**

There are two procedures for this:

- Direct elimination of the cause of the error:
  - After the cause of the error has been eliminated, the interface automatically reconnects to the control.
- Use of offline operation for elimination
  - Switch the control to offline operation.
  - Eliminate the cause of the error.
  - Switch the control to online operation.



## 2 Applications in the MT Interface

### 2.1 MTGUI Desktop

The MTGUI desktop is the central desktop for MTC200 and TRANS200. The following applications run in the MTGUI desktop:

- Main Menu
- Control Selection (adapted)
- NC Screen
- Project Navigator
- Setup Menu

#### Main Menu (MTC200)

The main menu is displayed after the MTGUI desktop is started:

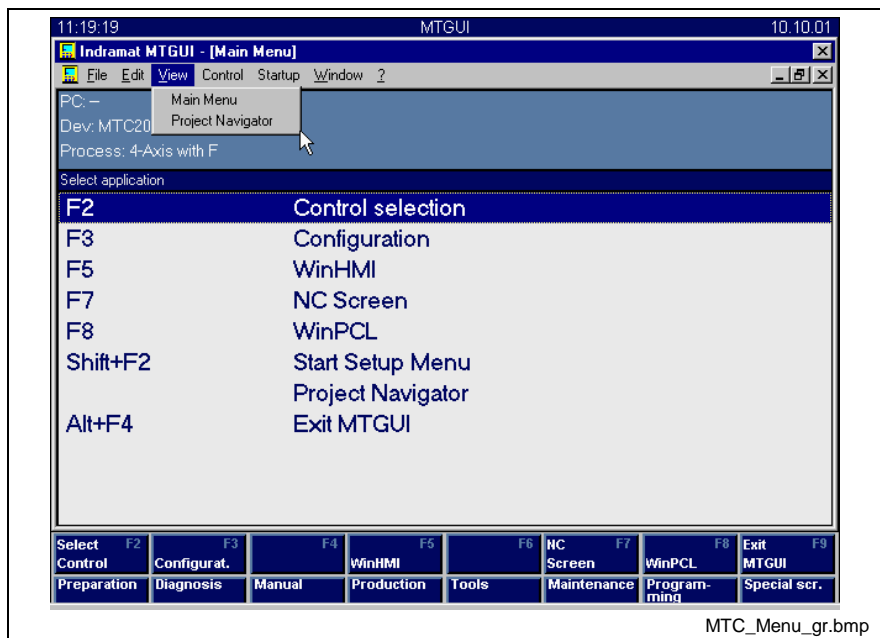


Fig. 2-1: Main menu for MTC200 with the View menu

In the Figure above, the **View menu** is open. It contains the following menu commands:

- Main Menu (always visible as a command)
- Project Navigator (only available if it is not open) or special call commands for the Navigator (if it is already open)

Both applications are used for navigation in the MT interface (see chapt. "Navigating Within the MTGUI Desktop"). Additional applications can be called via the main menu:

- The main menu window by highlighting the application + pressing <Enter>
- <F> keys or shortcuts
- Menu commands from the menus in the menu bar


Highlighted application + <Enter>	Key or shortcut	Menu \ menu command
Control Selection	<F2>	Control \ Control selection
Configuration	<F3>	Startup \ Configuration
WinHMI	<F5>	Control unit \ WinHMI (in the WinHMI desktop)
NC Screen	<F7>	Control unit \ NC screen
WinPCL	<F8>	Startup \ WinPCL (in the WinPCL desktop)
Start Setup	<Shift>+<F2>	Startup \ Setup
Project navigator		View \ Project Navigator
Exit	<Alt>+<F4>	File \ Exit
	 key	View \ Main Menu: Function: <b>Back to main menu</b>
		File \ Log on user (see Start Setup / User management)
		File \ Log off user ( " )
		File \ Change password ( " )
		File \ Log on with name and password ( " )
		File / Log on with reference and keycode ( " )

Fig. 2-2: Opening applications via the main menu for MTC200

## Main Menu (TRANS200)

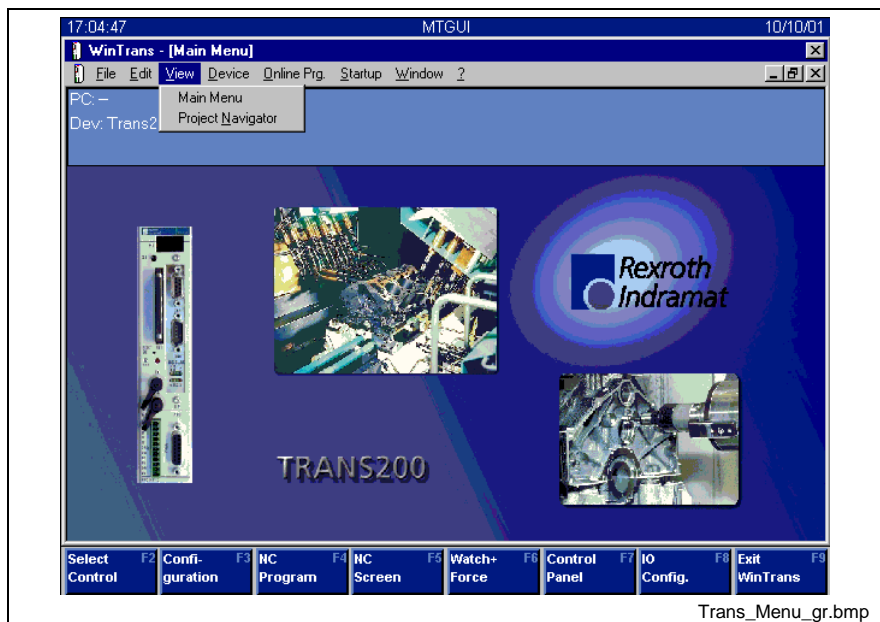


Fig. 2-3: Main menu for TRANS200 with the View menu

In the Figure above, the **View menu** is open. It contains the following menu commands:

- Main Menu (always visible as a command)
- Project Navigator (only available if it is not open) or special call commands for the Navigator (if it is already open)

Both applications are used for navigation in the MT interface (see section "Navigating in the MT Interface"). Additional applications can be called via the main menu:

- <F> keys or shortcuts
- Menu commands from the menus in the menu bar

Application	Key or shortcut	Menu \ menu command
Control selection	<F2>	Device \ Control selection
Configuration	<F3>	Startup \ Configuration
NC Program	<F4>	Startup \ NC Programs
NC Screen	<F5>	Online prg. \ NC Screen
Watch+Force	<F6>	Online prg. \ Watch+Force
Control Functions	<F7>	Online prg. \ Control functions
I/O Configuration	<F8>	Startup \ I/O Config.
Exit WinTrans	<F9> <Alt>+<F4>	File \ Exit
Start Setup	<Shift>+<F2>	Startup \ Setup
Project navigator		View \ Project Navigator
Main Menu		View \ Main Menu

Fig. 2-4: Opening applications via the main menu for TRANS200

## Control Selection (MTC200)

Control selection is a special application which can be used by both the MTGUI desktop and (in a slightly different configuration) the HMI desktop. See also the WinHMI description.

Control selection is used to select a control from the available controls. The machine tool interface that appears on the screen is then always based on the selected control.

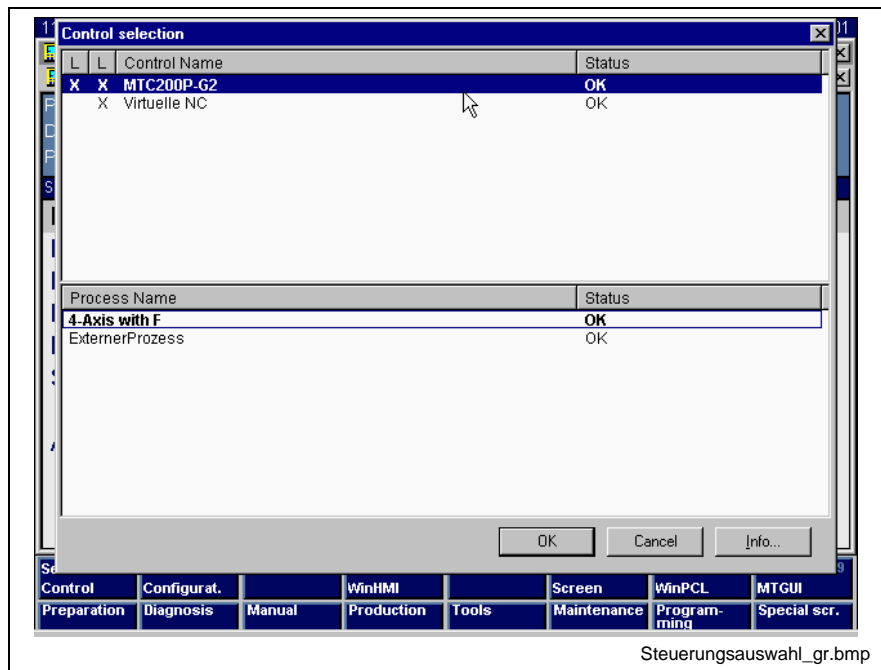


Fig. 2-5: Control selection for MTC200

**Controls** The first list displays all configured controls and contains the following columns:

- K: The head-end control is indicated by an X.
- L: An X indicates local control; a blank entry indicates remote control
- Control Name: Device name
- Status: Device status:  
OK, System failure, Download, Failure, No connection

Controls that cannot be selected, e.g. due to an error, are displayed in *italics*. The selected control is highlighted in **bold** print. All other control are displayed in normal print.

**Processes** The second list shows the processes of the highlighted control. The list contains two columns:

- Process name
- Status (OK, Failure)

The currently selected process is displayed in **bold**.

The highlighted control and the highlighted process are selected when the user presses OK. The dialog box is closed. The selected control can then be further processed.

**Info...** The **<Info...>** button opens another modal dialog box, which provides information about the highlighted control.

The information includes the following:

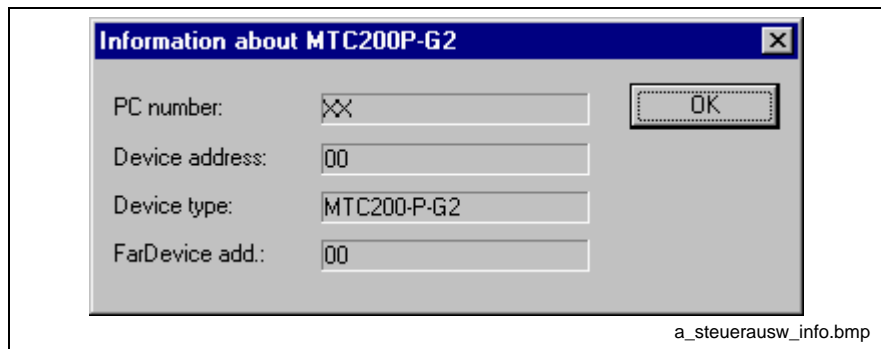


Fig. 2-6: Information about the selected control

- Number of the PC to which the control is assigned
- Local device address
- Device type
- FarDevice address

### Switching Online/Offline (MTC200)

The ON <-> OFF button is used to switch between online and offline operation (see Fig. in "Control Selection (MTC200)").

Depending on the current state of the marked control, it can be switched to offline or online operation. Information regarding the switch is provided in a message box; in addition, the switch can be cancelled here. The status of the selected control is updated as soon as the control responds.

#### Switching to offline operation

The control is switched to offline operation. States and data from the control are no longer displayed. Only selected functions are still available. Communication to the control is switched off.

#### Switching to online operation

Control unit XYZ highlighted in the Control Selection window is switched to online operation. Beforehand, ensure that communication with the control is possible.

#### Switching protection

Switching the control between online and offline operation is password-protected in User Management. The right "Switch to online/offline operation" is located in the "General" tab in User Management.

Only local controls can be switched between online and offline operation.

Remote control that are in offline operation can not be selected in Control selection.

## Control Selection (TRANS200)

The Control selection menu item is called with the <F2> key. It corresponds to Control selection for the MTC200 but is more limited, in that processes cannot be selected (only one process per control).

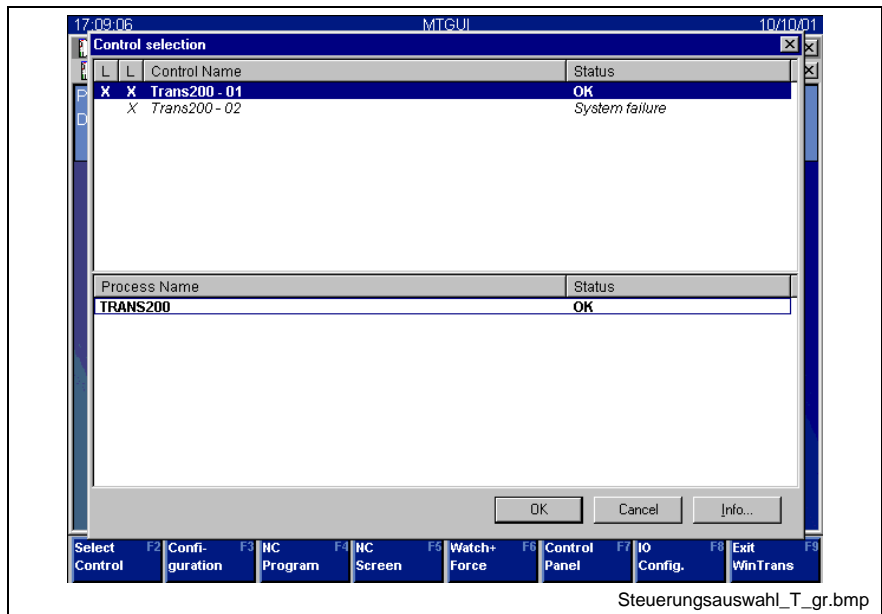


Fig. 2-7: Control selection for TRANS200

See "Control Selection (MTC200)".

## Project Navigator

A detailed description of the Project Navigator can be found in the "General" section.

In the main menu, the <F3> key opens the **Configuration** tab in the **Project Navigator** application. The various control configurations can be carried out here.

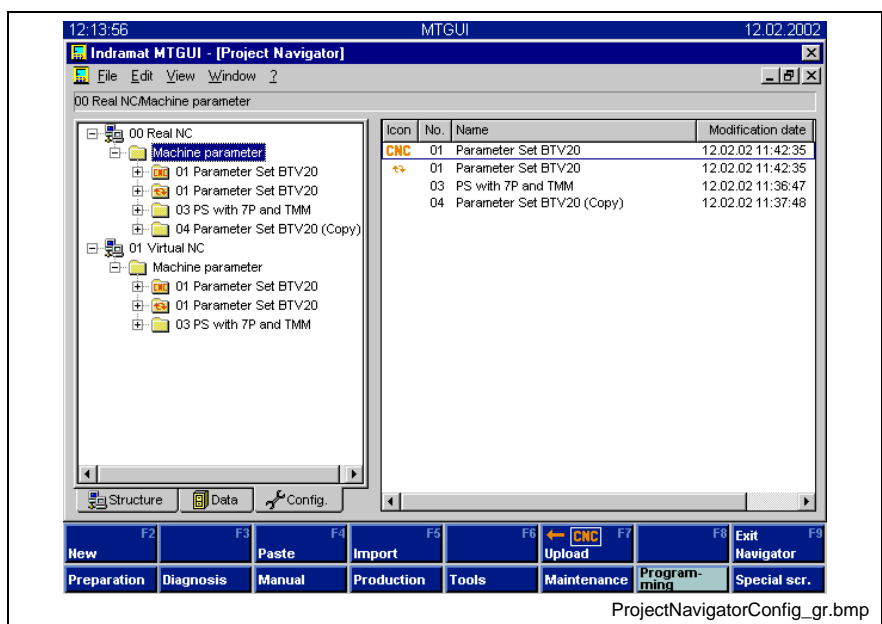


Fig. 2-8: Project Navigator with the "Configuration" tab

## NC Screen

A detailed description can be found in the description of the NC Screen application.

NC Screen is used to display important data for the control unit. The user is therefore provided with a quick overview of the current status of the control and the machine.

With MTC, it is possible to integrate windows with status indicators and windows for displaying and editing NC data into an NC screen.

The display refers to the control and process selected in dialog box "Control Selection" (main menu).

The address and name of the control are displayed in the header.

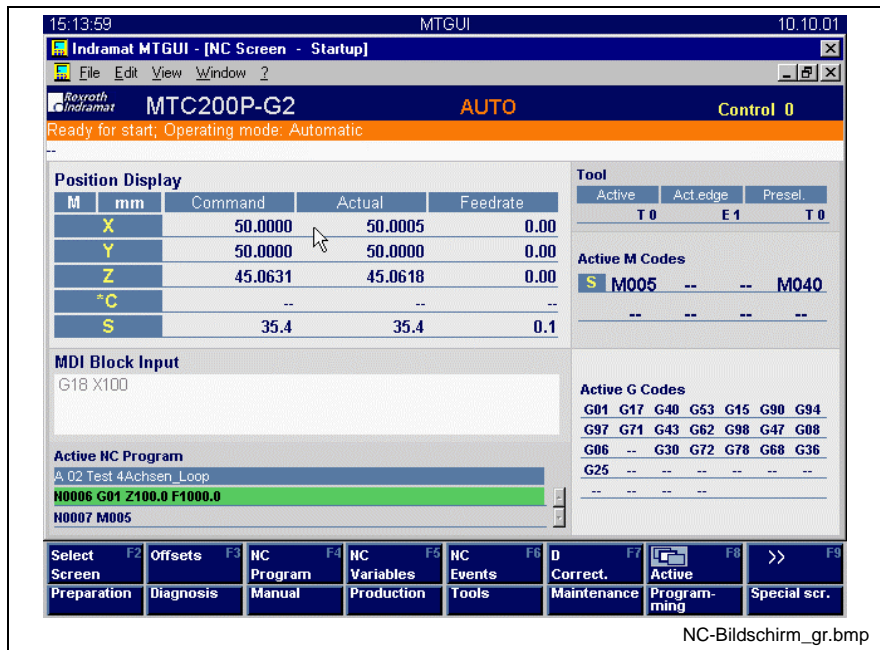


Fig. 2-9: MTGUI desktop with NC Screen

## Setup Menu

Various applications which can be used to specify basic settings for the control can be called from the Setup menu.

The Setup menu can be called with the <Shift>+<F2> shortcut for both the MTC200 and TRANS200. The specific differences between these control types are covered in the documentation for the special application programs.

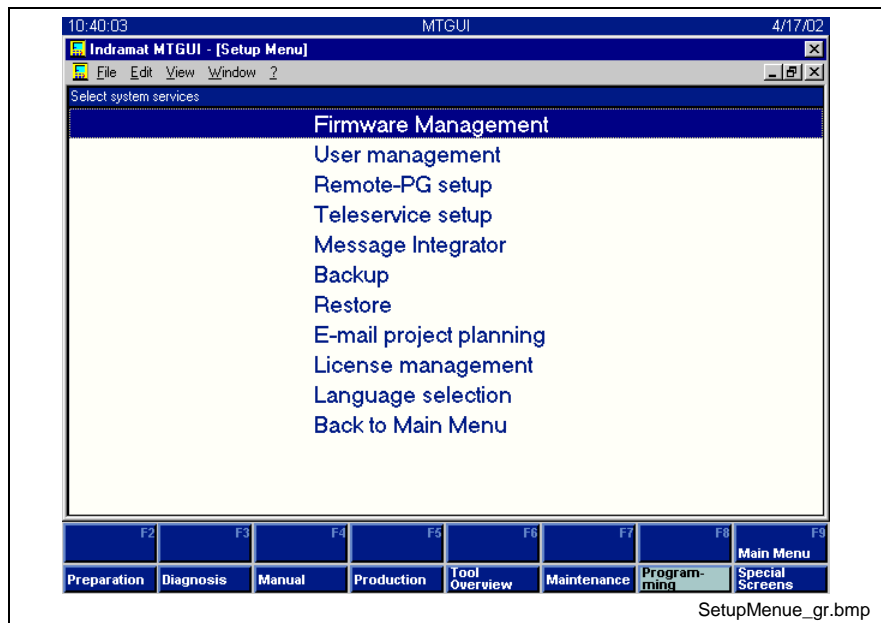


Fig. 2-10: Setup menu

### Setup Menu: Firmware Management

A detailed description can be found in the documentation "Setup".

Bosch Rexroth control components are equipped with electrically erasable flash memories. Replacing EPROM chips is not necessary to install or update the firmware. Instead, the firmware is simply loaded on the PC.

### Setup Menu: User Management

A detailed description can be found in the documentation "Setup".

User Management ensures that only authorized personnel have access to protected functions (and program parts). Before a protected function is executed, the user must register with User Management.

### Setup Menu: Remote PG Setup

A detailed description can be found in the documentation "Setup".

The PG interface is a performance feature which, in conjunction with the appropriate client software, enables remote programming of the PLC. With the aid of this add-on, the user can allow or prevent remote programming of the PLC for this computer.

### Setup Menu: Teleservice Setup

A detailed description can be found in the documentation "Setup".

The TS interface is a performance feature which, in conjunction with the appropriate client software, enables remote operation of the computer. With the aid of this add-on, the user can allow or prevent remote operation of this computer.

### Setup Menu: Message Integrator

A detailed description can be found in the documentation "Setup".

Diagnostic message handling includes:

- processing of process messages and system faults
- processing of general PLC and sequencer errors.

General PLC and sequencer errors are processed using the external Message Integrator application, which is available in Version 18 or later.

Dialog boxes for processing process messages and system faults are already integrated in the MTGUI.

The Message Integrator dialog boxes that are currently integrated in the MTGUI enable the user to:

- modify process messages and system faults specified by Bosch Rexroth with the relevant additional information
- add user-created process messages and system faults.

See Message Integrator (Messagesint\_de.hlp).

### Setup Menu: Backup

This menu is used to save control unit data.

A detailed description can be found in the documentation "System Services".

### Setup Menu: Restore

This menu is used to restore control data.

A detailed description can be found in the documentation "System Services".

### Setup Menu: Email Configuration

The email connection allows event-driven sending of messages, such as maintenance instructions or fault messages, via email, SMS or fax to various devices such as a PC, cell phone or pager.

A detailed description can be found in the documentation "System Services".

### Setup Menu: License Management

The License Management System (LMS) manages licensing of the standard range of functions of the MTGUI as well as the enablement of certain additional components (= options).

A detailed description can be found in the documentation "System Services".

### Setup Menu: Language Selection



Fig. 2-11: Switching languages

Key <F2> is used to switch the set language.

In the example (see Fig. above), a switch from the current language (English) to the German language setting can be made.

1. Press <F2>.
  - The label of <F2> changes.
2. Exit the setting dialog box with <F9>.
3. Exit the MTGUI desktop.

---

**Note:** The new language goes into effect when the MTGUI interface is restarted.

---

## 2.2 WinHMI Desktop (MTC200 Only)

The WinHMI desktop is not available for the TRANS200.

A detailed description can be found in the WinHMI description.

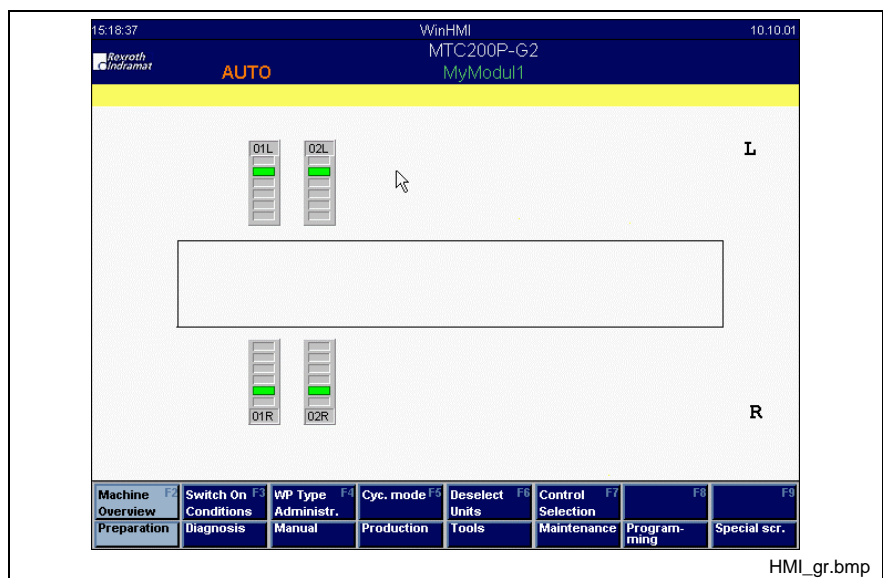


Fig. 2-12: WinHMI desktop with machine overview

The applications in the WinHMI desktop are described in DOK-MTC200-WIN-HMI\*V19-AW01-EN-P (288996).

## 2.3 WinPCL Desktop (MTC200 Only)

The WinPCL desktop is not available for the TRANS200.

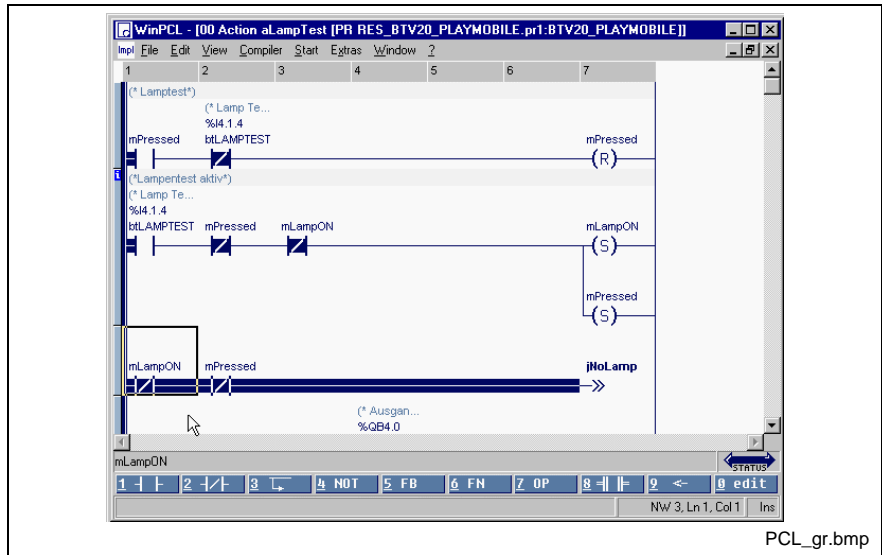


Fig. 2-13: WinPCL desktop with action window

The applications in the WINPCL desktop are described in DOC-CONTRL-WINPCL\*3VRS-AW01-EN-P (291135).

## 2.4 DriveTop Desktop

The Drivetop desktop is used by the MTC200 and TRANS200.

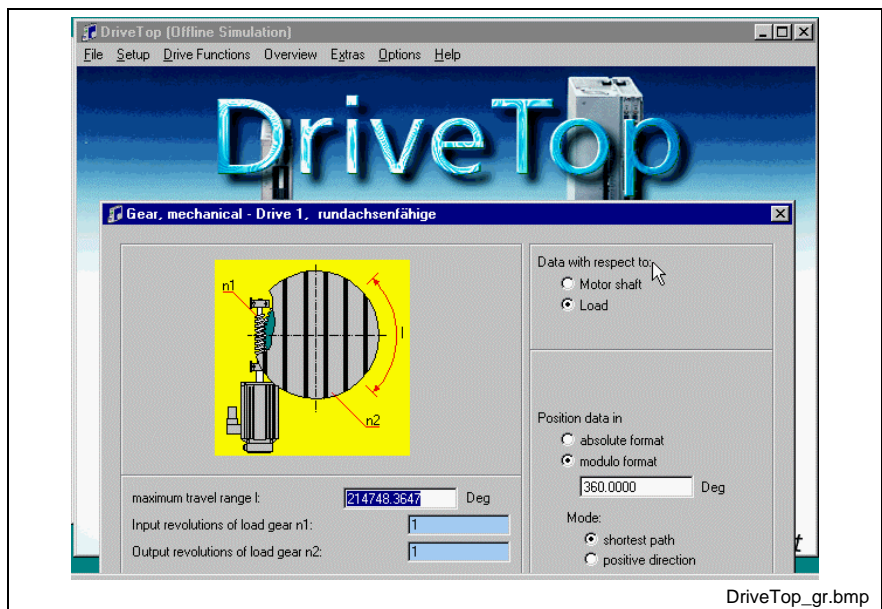


Fig. 2-14: DriveTop desktop with mechanical gear dialog box

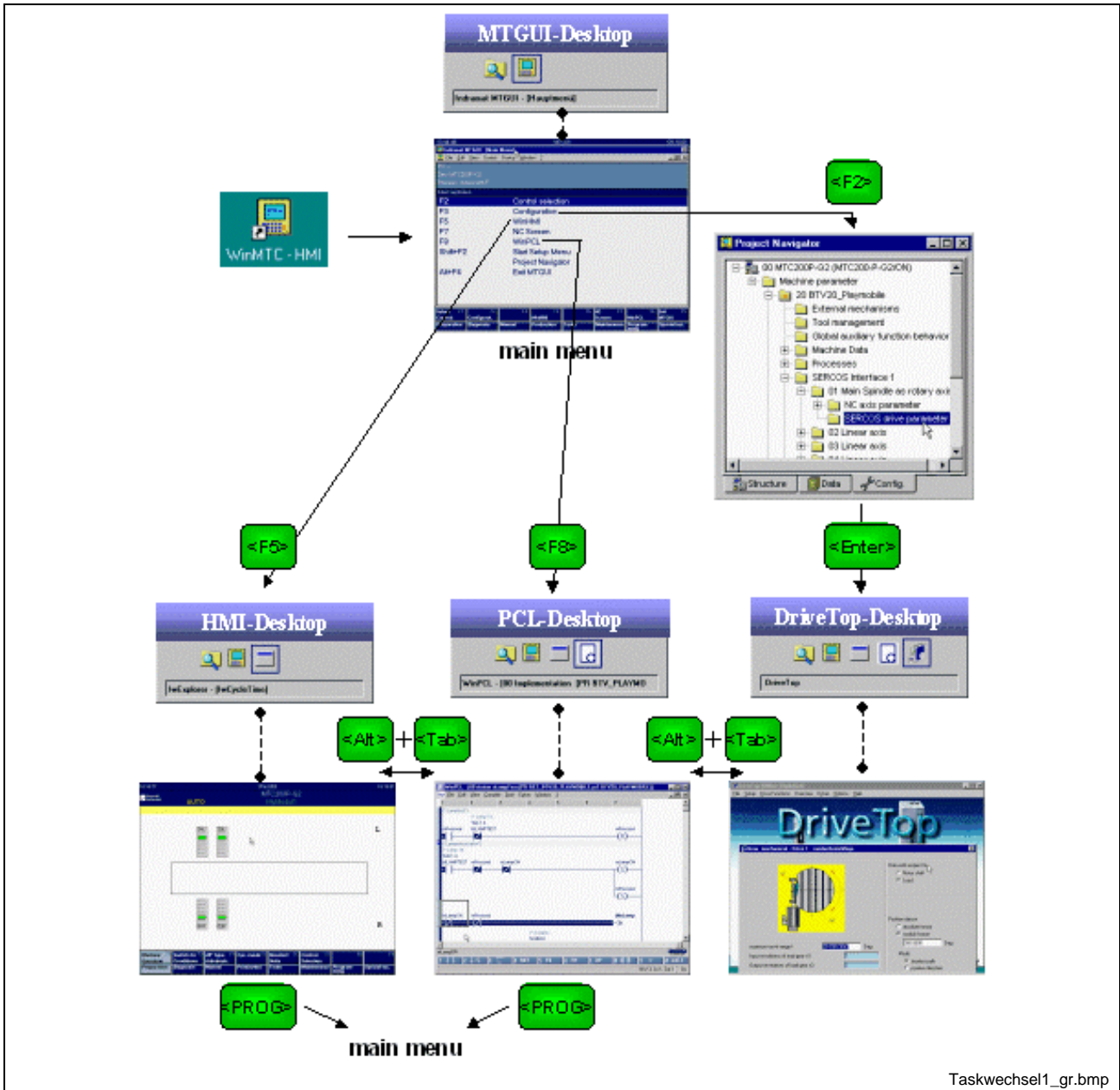
The functions of DriveTop are used to configure drive parameters and to commission the drives.



### 3 Navigating in the MT Interface

#### 3.1 Desktop Selection from the Main Menu (MTC200)

The desktop is changed by switching tasks in the Windows system.



Taskwechsel1\_gr.bmp

Fig. 3-1: Navigating between desktops

The figure (above) shows how to access the applications in the various desktops from the main menu (MTGUI desktop) for MTC200.

The NC-specific functions (e.g. NC Screen) and the Project Navigator are applications in the MTGUI desktop.

Use <F5> to access HMI.

Use <F8> to call PCL.

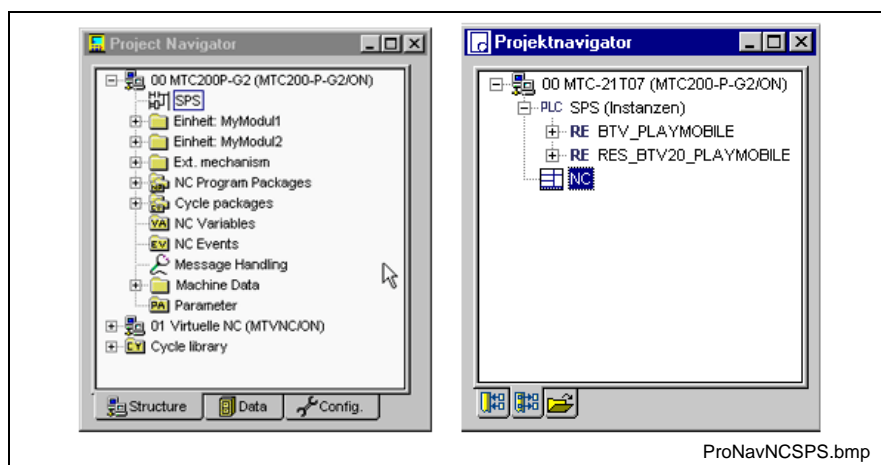
To access DriveTop, call the configuration in the Project Navigator with <F2>. DriveTop is opened by selecting the SERCOS drive parameters and pressing <Enter>.

To return to the applications in the MTGUI desktop, press the <PROG> key on the BTV20 (not DriveTop) or switch tasks using the <Alt>+<Tab> key combination.

## 3.2 Changing Desktops Using Project Navigator

Project Navigator can also be used to change between the MTGUI desktop (referred to here as NC) and the PCL desktop (referred to as PLC).

First, Project Navigator must be opened via the main menu either by **highlighting** "Project Navigator" and pressing <Enter> or via the View/Project Navigator **menu command**.



MTGUI desktop



WinPCL desktop

Fig. 3-2: Switching tasks using Project Navigator

The PLC can be called from Project Navigator (MTGUI desktop contents).

The NC can be called from Project Navigator (WinPCL desktop contents).

### 3.3 Navigating Within the MTGUI Desktop

Open desktop applications can be activated via the Window menu.

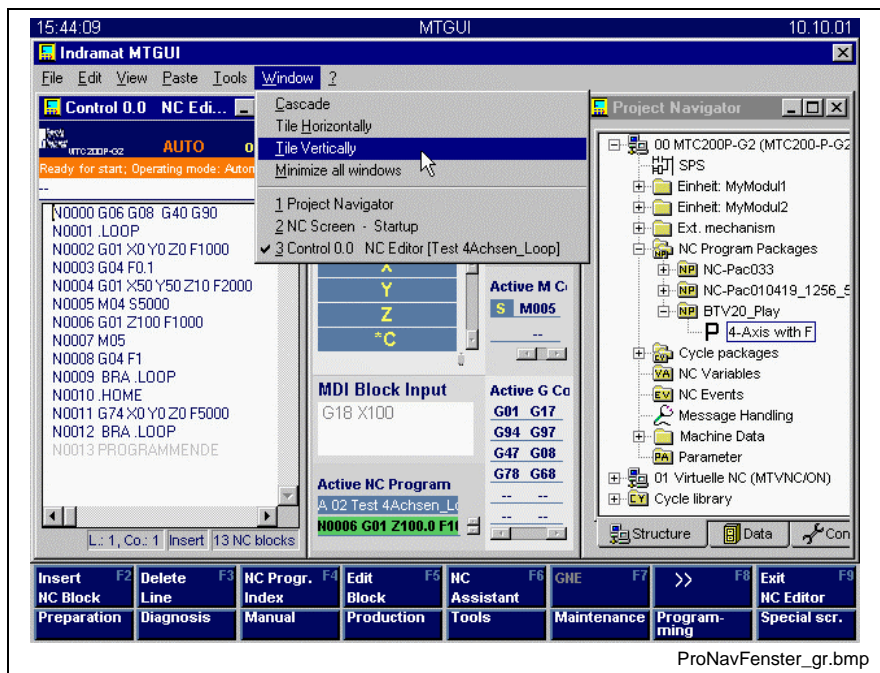



Fig. 3-3: Open applications in the MTGUI desktop

In the figure above, the applications in the MTGUI desktop are displayed next to one another (Tile Vertically menu command). The following applications are open:

- Project navigator
- NC Screen - Startup
- NC Editor (control unit 0.0 with NC Program Test1)

Press button  to maximize the window size of the corresponding application.

The applications can be selected via the Window menu.

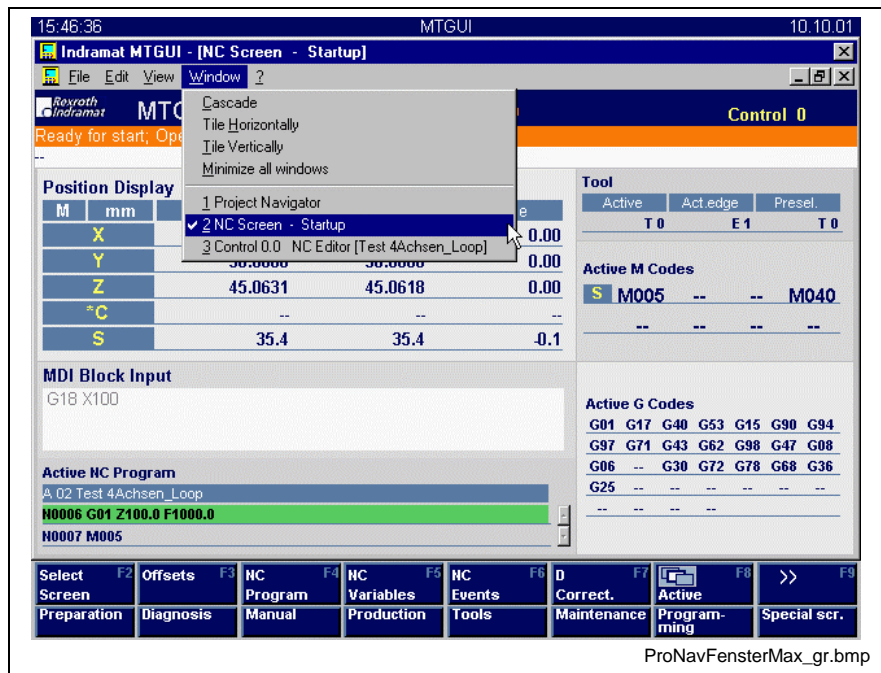


Fig. 3-4: Window menu in the MTGUI desktop

**Note on the <F> key bar**

The <F> keys are assigned by the active application.

- 1. figure:           Active application:       NC Editor       Editor keys
- 2. figure:           Active application:       NC Screen      NC Screen keys

## 4 Project Navigator

### 4.1 General Information About Project Navigator

Project Navigator is a tool used for navigation in the diverse data of all the configured controls of a PC. For this purpose it offers:

- different instances (window layout) and views (structure of the data)
- command input via the main menu, contextual menu and function keys
- specific access to online and offline data
- specific programmer and user actions for each data type
- standard functions such as New, Edit (calling an editor), Download (loading to the control), etc.

### Instances

**Tree+List** In the "Tree+List" instance, a tree structure is displayed on the left-hand side of the window and a list on the right-hand side, which displays additional information about the highlighted entry, if available. The figure below is an example of this instance:

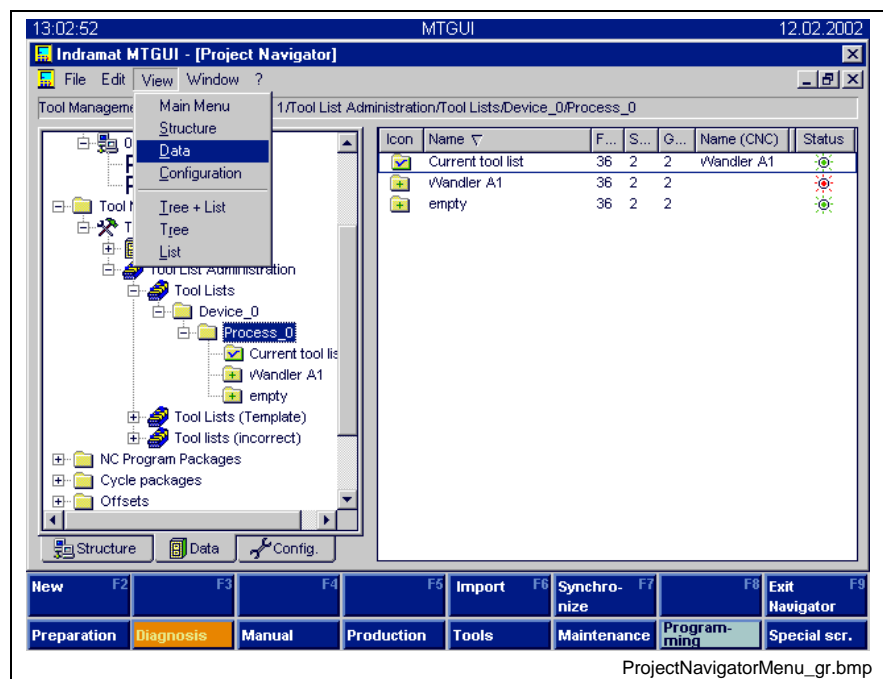


Fig. 4-1: Project Navigator in the "Tree+List" instance

**List** In the "List" instance, only a list is displayed. This display is used, for example, when only one selection is to be made within a data type specified by a different application. The figure below is an example of this instance:

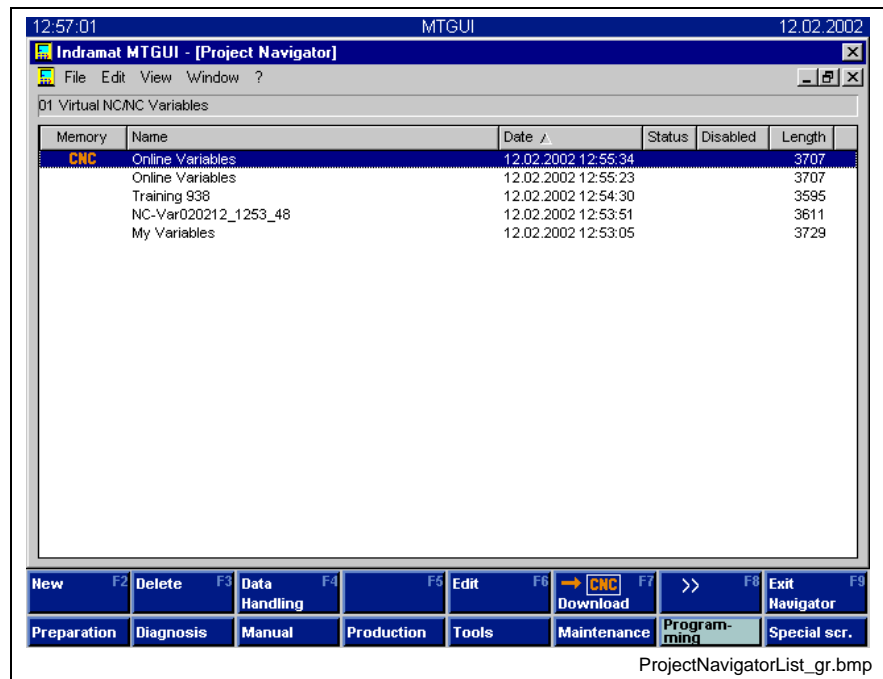


Fig. 4-2: Project Navigator in the "List" instance

**Tree** Only the tree structure is visible in the "Tree" instance. At present this display can only be activated via the "View\Tree" menu item. This is useful if the main purpose is viewing the hierarchy when detailed information is not necessary.

## Call and Exit

**Call** Project Navigator can be called either in the main menu of the user interface by selecting "Configuration" or "Project Navigator" or indirectly from the NC Screen or the various NC Editors in the "List" instance.

**Exit** Project Navigator can be closed at any time via the <F9> function key (Exit Navigator), using the Close button or the <Ctrl>+<F4> shortcut or via the "File\Exit Navigator" menu item.

**Switching to other applications** The "Window" menu item or the <Ctrl>+<F6> shortcut can be used to switch to another window/application without exiting Project Navigator.

## Views

Project Navigator offers the user three different views of the control data using various tree structures. The three views are displayed in the "Tree+List" and "Tree" instances as tabs. To switch views, click the tab of the desired view or select the corresponding entry in the "View" menu item.

When the input focus is in the tree, the view can be switched using the standard Windows function <Ctrl>+<Tab> (forward) or <Shift>+<Ctrl>+<Tab> (back).

### View: Structure

The figure below shows Project Navigator in Structure view:

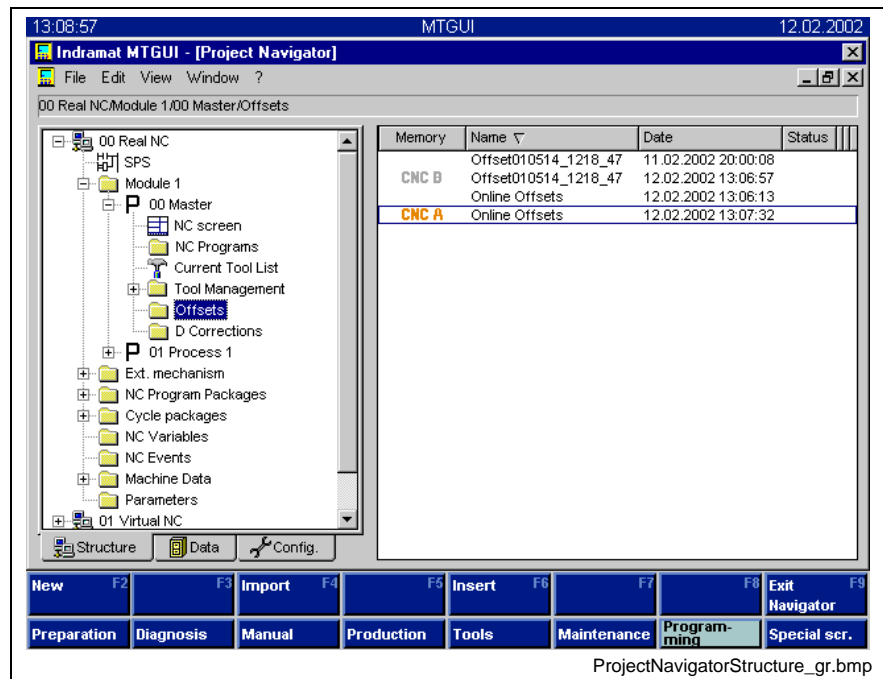


Fig. 4-3: Project Navigator in Structure view

Structure view displays all the configured control units in the first level of the tree. The node designation (entries in trees are also called "nodes") consists of the address and the name. In the case of control units with the status "Offline", "(offline)" is also displayed and the node designation is dimmed. Controls that do not currently have a connection are also dimmed.

**Note:** The order in which the controls are displayed in Project Navigator is the same as in the system configurator and can only be modified there.

The appearance of an extended tree structure below the relevant control node depends on the control type and the configuration defined in the active parameter set.

In addition, the tree structure for the MTC200 control family depends on the module configuration specified in the "ModulDef.ini" file. This file specifies whether modules exist and which configured processes are assigned to them. The corresponding module nodes are displayed with subprocess nodes accordingly.

Specific entries which represent the relevant control unit data for the process or device are displayed for each control type. If a plus or minus symbol appears on the left of the entry, this means that the data is further structured; otherwise the entry is an end node. In this case, additional information is usually displayed in the list, as shown in the figure below. Certain end nodes (e.g. the "PLC", "NC Screen" or "Parameter" entries) offer only one command, which is triggered with the Enter key or by double-clicking the mouse, and enables the user to switch to the desired application.

The "Cycle library" entry also appears below the control nodes when at least one control from the MTC200 control family is configured (only this

control type has cycles and thus a cycle library). This is a special entry as it is not directly related to a control.

### View: Data

The figure below is an example of Project Navigator in the "Tree+List" instance in Data view:

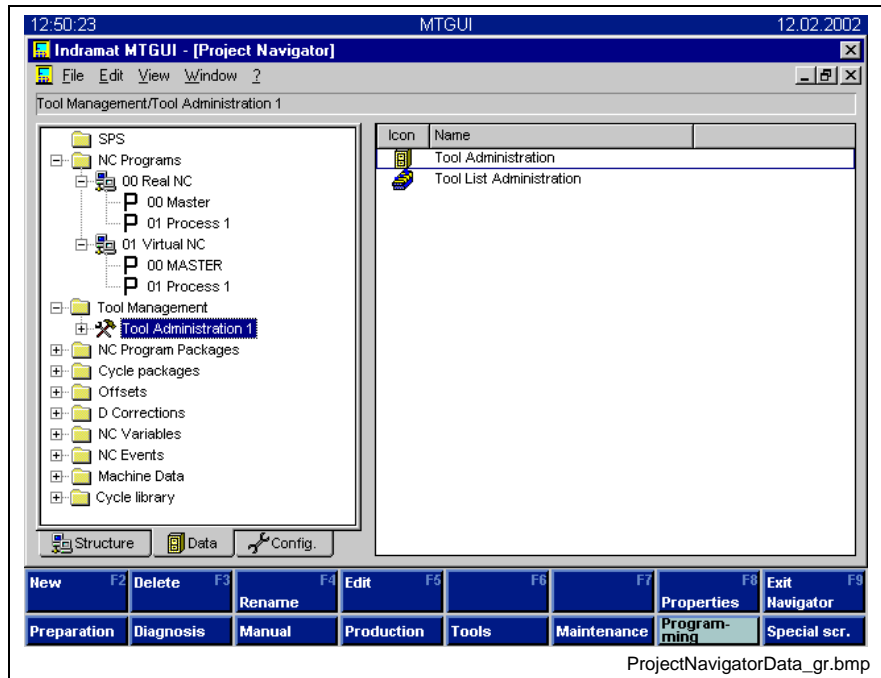


Fig. 4-4: Project Navigator in Data view

In contrast to Structure view, which offers control-oriented display of the data, the different data types are in the foreground in Data view.

All data types that support the current configured control are displayed in Data view. The relevant control offered by a data type are listed within the particular data type. With regard to process-related data, the current configured processes for an MTC200 control are also displayed.

For some nodes (e.g. "Tool Management" or "Cycle library") that are not directly related to a control, no control nodes are displayed.

As in Structure view, the "PLC" end node, which appears if at least one control is configured with a PLC, can be used to switch to WinPCL via the Enter key or by double-clicking the mouse.

Since the control data are displayed according to data type, the user is provided with an overview and faster access to these data.

### View: Configuration

The figure below is an example of Project Navigator in Configuration view:

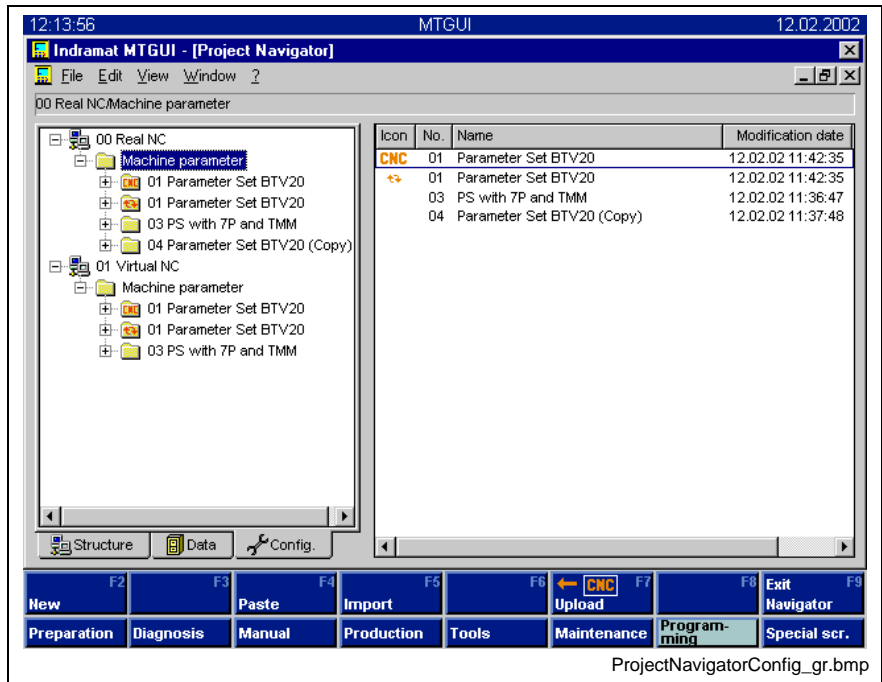


Fig. 4-5: Project Navigator in Configuration view

Configuration view has a similar layout to Structure view; however, only controls that have machine parameters (MTC200, TRANS200, MTA200, MTVNC control types) and machine data (MTC200, MTVNC control types) are displayed in Configuration view. Only the "Machine Parameters" entry with its special structure, which is explained in more detail in the chapter about machine parameters and machine data, appears under the relevant control node.

Configuration view plays an important role in the configuration of control units, as it is only in this view that parameter sets can be created, modified and loaded in the appropriate control. The active parameter set of a control also influences the display in the other two views, as it determines which processes are defined and what they are called.

## Control Unit-Specific Representation

As discussed in the previous section, the entries and information displayed in Project Navigator depend on the configured controls, their type and the active machine parameter set for MTC200, TRANS200 and MTVNC control types.

The nodes that are used for various control types in the "Structure" and "Data" views are described in the following table:

Node type (see figures)	Control type	Description
<Control node>	<All>	Represents a configured control unit and consists of address and name; in case of control units with status "Offline", "(offline)" is also displayed
PLC	MTC200 ISP200	End node which acts as a switch and can be used to switch to WinPCL
<Module 1-99>	MTC200 MTVNC	Structuring element that appears in Structure view for each configured module directly below the relevant control node
<Process 0-6>	MTC200 MTVNC	Represents the relevant process with its process-specific data. Appears below the module node when the process is assigned to the module; otherwise it is displayed directly below the control node. This entry is not available for TRANS200, as there is only one process.
NC Screen	MTC200 TRANS200 MTVNC	End node which acts as a switch and can be used to call the NC screen with the corresponding process for the relevant control
NC programs	MTC200 TRANS200 MTVNC	Represents free NC programs. Selecting this entry in Structure view displays the free NC programs for the relevant process in the list. In Data view for: <u>MTC</u> : the relevant process must be highlighted for the desired control <u>TRANS</u> : the desired control must be highlighted
Current Tool List	MTC200 MTVNC	Represents the online tool list; when the entry is selected, the current tool list of the corresponding process is displayed in the list
Tool Management	MTC200 MTVNC	Root node for Tool Management. In Structure view, only the tool data for the relevant process/relevant control is offered, whereas in Data view only data for Tool Management can be accessed.
Zero Points	MTC200 TRANS200 MTVNC	Represents offset files. Selecting this entry in Structure view displays the offset files for the relevant process in the list. In Data view for: <u>MTC</u> : the relevant process must be highlighted for the desired control <u>TRANS</u> : the desired control must be highlighted
D corrections	MTC200 TRANS200 MTVNC	Represents D correction lists. Selecting this entry in Structure view displays D correction lists for the relevant process in the list. In Data view for: <u>MTC</u> : the relevant process must be highlighted for the desired control <u>TRANS</u> : the desired control must be highlighted
Ext. mechanism	MTC200 MTVNC	Structuring element that comprises all the external mechanisms of the control (process numbers greater than 6) in Structure view
NC program packages	MTC200 MTVNC	Structuring element that comprises NC program packages; they are displayed in the list and as subentries of the node
Cycle packages	MTC200 MTVNC	Structuring element that comprises the cycle packages. They are displayed in the list and as subentries of the node
NC variables	MTC200 TRANS200 MTVNC	Represents the NC variable lists. Selecting this entry in Structure view displays the NC variable lists for the relevant control in the list. In Data view, the desired control must also be highlighted.
NC events	MTC200 TRANS200 MTVNC	Represents the NC event lists. Selecting this entry in Structure view displays the NC event lists for the relevant control in the list. In Data view, the desired control must also be highlighted.
Machine data	MTC200 MTVNC	Structuring element that comprises the machine parameter sets. They are displayed in the list and as subentries of the node. They also provide access to the user machine data that was loaded in the relevant control.

Node type (see figures)	Control type	Description
Parameter	MTC200 TRANS200 MTVNC	End node which acts as a switch and can be used to switch to Configuration view
Cycle library	MTC200 MTVNC	Structuring element that comprises various cycle libraries (Indramat, OEM and user cycles). They are displayed in the list and as subentries of the node
I/O Configuration	TRANS200	Represents the I/O configuration lists. Selecting the entry in Structure view displays the I/O configuration lists for the relevant control unit in the list. In Data view, the desired control must also be highlighted.
Control Panel	TRANS200	Entry which offers commands for starting the "Jogging Axis" and "Operation Panel" applications

Fig. 4-6: Control-specific tree entries and their meaning

## Offline Operation

"Offline operation" allows configuration even without a real control, i.e.

- creating/modifying/"activating" machine parameter sets
- writing/adapting PLC programs
- executing NC programming (cycles, NC programs, etc.)
- creating/modifying tools and tool lists

To do this, it is merely required that the corresponding control unit be created in the system configurator and receives the status "Offline". Furthermore, the status of a configured control can be switched at any time in the Control Selection dialog box of the user interface.

After the download (which is carried out internally only) of a machine parameter set, the parameterized processes of this parameter set appear in the Structure and Data views, so that the process-dependent control data can continue to be configured.

Control units with the status "Offline" are identified in the Project navigator by the extension "(offline)" behind the name of the control unit. In addition, the corresponding node designation is dimmed in this case or if the connection to a control is interrupted.

As opposed to online operation, where the data that are currently in the control are identified by red bitmaps and symbols, these bitmaps and symbols are dimmed in offline operation. This also applies to some upload/download bitmaps on the function key bar.

If the real control is available, its status can be set to "Online"; then the various control data (starting with the machine parameters) can be downloaded – the bitmaps and symbols are displayed in red.

## 4.2 Operation

This section describes the various ways of operating Project Navigator in more detail.

Each individual entry in the Project Navigator tree and list usually has its own contextual menu and individually assigned function keys and menu bar. Consequently, when switching between tree and list or selecting another entry, the assignment of the function keys and the instance of the menu bar changes.

### Contextual menu

If an entry has its own contextual menu, it can be displayed by pressing the right mouse button or <Shift>+<F10>.

The user can highlight an entry in the contextual menu in the usual way, i.e. with the mouse, cursor keys, or by entering the underlined or first character of the entry and then pressing Enter or double-clicking.

Pressing the <Esc> key or clicking outside the contextual menu with the mouse closes the menu without executing an action.

- Menu bar** As previously discussed, the menu bar contains individual items for the entry that is focussed in Project Navigator. The entries can then be selected and activated in the same way as in the context menu by using the mouse or by pressing <F10> or <Alt>+<character> (<Alt>+underlined character in the menu bar).
- Function key bar** The function key bar can be found at the bottom of the user interface and is displayed in the form of softkeys, which represent function keys <F2> to <F9>. The softkeys can be triggered by clicking with the left mouse button or by pressing the corresponding function key. As previously discussed, the individual softkeys are assigned according to the entry that is focussed in Project Navigator.

## Switching Between Tree and List

The user can switch the input focus between tree and list by pressing the <Tab> key or by selecting the desired entry with the mouse. This is important, as any input via the keyboard is always applied to the entry that has the focus. If the user wishes to navigate in the list and the focus is in the tree, the focus can be moved to the list by simply pressing the <Tab> key. Pressing the <Tab> key again moves the focus back to the highlighted tree entry.

## Navigation in the Tree

Both the keyboard and mouse can be used to navigate in the tree. The mouse can be used to directly click individual entries to highlight them. To open or close an entry, click the plus or minus symbol on the left of the entry or double-click the entry itself.

---

**Note:** If the contextual menu for a node has a default entry, double-clicking with the mouse executes the entry instead of opening or closing the node. The default entry is indicated in the contextual menu by a star before the entry.

---

When navigating with the keyboard, the <Cursor right> key is used to open the current highlighted entry and the <Cursor left> key is used to close it.

In addition, entries can be directly accessed by entering the first character of the node name. In case of ambiguity, the next corresponding entry is selected.

The <Page up>, <Page down>, <Home> and <End> keys can be used in the usual way to move one page up or down or to jump to the first or last entry in the tree.

The cursor keys, as well as the <Page up> and <Page down> keys, are used together with <Ctrl> to move the visible section of the tree without changing the selection.

Pressing the <Backspace> key moves the highlight to a higher-level entry, if one exists.

## Navigation in the List

Entries are highlighted in the list by pressing the <Cursor up> and <Cursor down> keys or by clicking once with the mouse, whereas using the <Cursor left> and <Cursor right> keys moves the section of the list left or right. Press the Enter key or double-click the mouse to trigger the default command for the current highlighted entry. If this command does not exist, the list changes to display the subentries of the highlighted entry, if they exist. As in the tree display, pressing the <Backspace> key moves the focus up one level if a list display is available.

If multiple selection is permitted for the displayed List entries, all the entries can be highlighted by pressing <Ctrl>+<A>. Furthermore, it is then possible to select/deselect groups of entries or several individual entries using the <Shift> and <Ctrl> keys in the normal manner.

The <Page up>, <Page down>, <Home> and <End> keys can be used in the usual way to move the screen up or down or to jump to the first or last entry in the list.

For instances "Tree+List" and "List", there are two different degrees of detail in the List representation; these are selected automatically. However, if the list is wider than 400 pixels, the highest degree of detail is always used.

The columns displayed in each degree of detail are preset for each data type; however individual columns can be "hidden" by moving the columns closely together with the mouse. When this list type is displayed again, the column is displayed at the minimum width so that the user is aware that the column is hidden. However, columns that are invisible by default for a degree of detail can be "pulled out" by moving the mouse from the right over the corresponding column separator and pulling the column to the right while pressing and holding the left mouse button.

The column and the direction of the sort can only be changed with the mouse by clicking the appropriate column header one or more times. A small triangle then marks the current sorting column and indicates the selected sort direction; the point of the triangle shows the direction of increasing values.

Project Navigator saves the column width, the sorting column and the direction of the sort for each degree of detail and each list type. These data are saved to the hard disk when the view is changed or when Project Navigator is closed and exited.

When key combination <Shift>+<Home> is pressed when the entry focus is located in the list, the specified default values for the column configuration can be reset for the currently active list type and the currently visible degree of detail.

---

**Note:** Information about column widths and sorting can be found in the "PRONAV.INI" file in the ".\project\_000\customdata\resource" directory. If the default values need to be reset or in the event of general problems with the list display, this file can be safely deleted once the user interface has been exited.

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\*) Die Angaben in der vorliegenden Dokumentation können seit Drucklegung überholt sein.

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3. Tel./Faxnummern und e-Mail-Adresse, unter denen Sie für Rückfragen zu erreichen sind.

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1. Detailed description of the failure and circumstances.
2. Information on the type plate of the affected products, especially type codes and serial numbers.
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