ECKELMANN

E•CONTROL

Standard User Interface StdHMI for CNC Controllers (W2000, XP)

Operating Instructions

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Table of contents

1 Introduction

The program StdHMI is used to operate the Eckelmann CNC units via an operating panel. The system is composed of an Eckelmann CNC unit xNC55 (CNC55, ENC55, PNC55) and an operating panel in the form of a PC (e.g. Eckelmann industrial PC FIPC21.9 or a standard PC with operating system Windows 2000 or XP).

The program StdHMI is to support the user during installation, commissioning as well as during maintenance of the controller and the operating panel in the form of and industrial PC or a standard PC.

The operation of the user interface of the StdHMI is explained in these instructions. The instructions are valid for version 3.4 of program StdHMI. Some of the examples included refer to the Eckelmann industrial PC. Moreover, an installation manual is available for this program.

1.1 Documentation

This document refers to the following manuals:

- StdHMI installation manual
- E•CONTROL - CNC55 configuration
- E•CONTROL – CNC programming instructions
- E•CONTROL – xNC55 configurations instructions

2 General operation

The user interface described in these instructions is a Windows application, and the following platforms are supported: Windows 2000, Windows XP.

2.1 Operation of the program by means of an IPC

The program can be operated either via the keys of the operating panel or by means of an external standard PC keyboard. The key selection on the IPC is designed in such a way that operation during setup and automatic mode (production) is as simple as possible. A standard PC keyboard is required for extended operation and the generation of subroutines that can be optionally connected to the operating unit.

A keypad (pocket computer) is usually displayed for numerical inputs. This makes the inputs via keyboard, mouse or touching possible. The standard user interface does not depend on an external machine control panel for operating the machine. All important functions (start, stop, traversing keys) are assigned to softkeys.

With the appropriate programming of the internal PLC, however, it is also possible to assign the machine functions to separate keys and to utilize them in parallel with or as an alternative to the softkeys.

Please note that a triggering of machine movements via softkeys is not permitted on all machines. The machine user is to observe all valid safety guidelines. ECKELMANN AG offers to adapt the user interface to the particular requirements.

2.2 Configuration file

The user interface includes a configuration file (standard name: DELPHMMI.INI). This file includes settings that are required for the operation of the program, and must be modified by trained staff only. For further information about the contents of the file please check the StdHMI installation manual.

2.3 Change of language

All user interface texts are stored in a separate ASCII file that can be edited using any editor. In this way, texts can be adapted individually or translated into other languages (within the scope of the displayable characters). The currently active language file can be set in the configuration file delphmmi.ini. For information about the parameters and the procedure please check the StdHMI installation manual.

2.4 Passwords

Four authorization levels for access are provided in the standard HMI. The currently set authorization level is displayed by means of the color of the clock in the right top corner.

Authorization level	**Password**	**Color of the clock**
	without password	gray
Normal	1	blue
Master	2	yellow
Specialist	3	red

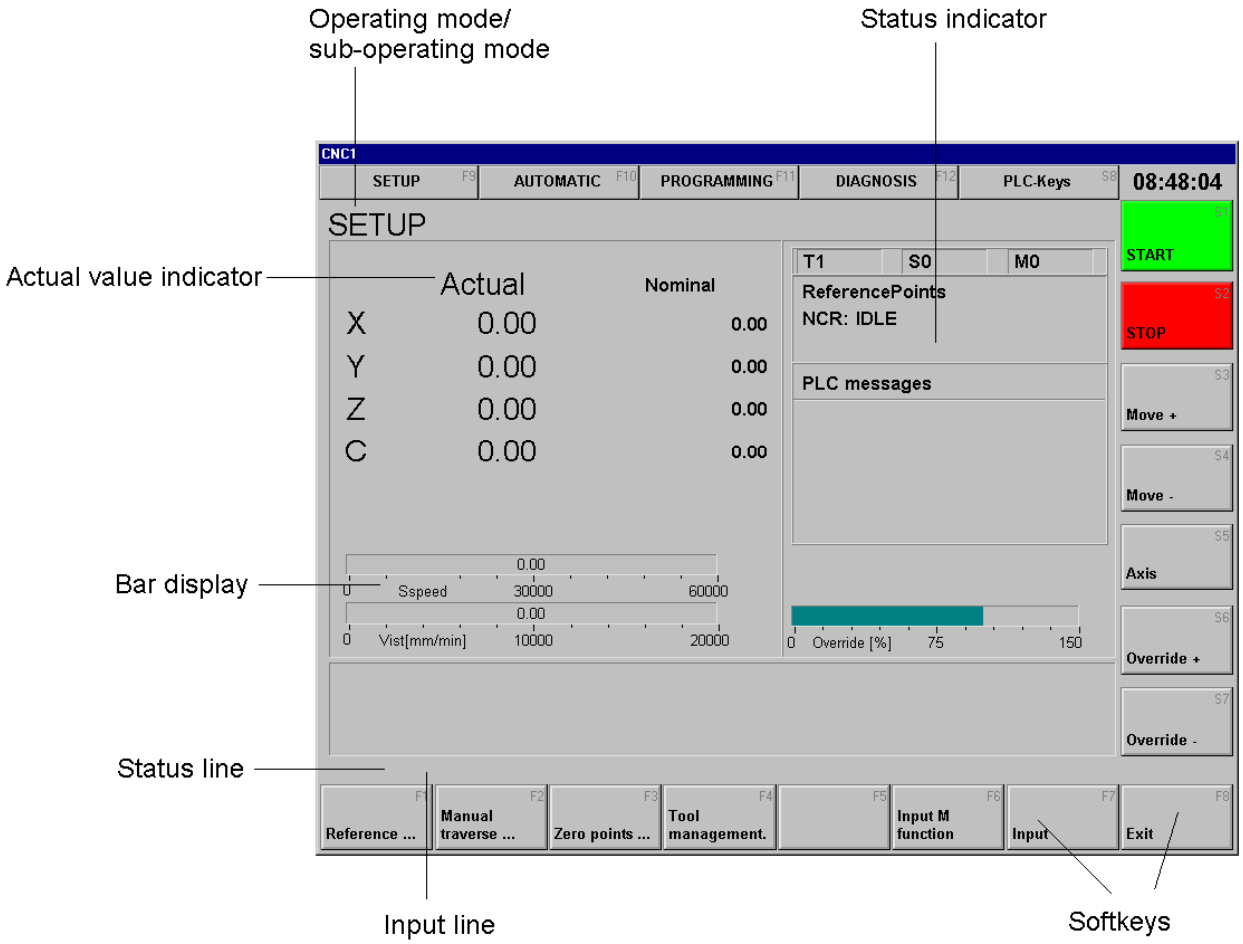
The passwords are saved in a file with the extension PWD. All passwords are reset to standards after a deleting of this file. A respective softkey is available in operating mode DIAGNOSIS for the modification of the standard settings (see operating mode DIAGNOSIS: Horizontal softkeys).

An authorization can be assigned to each softkey (see StdHMI installation manual: Password levels). Only softkeys are displayed that include an authorization. An additional authorization can be logged in by pressing <CTRL> + L or via the softkey *Diagnosis* - *LogIn* (for the operation by the touchpanel please check chapter 2.8). The password dialog is displayed.

2.5 Screen layout

The user interface is divided into various areas that are explained in the following with reference to operating mode *Setup*. In case of an operation by the mouse or by touching, the keys for changeover of operating modes on top of the screen can be activated.

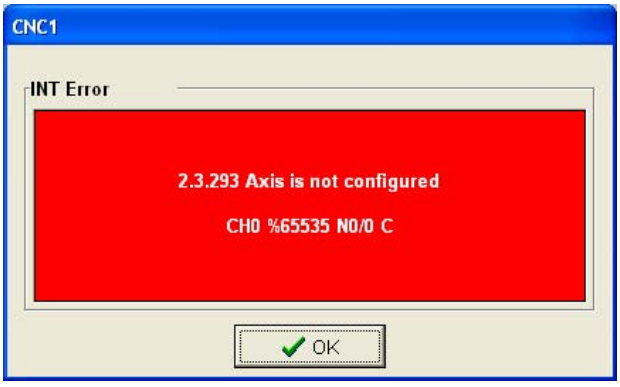
Moreover, a key is displayed, by which the softkey bar can be changed over to PLC keys. These keys are to be programmed in the PLC. The changeover to PLC keys is made by activating Shift F9.



Screen layout	Contents
Operating mode line	The currently selected operating mode and the so-called sub-operating mode are displayed here.
Actual value indicator	The actual and set positions of the currently configured axes are displayed in this area.
Status indicators	The status fields are used to indicate current program states, such as current program, T, S and M and H number. In addition, this screen area may contain information on the subroutine currently being processed as well as PLC error messages.
Softkeys	The horizontal and vertical softkeys with the current softkey assignment are located at the bottom and on the right.
Input and/or status line	An input line is located above the horizontal softkey bar. It is used for specific input dialogs when the inputs are not made directly on a screen. The line is white when active. Alternatively, this line is used to output information and general status indicators.
Bar displays	In addition to the standard bar display for Override and Vcur, further displays can be configured, or existing bars can be reconfigured.

2.6 Notes, warnings, error messages

All notes, warnings and error messages are displayed on a separate screen. This screen is superimposed on the user interface as modal dialog. Modal dialogs are dialogs that attract all inputs, i.e. no keys are accepted outside the dialog screen. Therefore, the message must first be acknowledged with <ENTER>. The dialog screen is then closed.

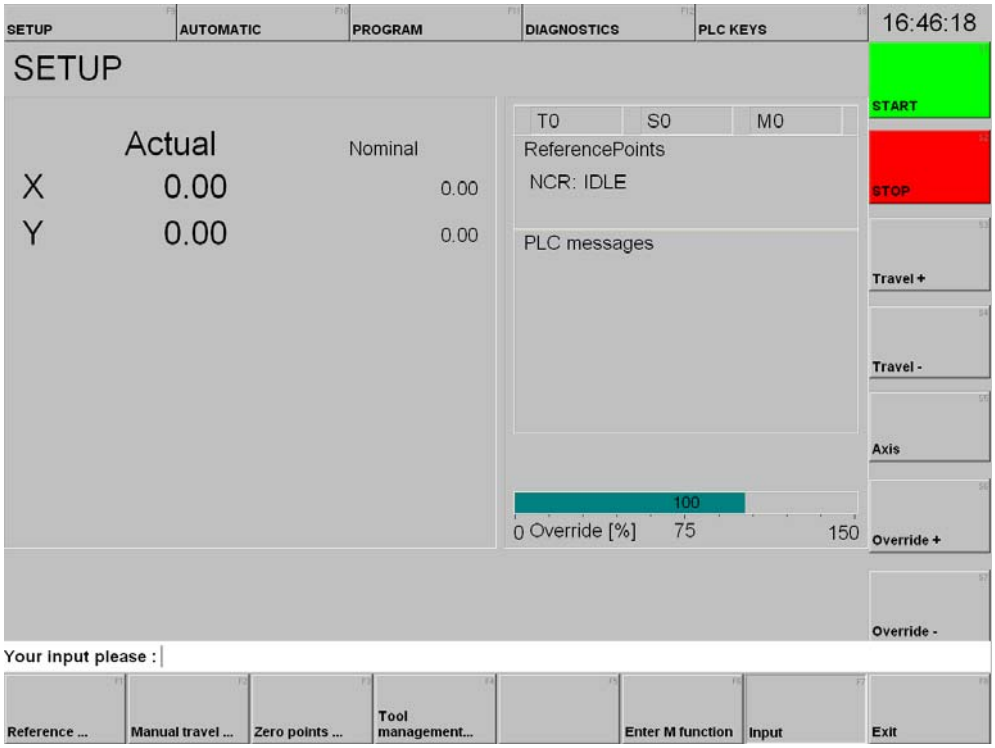


The types of message differ in color. A blue background represents information, a yellow background is a warning and a red background is an error. All messages are stored on the hard disk in a "log file" with date and time of occurring.

For further detailed information about the use of the error log please check the description of operating mode DIAGNOSIS. The designation of the controller reporting the error is indicated in the title bar.

2.7 Operation by means of softkeys

The controller can be operated by means of the horizontal (on the bottom) and the vertical (on the right) softkey line.



The key or shortcut key required to activate each individual softkey is indicated in the upper right corner. The keyboard of an industrial PC or a standard keyboard or a mouse may be used here.

Color and status of the softkey change, depending on its meaning. For example, the softkey "Incremental movement" appears pressed in as long as the function is active. In addition, the description of the active sub-operating mode appears in the operating mode line.

The softkeys can be actuated directly on the operating panel using the assigned keys. The operating mode can also be changed directly.

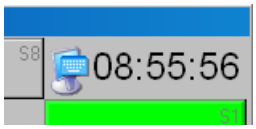
If an external keyboard is used, only the horizontal softkey line can be operated directly via the softkeys; the other keys must be selected with shortcut keys.

Additional key	Softkey	Action
	<F1> … <F8>	Triggering of the horizontal softkey functions F1 … F8
<Shift>	<F1> … <F7>	Triggering of the vertical softkey functions
	<F9> … <F12>	Changing of the operating mode F9 … F12
<Alt>	<F1> … <F4>	Changing of the operating mode
<Ctrl>	<F1> … <F12>	Not assigned
<Ctrl> + <Shift>	<F1> … <F12>	Not assigned
<Shift>	<F8>	Machine panel (option cut only) S8
<Shift>	<F9>	PLC keys S9
<Shift>	<F10>	Tool keys S 10

2.8 Operation by means of Touch

The keys for the changing of the operating mode can be displayed, see StdHMI installation manual. A vision keyboard and/or a context-sensitive pocket calculator is displayed if a keyboard is to be dispensed with completely, see StdHMI installation manual.

In case of operation by means of touch, LOGIN is accessed by clicking on the icon beside the clock.



2.9 Keys on the operating panel of the IPC

The operating panel keyboard is located on the front. The keyboard is located on the right of the screen. The action performed via the softkey is specified by the context-related identification.

Upon activating, the softkeys may respond in three different ways:

- Direct triggering of a function. e.g. program to the NC
- Display of a new softkey line (submenu). e.g. graphics …
- Activation of a specific state. e.g. modal traversing

2.10 PLC enabling for the HMI

Some functions within the StdHMI are only available if the CNC controller sets the respective bits in the data block DB1 (flag word MW1.31).

Bit	Meaning
MW1.31.0	PLC is capable for teach-in, see Programming
MW1.31.1	PLC supports the block search, see automatic mode, block search
MW1.31.2	PLC supports the interruption, see automatic mode
MW1.31.3	PLC supports the version string
MW1.31.4	PLC key control
MW1.31.5	Override
MW1.31.6	Order management

For further details please check the manual of the respective CNC controller.

3 Operating modes

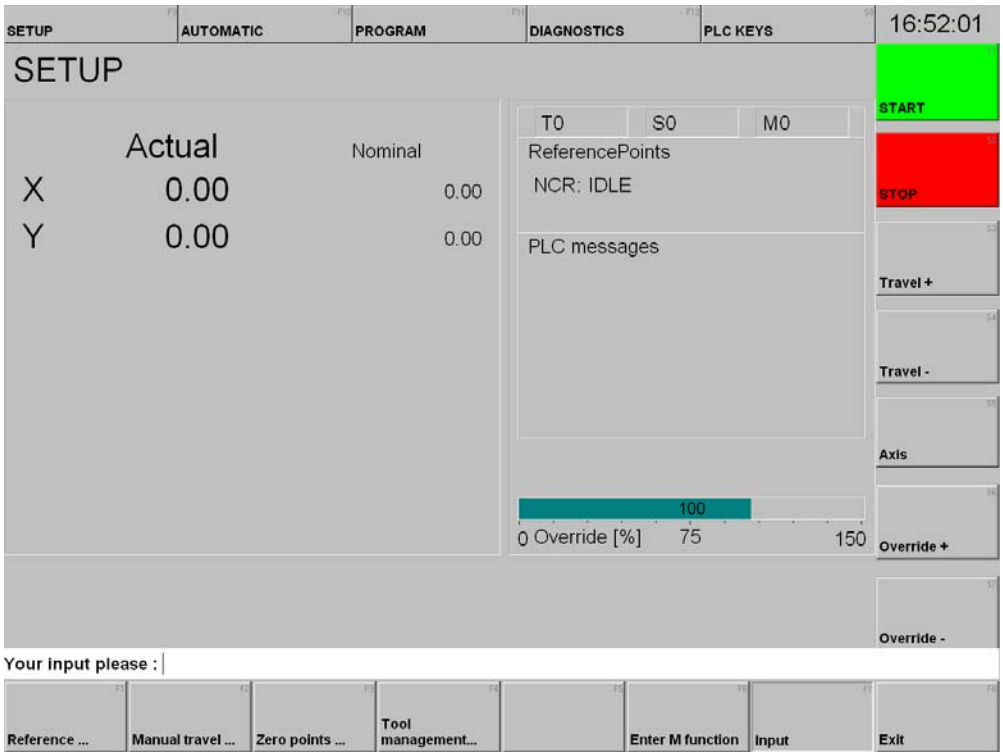
Changing of operating modes can take place on any program level. Open input screens or selection windows are to be closed before.

The operating mode that is to be displayed first after starting the user interface can be specified via the configuration file (see StdHMI installation manual).

The following operating modes are available:

- Setup
- Automatic
- Programming
- Diagnosis

4 Operating mode SETUP



The operating mode SETUP mainly contains functions for setting and adjusting the system. In particular, reference and manual traversing can be executed. In addition, tool management is provided.

4.1 Key Documentation / Help

After pressing the key *Documentation/Help* (F5) this document and the installation instructions can be selected for displaying.

4.2 Menu structure Setup

4.2.1 Horizontal softkeys Setup

Each horizontal softkey has a respective vertical softkey bar. This bar may be different for the single softkeys.

1st level	2nd level	3rd level	Respective vertical softkey set	Only visible, if
Reference	Automatic		1	
	Manual			
	Back			
Manual traversing	Modal traversing		1	
	Incremental traversing			
	Increment			*Incremental traversing* was pressed
	Target point travel			
	Target position			*Target point travel* was pressed
	Handwheel			
	Handwheel factor			
	Back			
Zero points	Reset		1	
	Set			
	Correct			
	S Switch over			
	S offsets	Download to NC	2	Data were modified (hidden after actuating)
		Save as		
		Back		
	Back			
Tool management	Tool data		4	
	Download to NC			Data were modified (hidden after actuating)
	Magazine assignment		3	
	Edit		4	Operator has change authorization (password)
	Magazine change pos.		2	
	Save as		4	
	Reset tool		4	*Tool data* was pressed
	Magazine place empty			*Magazine assignment* was pressed (hidden if Magazine change pos. was pressed)
	Back			

1st level	2nd level	3rd level	Respective vertical softkey set	Only visible, if
Documentation/help	Installation instructions		1	
	Operating instructions			
	Back			
Enter M function			1	
Input			1	
Exit			1	

4.2.2 Vertical softkeys

	Vertical softkey set 1	Vertical softkey set 2	Vertical softkey set 3	Vertical softkey set 4
S1	START			
S2	STOP	STOP	STOP	STOP
S3	Move +	Position import	Duplicate tool	Sister tool
S4	Move -		Fetch tool	
S5	Axis		Change tool	Change tool
S6	Override +		Deposit tool	
S7	Override -	Load tool record	Load tool record	Load tool set

4.3 Horizontal softkey: Reference

- **Automatisch**

  By activating this function, the Start key initiates an automatic reference point traversing (see manual E•CONTROL – CNC55 configuration). All axes are referenced in the configured sequence.

- **Manual**

  By activating this function, a manual reference point traversing can be initiated. The required axis is selected and moved by means of the *Axis* key (or cursor keys) and the traversing *Move +*, *Move -* or *Start* keys.

- **Back**

  Back to the previous level.

4.4 Horizontal softkey: Manual traversing

By means of function *Manual traversing*, it is possible to traverse the axes manually.

- **Modal traversing**

  The selected axis is moved as long as the softkey *Move +* or *Move -* is activated. The axis is selected by means of the *Axis* function or the cursor keys. The speed of the axes traversing is preset by a machine constant. The speed can be influenced with the *Override +* and *Override -* functions.

- **Incremental traversing**

  The selected axis is moved by the input increment. The direction is determined by activating the soft-keys *Move +* or *Move -*. With incremental traversing, the axes move in rapid speed.

- **Increment**

  Increment input in mm by which the selected axis is to be moved. The input is to be completed with the <ENTER> button. The softkey is not identified or enabled until the *Increment traversing* key has been activated.

- **Target point traversing**

  The *Target point traversing* function relates to all axes. By means of the <START> key, all axes are moved whose ACTUAL and SET positions are not identical. With *Target point traversing* the axes move in rapid speed.

- **Target position**

  Make the input of a target position for the selected axis possible. The axis is selected by means of the *Axis* function or by using the cursor keys. The input of a target position must be completed with the <ENTER> button. <ESC> aborts the input and sets the previous positions. The softkey is not identified or enabled until the *Target point traversing* key has been activated.

- **Handwheel**

  This function makes the traversing of the axes possible by using a handwheel. The axis to be traversed with the handwheel can be specified by means of the *Axis* key or the cursor keys.

- **Handwheel factor**

  Make the selection of a factor possible to be used for the traversing speed. Five handwheel factors are provided (1, 3, 10, 30, 100). The system switches to the next factor every time the key is activated. The softkey is not identified or enabled until the *Handwheel* key has been activated.

The Handwheel keys are only displayed if a handwheel has been configured in the machine constants.

- **Back...**

Back to the previous level

4.5 Horizontal softkey: Zero points

- **Reset**

  The current position of the selected axis is made the zero point of the coordinates. (see also E•CONTROL – xNC configuration instructions - G193)

- **Set**

  Point Zero is set in such a way that the selected axis is on the input value after traversing.
  (see also E•CONTROL – xNC configuration instructions - G193)

- **Correct**

  Zero of the selected axis is traversed by the input value (see also E•CONTROL – xNC configuration instructions – G92).

- **S switch over**

  Input of the desired number of the tool coordinate system (S), completion with <ENTER>, abort with <ESC>. The input coordinate system is activated.

➢ **S offsets**

A table of all coordinate systems is displayed except S0. For each coordinate system, the traversing is indicated relatively to S0. These offsets can be changed within the table.

- **Download to NC**

  The table of the S coordinate system is transferred to the controller. This softkey is only available after the change of the data.

- **Save as**

  The table of the S-coordinate system is saved in a file with the extension WSK. The file name is input in the displayed 'Save file' dialog.

- **Back...**

  Back to the previous level

➢ **Back**

Back to the previous level

4.6 Horizontal softkey: Tool management

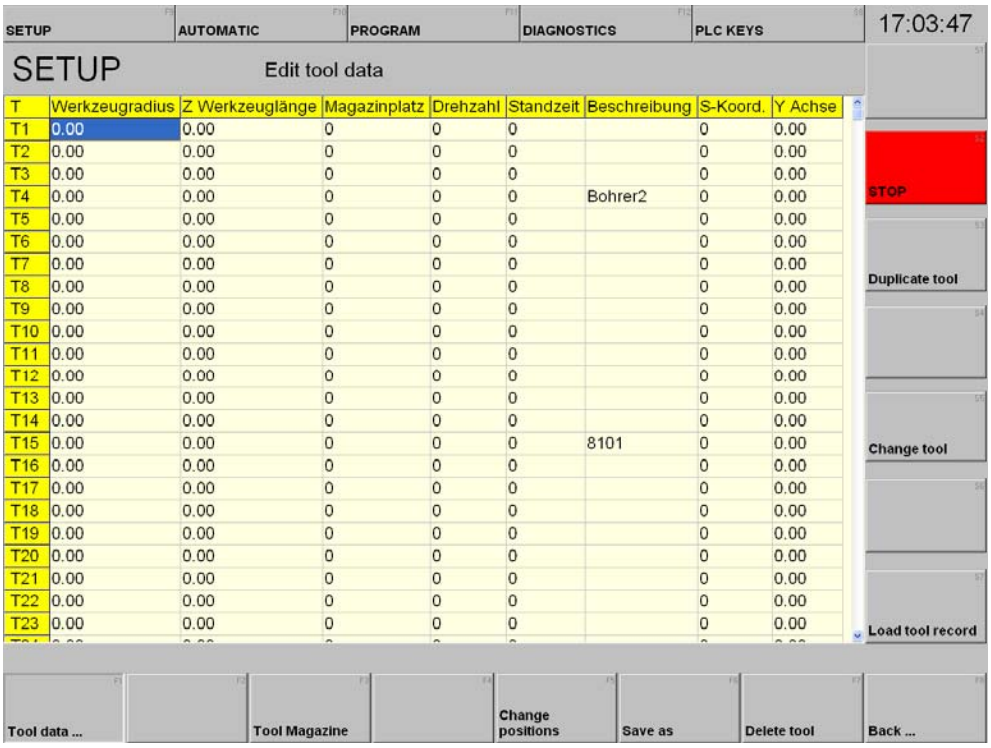
By means of the tool management, the user is able to manage the tools and the respective change positions. The StdHMI carries out the managed part only. The control of the necessary inputs and outputs and the sequence of the tool change is to be made by the user (DIN program, PLC).

The tool management makes the input and the storage of 99 tools possible (or 31 in case of a lower stage of extension). Tool 0 is used as reference tool and should not be used for other purposes. The tools can be assigned to the tool magazine slots. Tool change positions are assigned to tool magazine slots. The S coordinate systems of the change positions can be protected by means of MK_VERSATZSPERRE.

The number of magazine slots to be managed in the HMI is specified in the .INI file (see StdHMI installation manual). 30 parameters are available for each tool. The data are made available in the P-field (P700 - P729) by selecting the tool in the subroutine. The parameter allowed to be displayed or changed can be configured (see StdHMI installation manual).

- **Tool data**

  By activating this key, the current tool data are requested from the NC computer and stored in file *vom_nc.wtk* in the configuration directory. The data received are interpreted according to the tool management specification and are displayed in the tool table. Up to 30 parameters can be input in the table of the tool data.



T	Werkzeugradius	Z Werkzeuglänge	Magazinplatz	Drehzahl	Standzeit	Beschreibung	S-Koord.	Y Achse
T1	0.00	0.00	0	0	0		0	0.00
T2	0.00	0.00	0	0	0		0	0.00
T3	0.00	0.00	0	0	0		0	0.00
T4	0.00	0.00	0	0	0	Bohrer2	0	0.00
T5	0.00	0.00	0	0	0		0	0.00
T6	0.00	0.00	0	0	0		0	0.00
T7	0.00	0.00	0	0	0		0	0.00
T8	0.00	0.00	0	0	0		0	0.00
T9	0.00	0.00	0	0	0		0	0.00
T10	0.00	0.00	0	0	0		0	0.00
T11	0.00	0.00	0	0	0		0	0.00
T12	0.00	0.00	0	0	0		0	0.00
T13	0.00	0.00	0	0	0		0	0.00
T14	0.00	0.00	0	0	0		0	0.00
T15	0.00	0.00	0	0	0	8101	0	0.00
T16	0.00	0.00	0	0	0		0	0.00
T17	0.00	0.00	0	0	0		0	0.00
T18	0.00	0.00	0	0	0		0	0.00
T19	0.00	0.00	0	0	0		0	0.00
T20	0.00	0.00	0	0	0		0	0.00
T21	0.00	0.00	0	0	0		0	0.00
T22	0.00	0.00	0	0	0		0	0.00
T23	0.00	0.00	0	0	0		0	0.00

  A magazine slot can be assigned to each tool. It is not permitted to assign a magazine slot more than once. A tool is defined if a tool number is input in the *Original tool* field.

- **Download to NC**

  The tool data are transmitted to the controller. This softkey is only available if data have been changed.

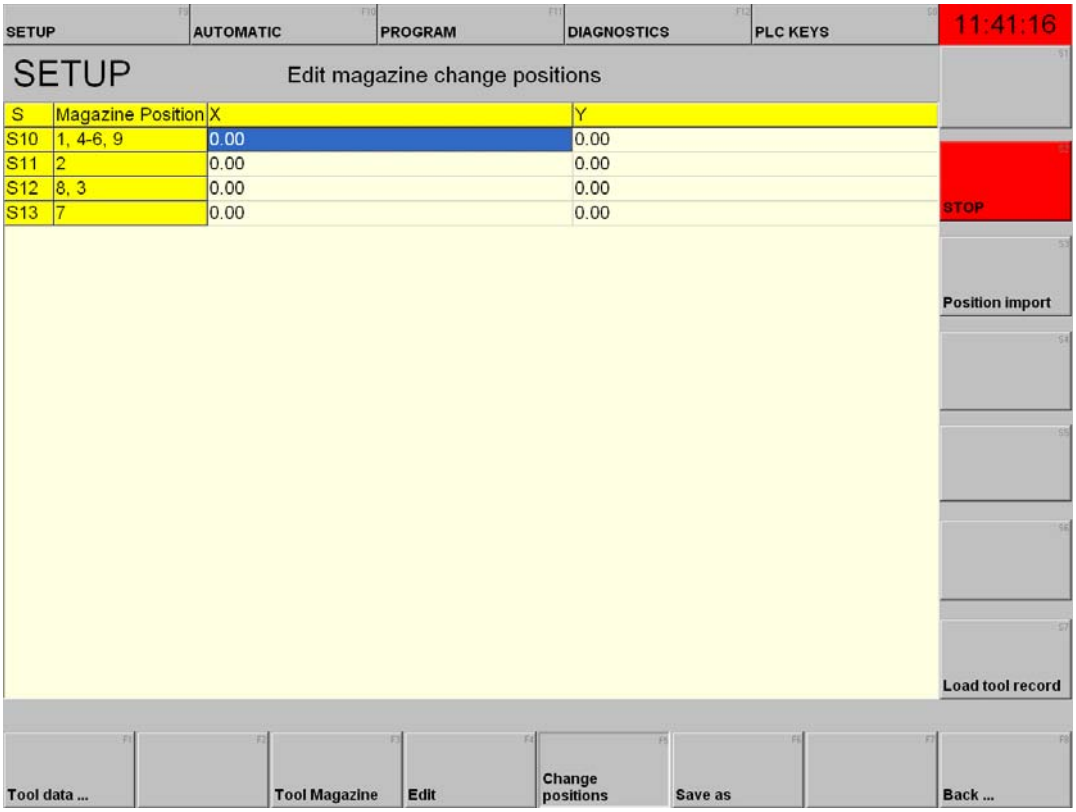
- **Tool assignment**

  In this table, tool data are displayed as per magazine slot. The number of magazine slots and the displayed columns can be parameterized, see StdHMI installation manual - Tool management.

- **Edit**

  The softkey Edit makes the modification of values possible that are managed by the PLC (e.g. current life, see StdHMI installation manual - Tool management). This softkey is only activated if the operator has change authorization (standard authorization *Normal*). See chapter Passwords.

➢ **Magazine change positions**



By activating this key, the current magazine data are requested by the NC computer and stored in the *vom_nc.wsk* file in the configuration directory. The data received are interpreted in compliance with the tool management specification and are displayed.

The table represents the assignment between magazine slots and coordinate systems. The change positions are also input in the table. The positions for X, Y, Z and C can either be input manually or determined via a teach function. If the machine has the option to move the axes independently of softkeys, the unit can be moved to the positions which are then accepted by means of the *Accept position* softkey for the selected magazine slot. The data are input into the corresponding columns.

➢ **Save as**

In the case of *Tool data* and *Magazine assignment*, the current data are saved in a workpiece coordinates file (*.WTK). If additional texts are included in the table, the data can be saved in an extended workpiece coordinates file (*.WTX). In the WTK file, descriptive text is lost since the file includes the data that are to be transferred to the controller. In *Magazine assignment*, the current data are saved in a workpiece file (*.WSK).

- **Reset tool**

  With *Reset tool,* the parameters of the selected tool are set to zero. No sister tool must have be defined for this tool.

- **Empty magazine place**

  The assigning between magazine slots, coordinate systems and change positions can be changed. The data of the selected magazine slot are deleted. The tool itself remains unchanged, only the magazine slot is enabled for a different tool.

- **Back**

  Back to the previous level

4.7 Horizontal softkey: Enter M function

A field is at the top of the *Status indicators* screen where M functions can be input. After activating this key, the field is colored and the cursor flashes in this field. The function number can be specified here. The *M* remains as standard and needs not to be input separately. Changes are reset by actuating <ESC> and are accepted with <ENTER>. The M function is transmitted to the PLC for execution.

4.8 Horizontal softkey: Single block

Single block makes the input of a single block possible (e.g. G, S, T and M functions). The execution is completed by the actuating of <ENTER> and thus triggered.

4.9 Horizontal softkey: Exit

The application is completed by the actuating of ‘Exit’. Windows is shut down also, if the configuration is made accordingly, see StdHMI installation manual.

4.10 Vertical softkey set 1

- **START**

  With START, various actions, including automatic reference point traversing, are triggered.

- **STOP**

  Ends all axis movements as well as a running program

- **Move +**

  Manual traversing key for positive axial direction of the selected axis

- **Move -**

  Manual traversing key for negative axial direction of the selected axis

- **Axis**

  The current axis to be moved can be selected using this function for all axis-related movement functions. Selection can also be made by means of the cursor keys.

- **Override +**

  Increase override percentage of the configured/set axis or path speed. Above 10%, the value is changed in 10% increments and below 10%, it is made in 1% increments The maximum permissible override value is specified in a machine constant.

- **Override -**

  Reduce override percentage for the configured/set axis or path speed. Above 10%, the value is changed in 10% increments, and below 10%, it is made in 1% increments

4.11 Vertical softkey set 2

4.11.1 Special vertical softkeys in case of S offsets

- **STOP**

  Ends all axis movements as well as a running program

- **Position import**

  The current machine position is input as zero point of the selected coordinate system (in the list of all coordinate systems).

- **Load tool record**

  A table with S-coordinates previously saved by means of *Save as*, is transmitted to the controller (*.WSK).

4.11.2 Special vertical softkeys in case of magazine change positions

- **STOP**

  End all axis movements as well as a running program.

- **Position import**

  The current axes positions are read as tool change positions and are accepted in the table.

- **Load tool record**

  A dialog is opened that can be used to select a file with workpiece data (WSK file). This file is transmit ted for controlling.

4.12 Vertical softkey set 3

- **STOP**

  End all axis movements as well as a running program.

- **Duplicate tool**

  Select an empty line. With *duplicate tool* you are prompted to input the tool number, i.e. the respective T-coordinate system. This number must not have been assigned yet in the table.

- **Fetch tool**

  Tool Tx displayed in the status fields is taken from the tool magazine and inserted into the tool holder.

- **Change tool**

  Tool Tx displayed in the status fields is changed with the tool that is currently in the tool holder.

- **Deposit tool**

  Tool Tx displayed in the status fields is deposited in the tool magazine.

  The functions of tool change require a respective PLC program (DIN programs).

- **Load tool record**

  A dialog screen is opened where a file with tool data (WTK or WTX file) can be selected. This file is subsequently transmitted to the controller.

4.13 Vertical softkey set 4

- **STOP**

  End all axis movements as well as a running program.

- **Sister tool**

  A new tool can be assigned by means of *Sister tool* that can be used as an alternative to an already existing tool. This sister tool can be used if the programmed original tool is not available in the sequence. Prerequisite is that the PLC supports this function.

  Upon clicking into the respective line, the softkey *Sister tool* is activated. A pocket computer is displayed, input the number of the original tool.

- **Change tool**

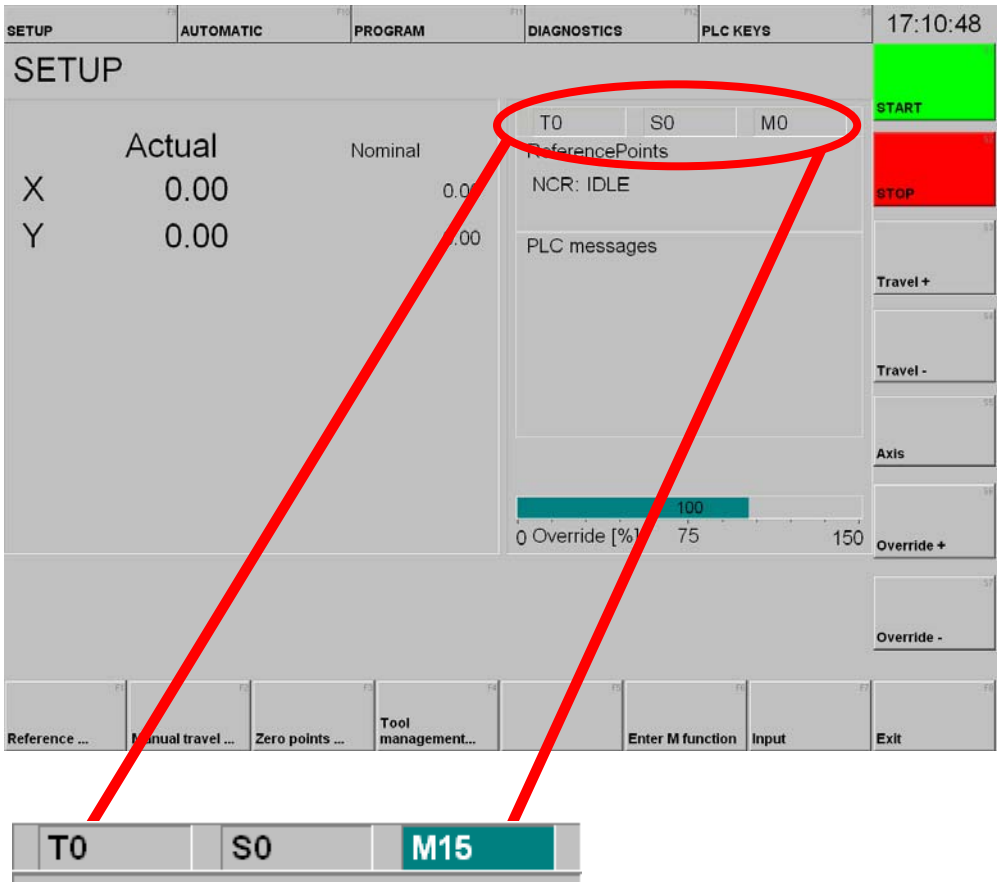
  Tool Tx displayed in the status files is changed with the tool that is currently in the tool holder.

- **Load tool set**

  A dialog screen is opened where a file with tool data (WTK or WTX file) can be selected. This file is subsequently transmitted to the controller.

4.14 Input fields T S M H

In these fields the respective DIN functions can be triggered. Further details concerning DIN functions see E•CONTROL – xNC55 configurations instructions.

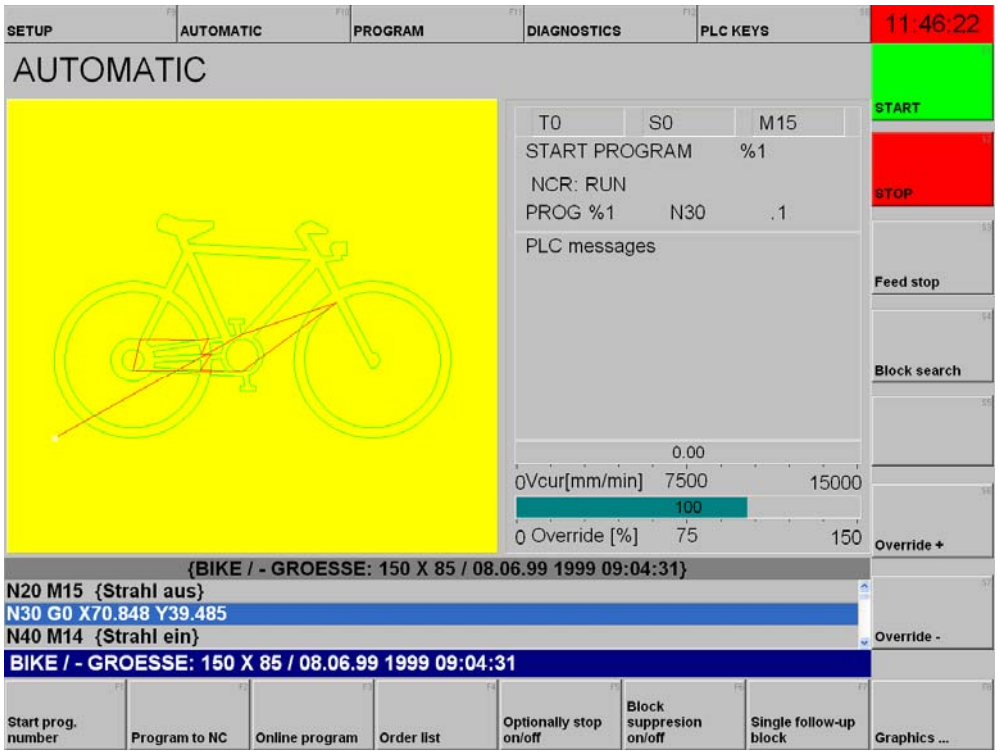


- T change-over is made by clicking on field T.
- S change-over is made by clicking on field S.
- An M-function is released by clicking on field M.
- An H-function is released by clicking on field H.

Upon clicking of the respective field, the pocket computer for the input of the function number is displayed. The H, M, S or T need not to be input separately. Modifications are undone by means of <ESC> and are accepted by pressing <ENTER>.

5 Operating mode AUTOMATIC

The operating mode AUTOMATIC is always set if the NC computer is in a normal program routine. The most important information and status are displayed in the corresponding screens on the user interface.



Upon clicking on key More…, the following additional softkeys are displayed:

5.1 Menu structure Automatic

5.1.1 Horizontal softkeys

Each horizontal softkey has a respective vertical softkey bar. This bar may be different for the various softkeys.

Level 1	Level 2	Level 3	Respective vertical softkey set	Only visible if
Start program number			1	
Program to NC	Filter		1	
	Accept			
	Abort			
Online program/ online abort	Filter		1	
	Accept			
	Abort			
Order management	New order	Number	2	
		Online		
		Filter		
		Listing		
		Accept		
		Abort		
	Change order			
	Load order list			
	Add order			
	Save order list			
	Status reset			
	Program to NC			
	Back			
More	Optionally stop on/off		1	
	Set hidden on/off			
	Single sequence block			
	Feed stop			
	Interrupt			
Graphics	Reset image position		3 (at Graphics on)	Graphics on
	MaschRel.			Graphics on
	Border drawing			Graphics on
	Display idle travel			Graphics on
	Progress in color			Graphics on
	Graphics on/off			
	Back			

5.1.2 Vertical softkeys

	Vertical softkey set 1	Vertical softkey set 2	Vertical softkey set 3	Vertical softkey set 4
S1	START	START	Rotation	Rotation
S2	STOP	STOP	Shift in X direction	Rotate by X
S3		cncOut (option)	Shift in Y direction	Rotate by Y
S4	Block search	Delete order	Zoom	Rotate by Z
S5	Parameters	Delete all orders	Full screen	Reset rotation
S6	Override +	One up	Plus	Plus
S7	Override -	One down	Minus	Minus

5.2 Horizontal softkey: Start program number

The program number is input with this function. The respective program must already have been transmitted to the NC computer, e.g. with the function *Program to NC* where appropriate, with all required subroutines. The program is started with the <Start> key.

If the respective program is not in the controller, a respective error messages is made after activating of key <START>.

5.3 Horizontal softkey: Program to NC

A program is transmitted from the PC FIPC21.9 to the NC. Upon calling of the function, a dialog screen is displayed. By means of the cursor keys, a program can be selected and transmission is started with the <ENTER> key.

In the dialog for program selection, files can be deleted, copied or moved as follows via the horizontal softkeys:

- A selected file can be deleted if you are in the configured directory. A prompting is made for confirmation prior to deleting.
- A file can be copied or moved into the configured directory if you are not in the configured directory. A prompting is made for confirmation prior to the possible overwriting of an already existing file.

The program selection can be aborted by activating the <ESC> key, see also *Dialog screen for file selection*. The program number is input after the transmission. The program can be started immediately by means of <START>. Another option of transmitting programs to the controller is provided by the configuration file. All programs defined in this file are automatically transmitted when the controller is started.

5.4 Horizontal softkey: Online program

If a program is so large that it cannot be transmitted to the NC in one batch, the "Online program" function can help. Calling this function opens a dialog screen which can be used to select the program to be run.

After completing the selection with <ENTER>, the program is transmitted to the NC in blocks. With the <START> function, the program is started without requiring the complete transmission. The selected program and the percentage transmitted are displayed in the *Output line*.

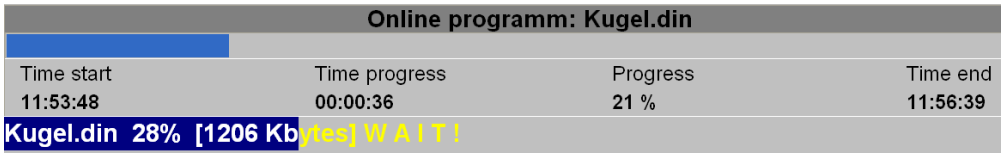
If WAIT is displayed in the transmission bar, the NC memory is currently unable to store anything else. As soon as a transmitted block has been processed, the next block is transmitted automatically until the program has been completely processed.

To be able to run a program *online*, please note that the program must not include any jumps or branches. For subroutines or cycle calls, please observe that the programs have already been loaded into the NC computer.

If a program is loaded Online, the key *Online Program* changes to *Online Abort.* The online mode can be completed with this. With a restart, the routine must be started from the beginning.

In case of an online program, the progress is displayed in percent on the basis of the implemented blocks. The presumable time of completion of the program is calculated.

Example: The online program was started at 16:31:43, it is implemented in the controller by 5%, implementing required 12 seconds and will be completed presumably at 16:35:28.

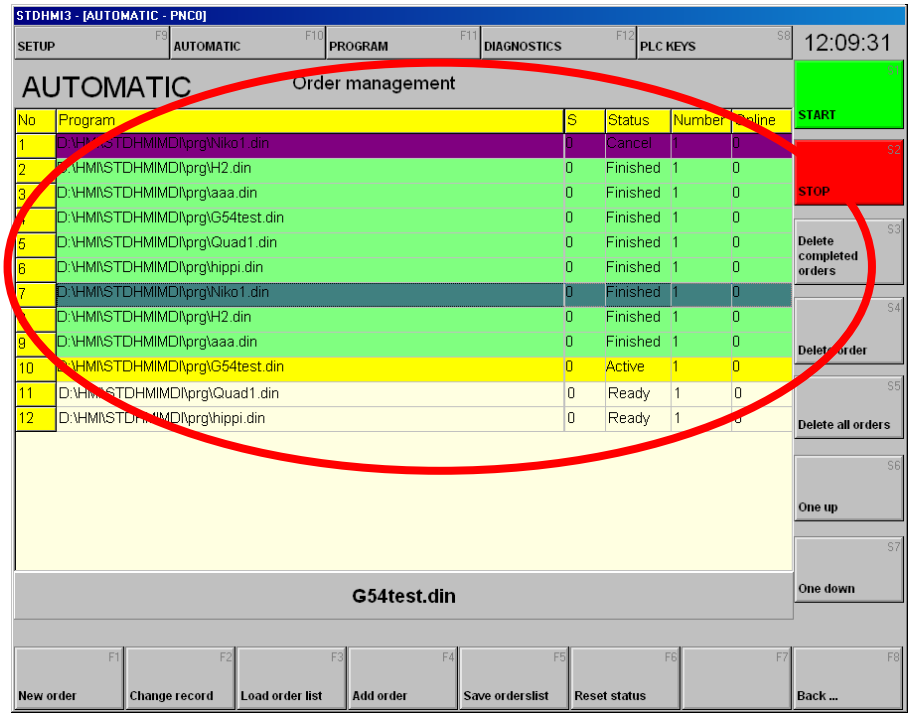


In the dialog for program selection, files can be deleted, copied or moved as follows via the horizontal soft-keys:

- A selected file can be deleted if you are in the configured directory. A prompting is made for confirmation prior to deleting.
- A file can be copied or moved into the configured directory if you are not in the configured directory. A prompting is made for confirmation prior to the possible overwriting of an already existing file.

5.5 Horizontal softkey: Order management

In the order management, a list of orders is generated that are processed one after the other.



No	Program	S	Status	Number	Online
1	D:\HMI\STDHMIMDI\prg\Niko1.din	0	Cancel	1	0
2	D:\HMI\STDHMIMDI\prg\H2.din	0	Finished	1	0
3	D:\HMI\STDHMIMDI\prg\aaa.din	0	Finished	1	0
4	D:\HMI\STDHMIMDI\prg\G54test.din	0	Finished	1	0
5	D:\HMI\STDHMIMDI\prg\Quad1.din	0	Finished	1	0
6	D:\HMI\STDHMIMDI\prg\hippi.din	0	Finished	1	0
7	D:\HMI\STDHMIMDI\prg\Niko1.din	0	Finished	1	0
8	D:\HMI\STDHMIMDI\prg\H2.din	0	Finished	1	0
9	D:\HMI\STDHMIMDI\prg\aaa.din	0	Finished	1	0
10	D:\HMI\STDHMIMDI\prg\G54test.din	0	Active	1	0
11	D:\HMI\STDHMIMDI\prg\Quad1.din	0	Ready	1	0
12	D:\HMI\STDHMIMDI\prg\hippi.din	0	Ready	1	0

The processing of the order list can also be made automatically, if the respective PLC is used. See E•CONTROL – CNC programming instructions.

The following statuses of an order are available:

- **Ready**

  Program neither loaded nor processed

- **Ready for start**

  Program in the NC not yet executed and/or number of runs not yet reached

- **Active**

  Program is currently being executed in the NC

- **Finished**

  Program was already processed

- **Cancelled**

  Program was not processed to the end. The next program is loaded into the controller by actuating the softkey *Program to NC*. The status changes from *Ready* to *Ready for start*. The program is executed with *Start* softkey. Subsequently, the program status changes to *Active*.

  If the number of runs is greater than 1, a change is made to status *Ready for start*. The status is, moreover, identified in colors (see also table Order list). Upon execution of the program, the status changes to *Finished*.

- **New order**

  A file is selected and parameterized in the extended dialog screen *Open file*. This order is attached to the list by actuating 'Accept'.

- **Change record**

  The extended dialog screen is displayed with the parameters of the selected order. Parameters can be changed now. The changes are accepted by actuating ‚Accept'.

- **Load order list**

  A file selection screen is displayed now. Select a file with the extension XML that includes an already predefined order list. Subsequently, the list is loaded.

  In the file selection screen, files can be deleted, copied or moved as follows via the horizontal softkeys:

  - A selected file can be deleted if you are in the configured directory. A prompting is made for confirmation prior to deleting.
  - A file can be copied or moved into the configured directory if you are not in the configured directory. A prompting is made for confirmation prior to the possible overwriting of an already existing file.

- **Add orders**

  A file selection screen is displayed now. Select a file with the extension XML that includes an already predefined order list. The orders of this list are attached to the current list.

- **Save order list**

  The current order list can be saved under a name with the extension XML.

- **Status reset**

  The status of the selected order is set to *Ready*.

- **Program to NC**

  The first program in the list that does not have the status *Finished* or *Abort* is loaded into the controller.

This softkey is not required in case of a suited PLC that makes an automatic processing of a list possible.

- **Back**

  Return is made to Automatic. If a program of the order list is active, it is displayed in the graphics of Automatic.

5.5.1 Table order list

The columns of the table have the following meaning:

- **No.**

  Sequential number. The orders are always processed in this order.

- **Program**

  Name of the selected program. The file name is displayed with complete path.

- **Status**

  Status display of order.

- **Number**

  Number of runs to be made by the program.

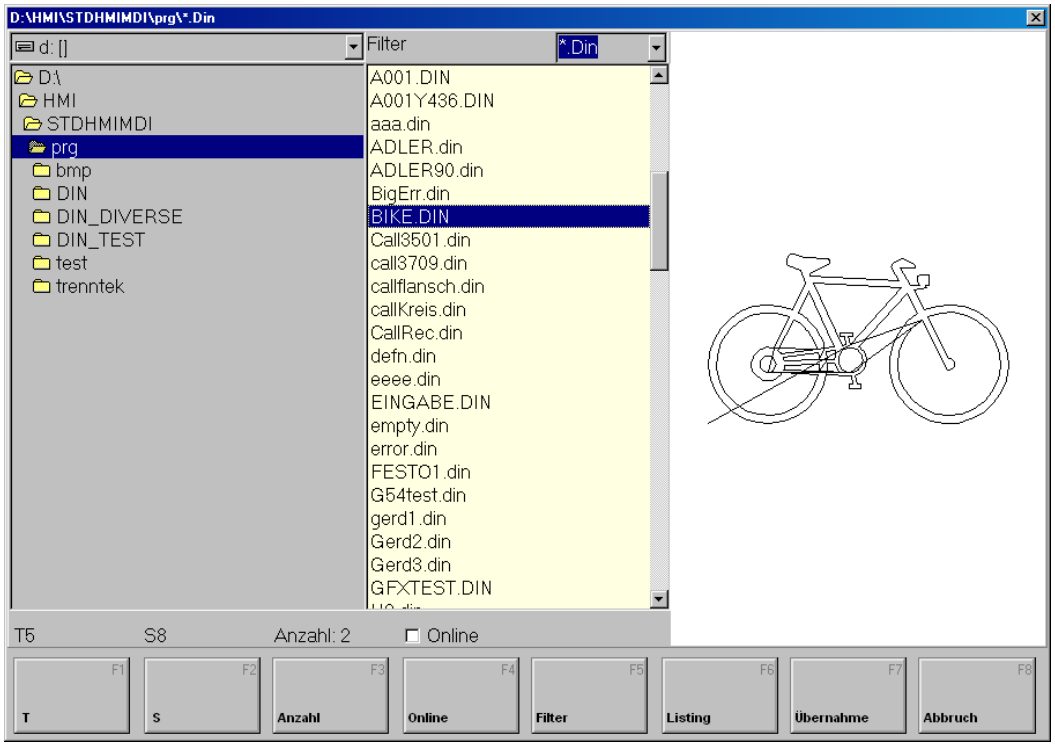
- **Online**

  The program is to be loaded online, since it is does not completely fit the memory.

Online programs must not include jumps and branches!

5.5.2 Dialog box: New order

The a.m. parameters can be assigned to an order with the help of this dialog screen.



5.6 Horizontal softkey More

5.6.1 Horizontale softkey: optionally stop on/off

With this function activated, the program is stopped with an *M1* command. The program is continued by activating the Start key.

M1 must be processed accordingly by the PLC.

5.6.2 Horizontal softkey: set hidden on/off

With this function activated, all sets characterized by a slash (/) are not executed.

5.6.3 Horizontal softkey: Single sequence block

With this function activated, each traversing block is to be started by activating the start key. In case of changing the operating mode in current operation, processing is stopped with the next possible block. Upon deactivating of single block, the start key is to be activated for further processing.

5.6.4 Feed stop

If *Feed stop* is activated, the axes are not moved any further until the function is deactivated again. The axes are stopped using the set brake ramps. Both the current traversing speed and the set override value are displayed in the status field.

Execution of the function is to be performed via the PLC.

5.6.5 Interrupt

A current program can be interrupted by means of *Interrupt*. Programs or single functions can be implemented without influencing the interrupted program. The repeated actuating of the *Interrupt key* resets the state. The interrupted program can be continued with *START* and aborted with STOP.

This function is to be activated by the PLC (MW1.31.2). Otherwise, the softkey is not available. Although the function is activated, the softkey is displayed only during program run.

5.7 Horizontal softkey: Graphics

- **Graphics on / off**

  A graphical display of the current program is shown instead of the position display.

The graphical representation is currently limited to the mere contour description of axes X and Y. Subroutine calls, jumps, contour and basic turning, scale factor and programming via P-fields are supported. Double indicated programming via P-fields, various coordinate systems etc. are not supported.

The graphics can be operated with the mouse as follows:

Move: With the right mouse button, the contour can be moved to the required position.

Zoom: With the left mouse button, a square is opened and this area is zoomed.

Reset: Zoom and Move is reset by making a doubleclick with the left mouse button, see also Softkey *Reset image orientation.*

A color can be defined for each M function, for instance to select idle travels. Moreover, a scale or a background grid can be defined, see StdHMI installation manual: *Interpreter.ini*. With activated graphics, the following softkeys are available.

- **Reset image position**

  All modifications of the section are reset.

- **MaschRel**

  The working range of the machine is displayed. The software limit switches of the machine constants are displayed as range limits. (See E•CONTROL - CNC55 configuration: MK_SW_ENDS_MINUS, MK_SW_ENDS_PLUS). The state remains unchanged after switch-off and switch-on.

- **Border drawing**

  A frame is drawn around the DIN program and is dimensioned in input units. The state remains unchanged after switch-off and switch-on.

- **Display idle travel**

  Idle travels are displayed in a different color (M15/M14).

  The graphics recognize idle travels by means of a preceding M15 and working travels by means of an M14. Other M functions can also be defined for the identification of the idle travel, see StdHMI installation manual: *Interpreter.ini*.

- **Progress in color**

  Paths already traveled are indicated by a color change. The state remains unchanged after switch-off and switch-on.

5.8 Vertical softkey set 1

- **START**

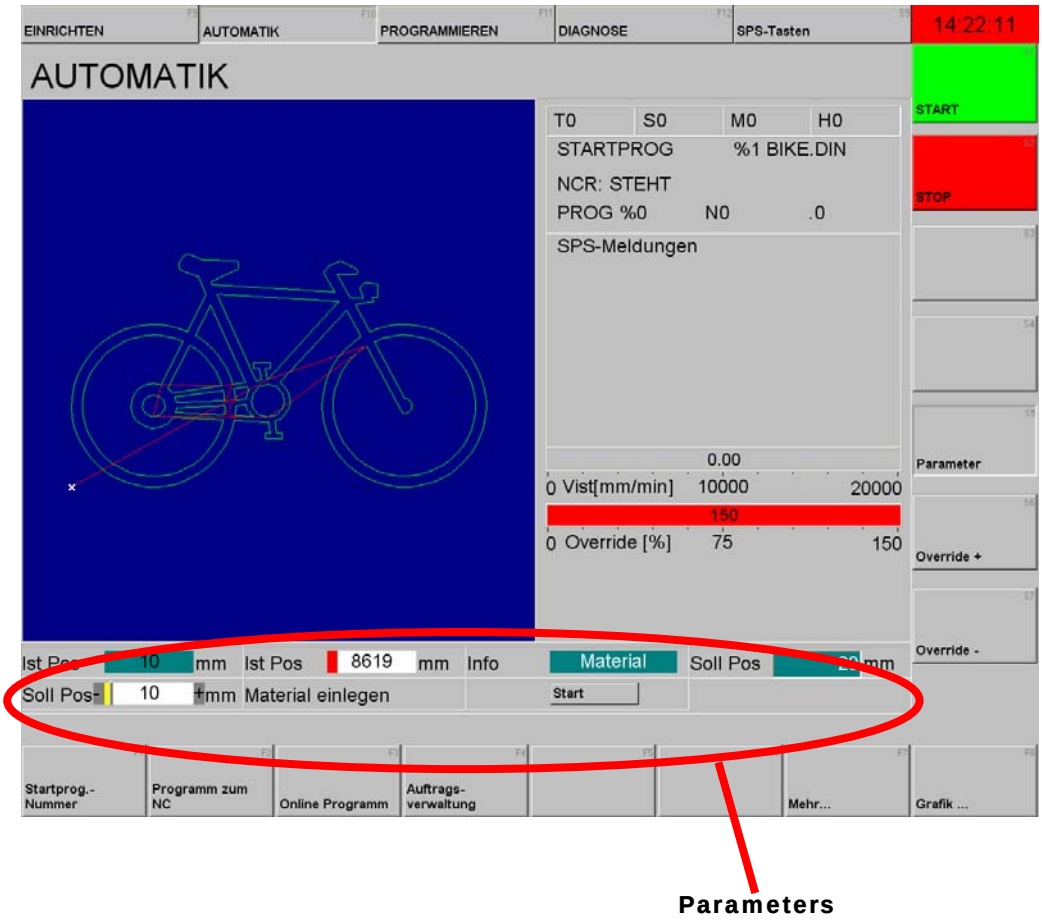
  Starts the selected program, i.e. the block-by–block processing in single block operation.

- **STOP**

  Immediately stops the program execution. All axes are stopped using the set brake ramps. At a restart, the processing is to be started from the beginning.

- **Parameters**

  At this point, a freely definable display and input list is shown. Variables of a P-field, the data block DB2 and the DPR can be displayed and changed. Several lists can be defined and changed over by a suited PLC. The first established list /page is displayed. Configuration is described in detail in section 7.9.1.



For almost all elements it is possible to establish a two-stage color change in case of exceeding of the defined mark. On the basis of the selected language, the displayed values can be labeled with follow-up texts or with text placed in front.

The following elements are available:

- Numerical display

  This element makes it possible to display the values of a P-field, the DB2 or the DPR. A modification of the values is not possible.

- Bargraph

  In addition to the function of the numerical display, the value of the element is displayed in the form of a bar. A modification of the values is not possible.

- Text display

  This element is used for the output of mere text information. Unlike in the case of the only-text-display, the contents of the second text field can be changed over by means of an index (value of the P-field, DB2 or DPR).

- Numerical input

  By means of this element, a value of the P-field, the DB2 or the DPR is displayed and can also be modified by the operator.

- Bar input

  The element displays the value of a P-field, the DB2 or DPR both in numerical form and as bar. In addition, the value can be modified by means of the slider or the +/- buttons of the bargraph.

- Text only

  Texts are display as by means of the text display. In this case, the contents are of the respective language file.

➢ Button

The button changes the state of a bit from a word of the DB2 data block.

➢ **Block search**

With *Block search,* the processing of a program can be started at a determined point in the program.

This function is to be activated by the PLC (MW1.31.1). Otherwise, the softkey is not available.

The meaning of ‚block search' is that the NC computer interprets a loaded DIN program up to a determined point without executing it. The NC computer starts only at this point. In this ways it is possible to restart an interrupted program at a determined point.

Upon activating the *Block search* key, the block search dialog is displayed. In this dialog, the point for the restart of the program is to be determined. For trigger conditions please check chapter *Trigger conditions in block search*.

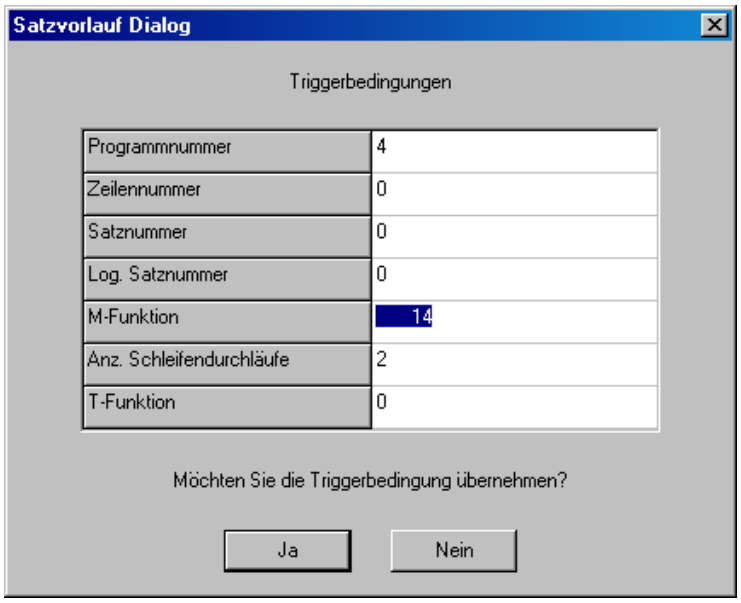
➢ **Override +**

Increase override percentage of the configured/set axis or path speed. Above 10%, the value is changed in 10% increments and below 10%, it is made in 1% increments The maximum permissible override value is specified in a machine constant.

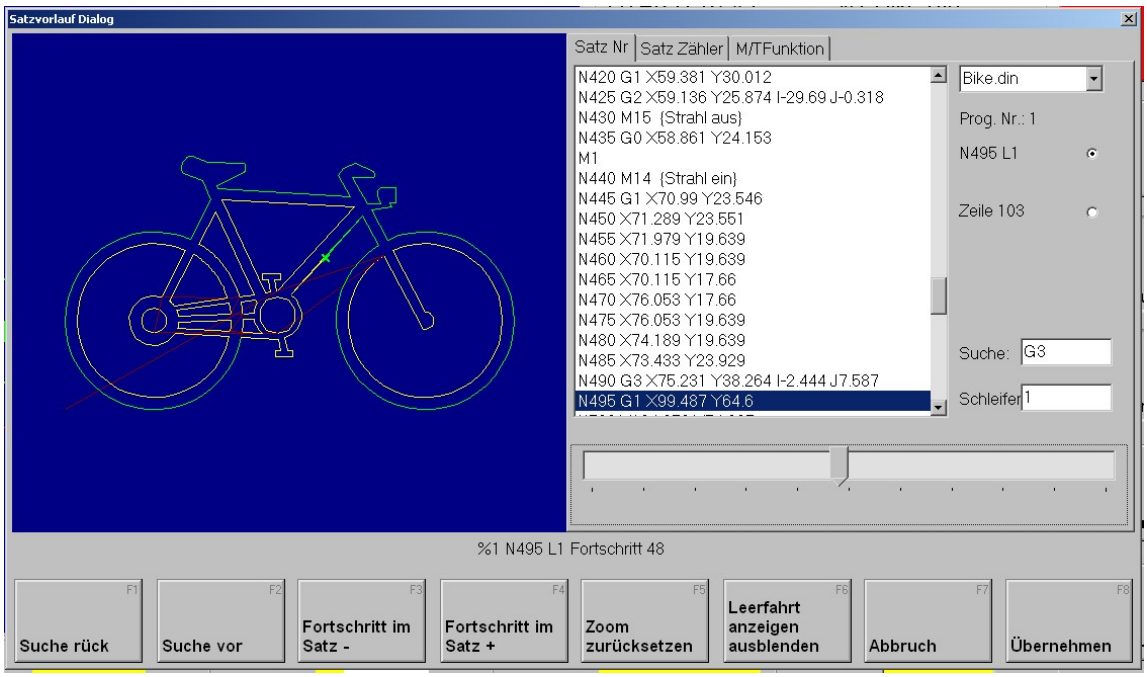
➢ **Override -**

Reduce override percentage for the configured/set axis or path speed. Above 10%, the value is changed in 10% increments, and below 10%, it is made in 1% increments.

5.8.1 Trigger conditions in block search



The trigger conditions of block search can be set in 3 different ways.



- **Search reverse**

  Reverse search in character string in field ‚Search:'

- **Search forward**

  Forward search in character string in field ‚Search:'

- **Progress in block -**

  Reduce progress in block by 1%

- **Progress in block +**

  Increase progress in block by 1%

- **Reset zoom**

  Reset zoom to full screen

- **Display / hide idle travel**

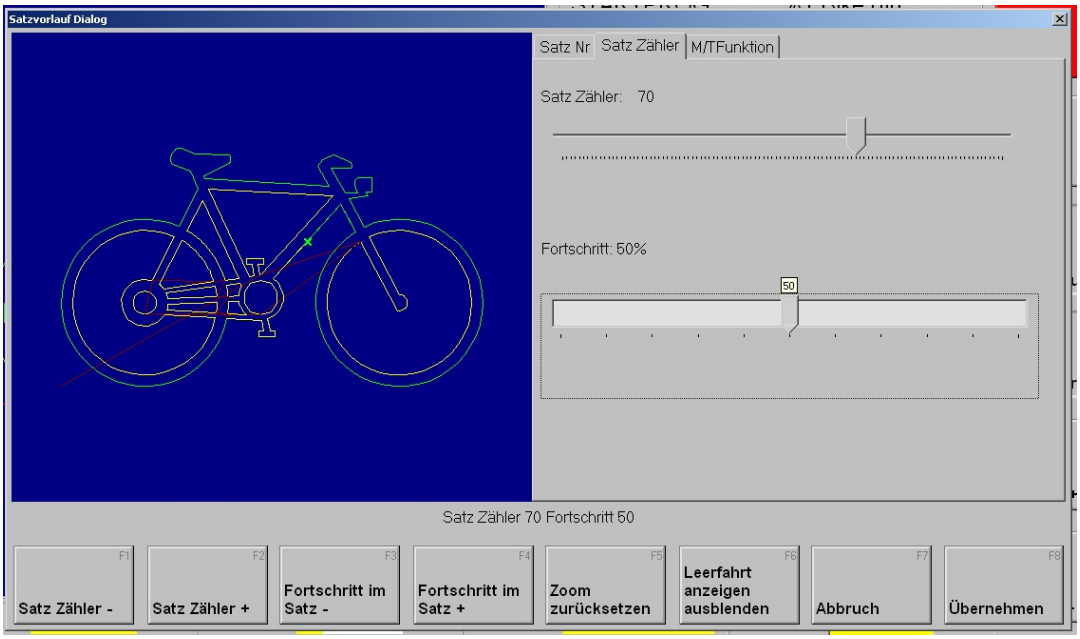
  Display/hide idle travel in graphics display

- **Interrupt**

  Interrupt dialog

- **Accept**

  Accept set trigger condition



- **Block counter -**

  Reduce block counter by 1

- **Block counter +**

  Increase block counter by 1

- **Progress in block -**

  Reduce progress in block by 1%

- **Progress in block +**

  Increase progress in block by 1%

- **Reset zoom**

  Reset zoom to full screen

- **Display / hide idle travel**

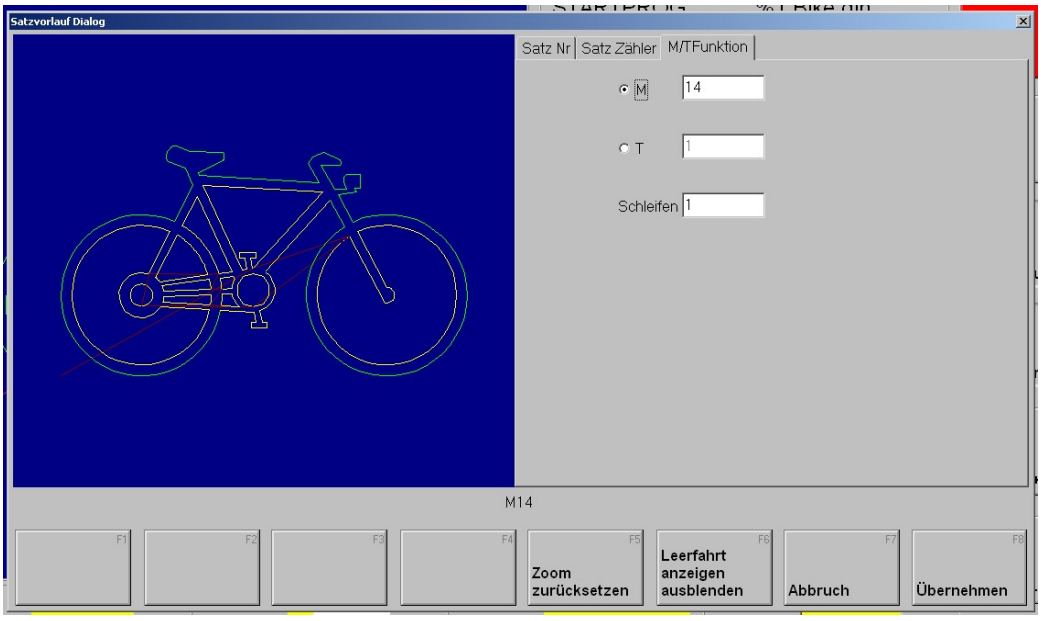
  Display/hide idle travel in graphics display

- **Interrupt**

  Interrupt dialog

- **Accept**

  Accept set trigger conditions, graphic settings via set counter bar and block progress bar or via mouse click in the graphics display.



- **Reset zoom**

  Reset zoom to full screen

- **Display / hide idle travel**

  Display/hide idle travel in graphics display

- **Interrupt**

  Interrupt dialog

- **Accept**

  Accept set trigger condition, finding of number of loops of entered M or T functions.

  In case of a PLC support, the PLC can already input the trigger conditions. For further information please check E•CONTROL – xNC55 configurations instructions chapter *Parameters for program management* (P-field 528 ff).

  Upon accepting of the trigger conditions, the sequence can be started.

- With *Start*, the program is interpreted up to the trigger condition. Upon reaching of the trigger condition, the following message is displayed in the status line:

  `Satzvorlaufgrenze erreicht weiter mit Start!`

- After a repeated actuating of *Start*, the machine moves to the position where the program continues. Upon approaching of the start position, the following message is displayed:

  `Satzvorlauf Zielposition erreicht, weiter mit Start!`

With *Start,* processing is started.

5.9 Vertical softkey set 2

- **Start**

  The program is started in status *Ready for start*.

  The current program is started in the controller if no order is included in status *Ready for start.* If a respective PLC is used, the order list is started with the next order not yet processed and runs to the end of the list.

- **Stop**

  The current program or the processing of the list is completed and has the status *Abort* with PLC or *Finished* without PLC.

- **cncCUT**

  Only if the option cncCut is installed. Orders transmitted to the HMI via cncCut are included automatically in the order management.

- **Delete order**

  The selected order is deleted.

  Only orders of status *Ready, Finished or Abort* can be deleted here.

- **Delete all orders**

  The entire table is deleted.

- **One up**

  The selected order replaces the previous order.

- **One down**

  The selected order replaces the following order.

5.10 Vertical softkey set 3

- **Rotation**

  Keys for rotation are hidden and unhidden.

  Rotate by X
  By means of **plus** or **minus**, the representation is rotated by X 10° in plus and minus direction.

  Rotate by Y
  By means of **plus** or **minus**, the representation is rotated by Y 10° in plus and minus direction.

  Rotate by Z
  By means of **plus** or **minus**, the representation is rotated by Z 10° in plus and minus direction.

  Reset Rotation
  The representation is reset to the defined rotation. Shifting and zoom remain unchanged.

- **Shift in X direction**

  By means of **plus** or **minus**, the representation is shifted in X plus or X minus direction.

- **Shift in Y direction**

  By means of **plus** or **minus**, the representation is shifted in Y plus or Y minus direction.

- **Zoom**

  The contour is zoomed in by means of **plus**. The contour is zoomed out by means of **minus**.

- **Full-screen representation**

  Full-screen representation of the graphics. All other displays are hidden.

- **Plus**

  Change of representation depending on the activated function, see above.

- **Minus**

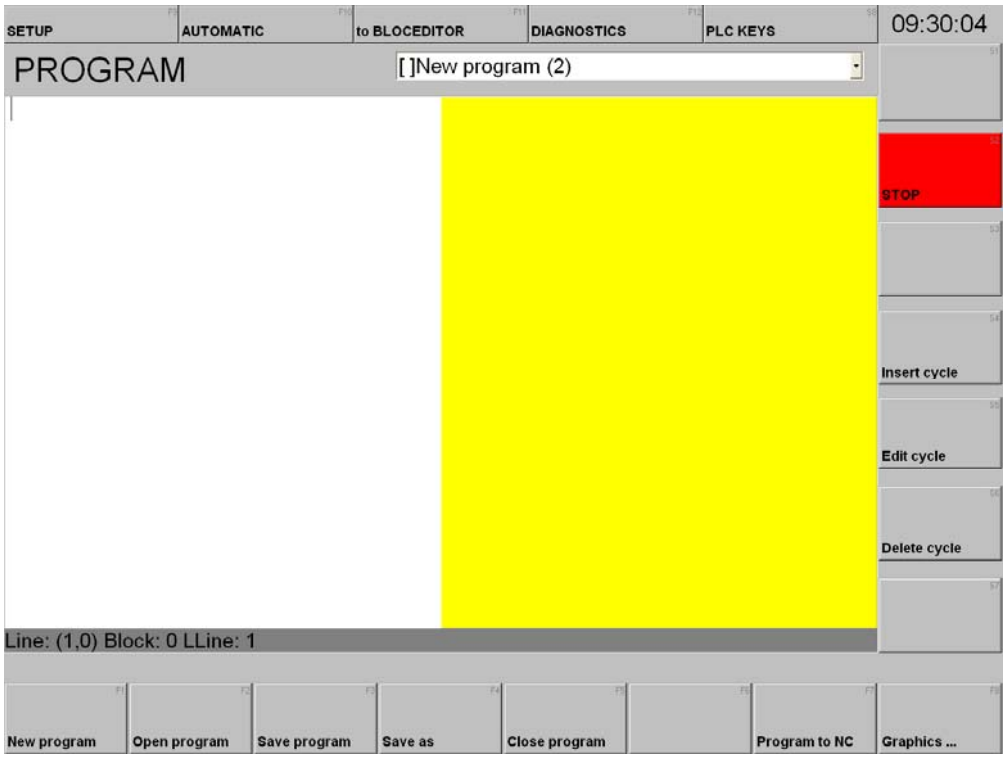
  Change of representation depending on the activated function, see above.

6 Operating mode PROGRAMMING

Upon selection of operating mode PROGRAM, the operator is in the programming mode. Operating mode PROGRAMMING is used to prepare and change the operating programs.

6.1 Programming via the text editor

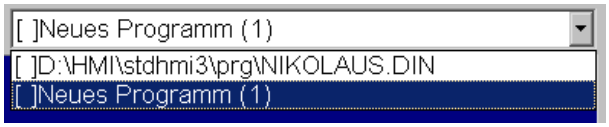
The programming via the text editor is to support the operator in inputting simple DIN programs. A frame program can be defined in this way that safeguards for each new program that necessary initializations are made. The input is provided for programs that are on a Cartesian level (rectangular axes).



The screen is subdivided into three areas:

- Display of the program listing
- Input field for instructions (can be hidden by clicking on ↓)
- Graphical representation of the program

Upon opening of a program, both the file and the graphical representation of the program are displayed in the editor field. Up to eight files can be opened simultaneously. The names are input into a list as follows:



Activate the TAB key until the cursor is in the list. The requested file can now be displayed on the screen by means of the cursor keys Pg Up and Pg Down. Acknowledge the selection by the pressing of ENTER.

In the status line below the editor, the currently selected line is displayed with line number, block number (N) as well as logical block number (L) that is specified by the NC in the case of an error. The traversing block selected in the editor is highlighted in the graphics. Likewise, the block is selected in the editor after clicking on a traversing block within the graphics. Prerequisite is that Select block is activated. The operation of an editor is described in a separate section.

6.2 Menu structure Text editor

6.2.1 Horizontal softkeys

1st level	**2nd level**	**Respective vertical softkey set**	**Softkey only visible if**
New program		1	
Open program	Filter	1	
	Listing		
	Accept		
	Abort		
Save program		1	
Save as		1	
Close program		1	
Teach-In	Modal traversing	3	Only activated with password
	Incremental traversing		Incremental traversing is activated
	Increment		
	Import		
	TeachIn PLC		The relevant bit is set in the PLC
	Save and load to NC		
Save and load to NC		1	
Graphics	Reset image position	2	
	Masch. Rel	2	
	Border drawing	2	
	Din-Display P-field	2	
	Display position	2	
	Select block	2	
	Back	2	

6.2.2 Vertical softkeys

	Vertical softkey set 1	Vertical softkey set 2	Vertical softkey set 2a	Vertical softkey set 3
S1		Rotation	Rotation	START
S2	STOP	Shift in X direction	Rotate by X	STOP
S3	cncCut	Shift in Y direction	Rotate by Y	Move +
S4	Insert cycle	Zoom	Rotate by Z	Move +
S5	Edit cycle	Split screen	Reset rotation	Axis
S6	Delete cycle	Plus	Plus	Override +
S7		Minus	Minus	Override -

6.3 Horizontal softkey: New program

The editor is prepared for the input of a new file. If another file was already being edited, it is not closed automatically but remains active in the background. If this file is to be displayed again, the new file can be closed (softkey "*Close program*") or the previous file is selected from the file name list.

The editor is prepared for the input of a new program. The following sequence is generated as per standard:

```
%1 (New program)
G17 (Go to XY level)
G1 F10000 (Initialize speed)
G60 X0 (Look ahead On, exact stop Off)
M30 (Program end)
```

Normally, the instructions are input between G60 and M30. A different sequence can be defined also that is to be loaded, see StdHMI installation manual.

6.4 Horizontal softkey: Open program

The selection of *Open program* opens a dialog screen in which a file can be selected. The cursor is moved using the cursor keys, ENTER completes the selection and the file is displayed. ESC aborts the procedure without selecting a file (see also *Dialog screen for file selection*).

In addition, programs of the dialog screen can be deleted, copied or moved as follows via the horizontal softkeys:

- A selected file can be deleted if you are in the configured directory. A prompting is made for confirmation prior to deleting.
- A file can be copied or moved into the configured directory if you are not in the configured directory. A prompting is made for confirmation prior to the possible overwriting of an already existing file.

6.5 Horizontal softkey: Save program

With *Save program*, changes to the currently selected file or the current editor content are saved. If a new program has been generated the file selection screen is opened in which a directory is to be selected and a program name is to be entered. If no file name has been assigned, the name *ProgX.din* is proposed, where X stands for a sequential number.

6.6 Horizontal softkey: Save as

This function provides the option of backing up the currently selected file or the current editor contents in a new file. The contents of the original file remain unchanged. The same file selection screen is opened as described under *Save program.*

6.7 Horizontal softkey: Close program

Close program ends program editing and deletes the current editor contents. The original file is not changed.

6.8 Horizontal softkey: Teach-In

The Teach-In mode is activated by means of this key. A current position can be recorded in Teach-In mode and set to the cursor position in the editor.

- **Modal traversing**

  The selected axis is moved as long as the softkey *Move* + or *Move* - is activated. The axis is selected by means of the *Axis* function or the cursor keys. The speed of the axes traversing is preset by a machine constant. The speed can be influenced with the *Override* + and *Override* - functions.

- **Incremental traversing**

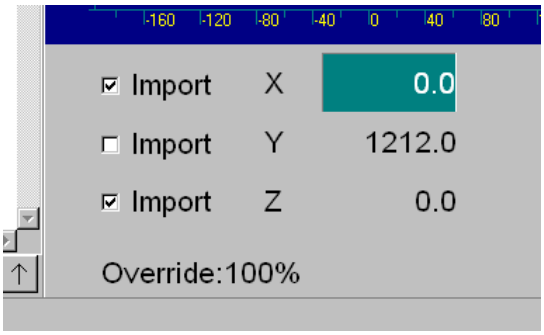
  The selected axis is moved by the input increment. The direction is determined by activating the softkeys *Move* + or *Move* –. With *Incremental traversing*, the axes move in rapid speed.

- **Increment**

  Increment input in mm by which the selected axis is to be moved. The input is to be completed with the ENTER button. The softkey is not identified or enabled until the *Increment traversing* key has been activated.

➢ **Import**

The current set position of the machine is inserted as traversing block G1 in the currently marked position in the program. Together with the traversing keys described in the following, a program can be taught in this way. The selected axes are accepted:



This key is only visible if the relevant bit is set in the PLC (MW1.31.0).

➢ **Teach-In PLC**

In this mode, the axes can be moved by means of the PLC. By means of a PLC message, the current position is entered in the editor as traversing block with the axis letters of the axes configured for the teach-in.

6.9 Horizontal softkey: Save and load to NC

The current program is saved and transmitted from the PC to the NC.

6.10 Horizontal softkey: Graphics

Display (in 3D mode) of the contour of a program in the editor. Selecting *Graphics* changes the current softkey assignment (horizontal and vertical).

The graphical representation is currently limited to the mere contour description of axes X, Y and Z. Subroutine calls, jumps, contour and basic turning, scale factor and programming via P-fields are supported. Double indicated programming via P-fields, different coordinate systems etc. are not supported.

➢ **Reset image position**

All modifications of the section are reset.

- **MaschRel**

  The working range of the machine is displayed. The software limit switches of the machine constants are displayed as range limits. (See E•CONTROL - CNC55 configuration:

  MK_SW_ENDS_MINUS, MK_SW_ENDS_PLUS). The state remains unchanged after switch-off and switch-on.

- **Border drawing**

  A frame is drawn around the DIN program and is dimensioned in input units. The state remains unchanged after switch-off and switch-on.

- **DinDisplay P-field**

  With the indirect programming of positions with P-fields, the latter can be occupied for the display in the graphics. The values in the controller are not influenced.

  Please note that there is no direct connection between the P-fields in the controller and the graphics. In the graphics, only the values of the P-fields are used that are included in a program.

- **Display position**

  If a program is running, the current position can be displayed and tracked on the contour using *Display position*. The state remains unchanged after switch-off and switch-on.

- **Select block**

  If Select block is activated, the traversing block selected in the editor window is highlighted in the graphics. The state remains unchanged after switch-off and switch-on.

- **Back**

  Back to the previous level.

6.11 Vertical softkey set 1

- **STOP**

  Ends a program in operation.

- **cncCut**

  The cncCut software is started only if the option cncCut is installed.

- **Insert cycle**

  Insertion of a prepared cycle. The cycle is inserted into the line (in the file currently open) in which the cursor is positioned. The cycle to be inserted is selected using the cursor keys in combination with the ENTER key. ESC aborts the selection. For further detailed information please check the section *Cycle programming*.

- **Edit cycle**

  An existing cycle is edited. The cursor must be in the line in which the cycle is called.

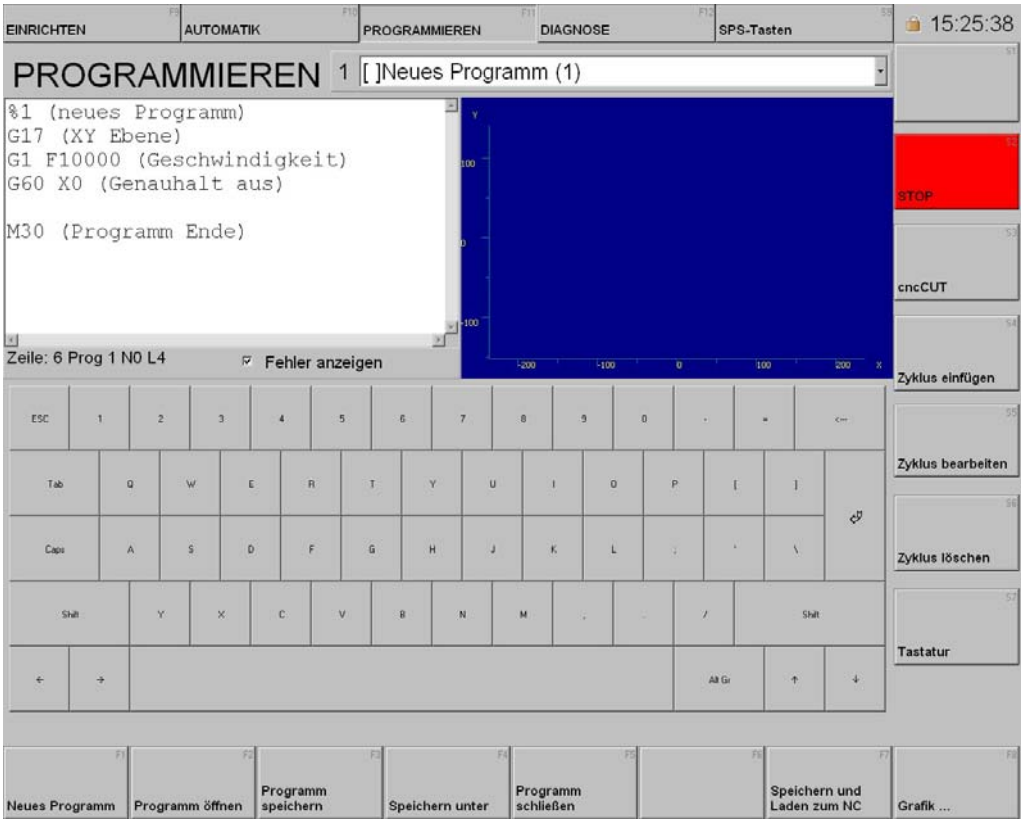
- **Delete cycle**

  The cycle call in the current cursor position is deleted.

  Cycles are defined in the INI file (default: delphmmi.ini). (See StdHMI installation manual).

- **Keyboard**

  In case of touchscreen operation, a screen keyboard can be displayed for programming.



6.12 Vertical softkey set 2

- **Rotation**

  Keys for rotation are hidden and unhidden

  Rotate by X
  By means of **plus** or **minus,** the representation is rotated by X 10° in plus or minus direction.

  Rotate by Y
  By means of **plus** or **minus,** the representation is rotated by Y 10° in plus or minus direction.

  Rotate by Z
  By means of **plus** or **minus,** the representation is rotated by Z 10° in plus or minus direction.

- **Reset rotation**

  The representation is reset to the defined rotation. See StdHMI installation manual. Shifting and zoom remain unchanged.

- **Shift in X direction**

  By means of **plus** or **minus**, the representation is shifted in X plus or X minus direction.

- **Shift in Y direction**

  By means of **plus** or **minus**, the representation is shifted in Y plus or Y minus direction.

- **Zoom**

  The contour is zoomed in by means of **plus**. The contour is zoomed out by means of **minus**.

- **Split screen**

  If this key is activated, the size of the graphics window can be changed by activating the plus and minus keys. The state remains unchanged after switch-off and switch-on.

- **Plus**

  Change of representation depending on the activated function, see above.

- **Minus**

  Change of representation depending on the activated function, see above.

The system of coordinates is only displayed if the view in all axles is set to an angle divisible 90°.

6.13 Vertical softkey set 3

- **START**

  Starts the included program. This is normally the last loaded program.

- **STOP**

  Ends all axis movements as well as a running program.

- **Move +**

  Manual traversing key for positive axial direction of the selected axis.

- **Move -**

  Manual traversing key for negative axial direction of the selected axis.

- **Axis**

  The current axis to be moved can be selected using this function for all axis-related movement functions. Selection can also be made by means of the cursor keys.

- **Override +**

  Increase override percentage of the configured/set axis or path speed. Above 10%, the value is changed in 10% increments and below 10%, it is made in 1% increments. The maximum permissible override value is specified in a machine constant.

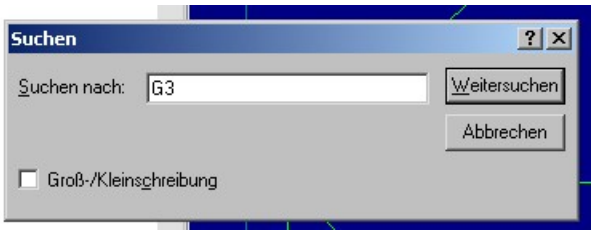
- **Override -**

  Reduce override percentage for the configured/set axis or path speed. Above 10%, the value is changed in 10% increments, and below 10%, it is made in 1% increments.

6.14 Text editor

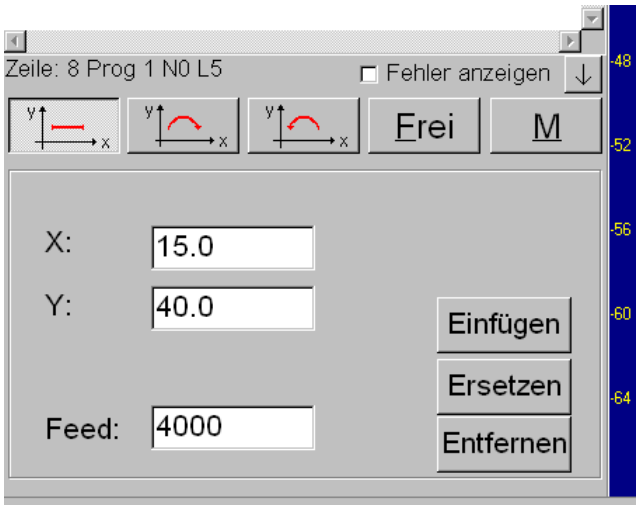
The editor is primarily used for inputting and changing of subroutines according to DIN 66025. It can also be used to edit other ASCII files. The editor should be used in combination with a separate PC keyboard. The editor operates to a great extent as Notepad, the standard Windows editor.

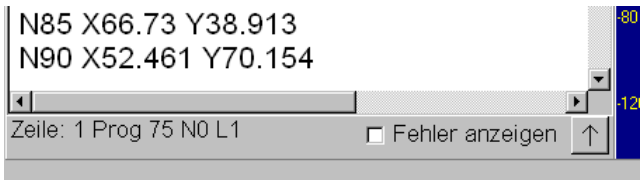
To simplify the input of blocks, all letters are represented in upper case, without the Shift key having to be pressed. If lowercase letters are required (axes u, v, w), the Shift key is to be used. The standard format is used within the comments ("(...)" or "{...}"). A *Search dialog* can be opened by clicking Cntr + F.



6.15 Block editor

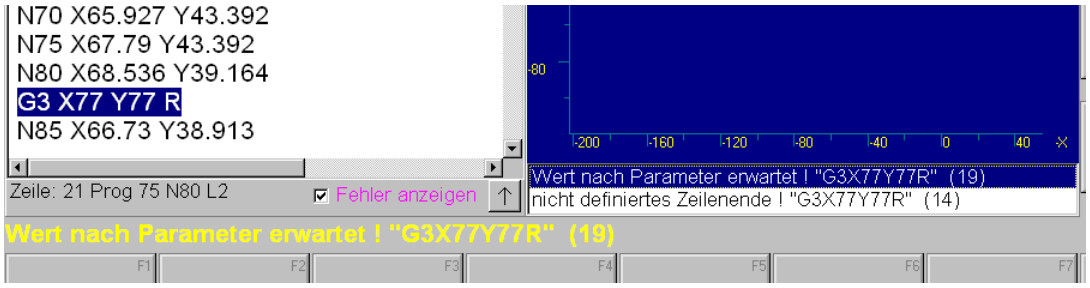
The block editor can be opened or closed by means of an arrow  :





6.15.1 Checkbox *Display errors*

If *Display errors* is activated, errors that may occur in program execution can be reported already in the input phase, e.g. a too small radius during programming of a circular arc. In case of an error, the text turns to red. Errors are displayed below the graphics. When clicking on an error input, the respective point in the editor is selected.



In Teaching mode, the error list is not displayed even if Display errors is active.

6.15.2 Input field for instructions

In this input field, straight line, arc or M-functions can be input. The following inputs are possible:

- **Straight line** (G1)

  X-coordinate

  Y-coordinate

  Feed

- **Arc right** (G2)

  X -coordinate

  Y-coordinate

  Radius

  Feed

- **Arc left** (G3)

  See arc right

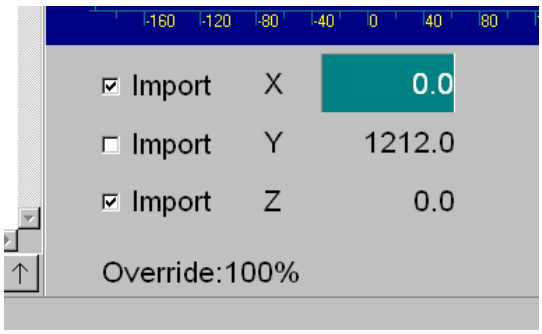
- **Free**

  Free input. Text can be input in a line. In this way, additional G-functions, numberings with N, comments and other items can be added to the program.

- **M-functions**

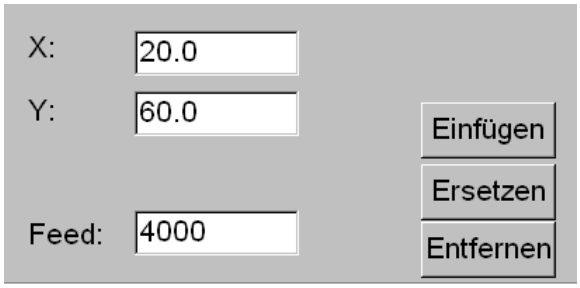
  The PLC programmer deposits a file with the valid M-functions, see StdHMI installation manual. The operator may select a predefined M-function. If a required M-function is not listed, the function can be input also via the keypad.

6.15.2.1 Display of actual position



If *Teach-in* is activated, the current X and Y coordinates of the machine are displayed below the graphics. The machine is in position (X=50.191, Y=100)

6.15.2.2 Buttons for the input of instructions



- **Insert**

  A new line is generated with the input values and inserted in the listing behind the currently selected line.

- **Replace**

  The selected line of the listing is overwritten with a newly generated line from the inputs.

- **Delete**

  The line currently selected in the listing is deleted.

6.15.3 Graphical representation of the program

The current program is graphically represented. Scaling is made automatically so that the program is represented completely.

- **Scale**

  A scale in input units is displayed. The configuration is made with the file *Interpreter.ini* (see StdHMI installation manual).

- **Mouse operation**
  - **Move**

    With the right mouse button, the contour can be moved to the requested position.
  - **Zoom**

    With the left mouse button, a square is opened the area that is to be zoomed.
  - **Reset**

    Zoom and Move is reset by making a doubleclick with the left mouse button (see also Softkey *Reset image orientation)*
  - **Select**

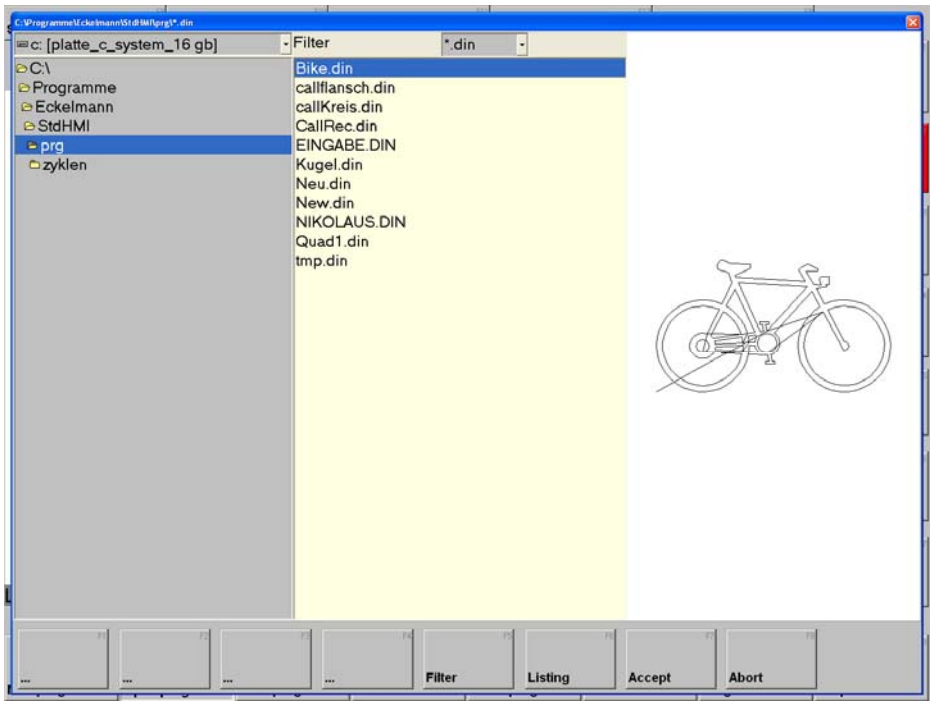
    If a click is made with the left mouse button on the travel path, the traversing block is selected in the listing. *If Select block* is activated, the travel path is highlighted in the graphics.

    A color can be defined for each M-function, for instance to select idle travel (see StdHMI installation manual - *Interpreter.ini)*.
  - **Split screen**

    The graphics window can be changed in size by means of the mouse. Move the mouse to the limit between graphics and text until the drag cursor is displayed. Now a shifting can be made.

6.16 Dialog screen: Open program

This dialog screen is used for the selection of a program for the editor and the transmission to the NC computer. Upon opening of the screen, the following contents are displayed, for example:

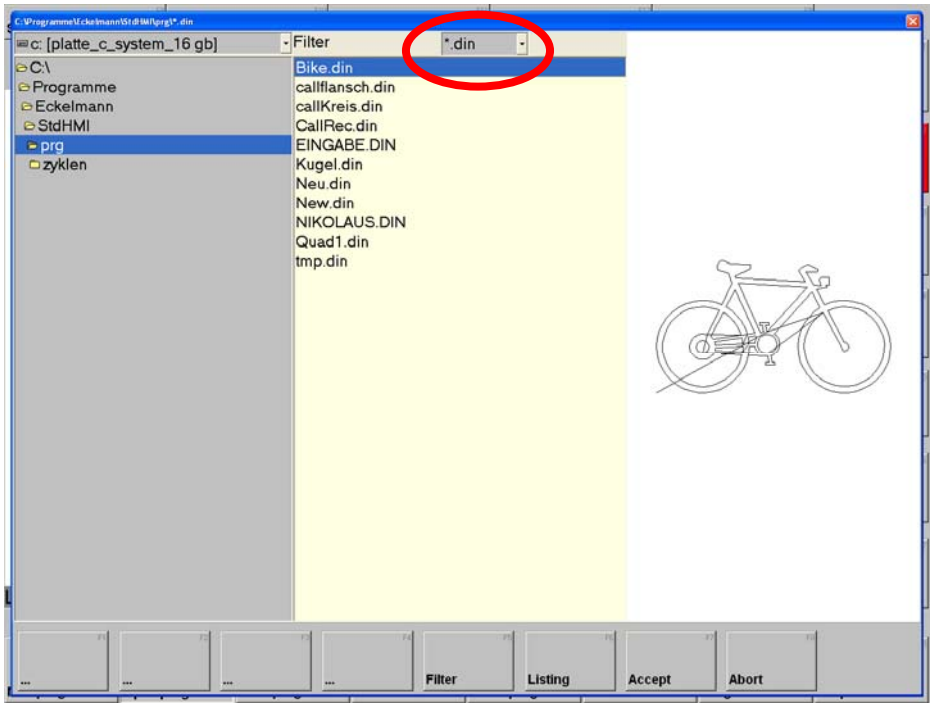


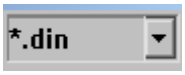
In general: the file to be selected is highlighted using the cursor keys and is selected by means of the ENTER key. Activate ESC if the procedure is to be aborted, i.e. no file can be selected.

The individual elements in the dialog screen can be accessed with the TAB key. The selection field is active after calling of the dialog screen. Re-activating TAB sets the focus on the field *Display filter*. In this way it is possible to extend, limit or optionally change the display of files in the *Selection area*. ENTER activates the input and ESC aborts the input.

In the graphics, always the preview of the currently selected program is display. The display is made with some decay in order to prevent a quick scrolling. If the file is very big (e.g. in case of online programs), no automatic display is made. A part of the listing is displayed and a softkey *Preview* is shown. Only upon activating, the graphics are displayed, what may take some time, however. The first lines of the listing can be displayed by activating *Listing*.

6.16.1 Filter *.din





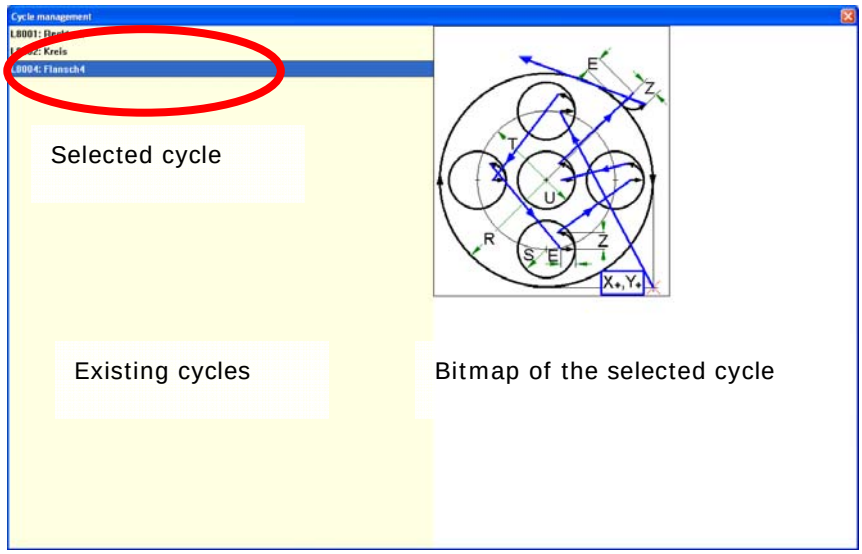
This filter appears in addition to the files [*.DIN]. If this entry is selected, all files in the current directory affected by this filter, are transmitted to the controller.

6.17 Cycle programming

A cycle is a subroutine which operates with the parameters to be transmitted during the call. During cycle programming, the parameters are prompted by the operator and are made available to the DIN program in P-fields. Available cycles are defined in the configuration file. For further detailed information about cycle programming please check StdHMI installation manual.

6.17.1 Inserting cycles

By selecting the *Insert cycle* function in operating mode PROGRAMMING, a screen containing a list of available cycles is opened. The cycle to be inserted into the displayed DIN program can be selected from this list.



After activating ENTER, the cycle parameters are displayed. ENTER takes you from one input field to the next. By activating ENTER in the last field, the cycle is entered in the editor field as a subroutine call.

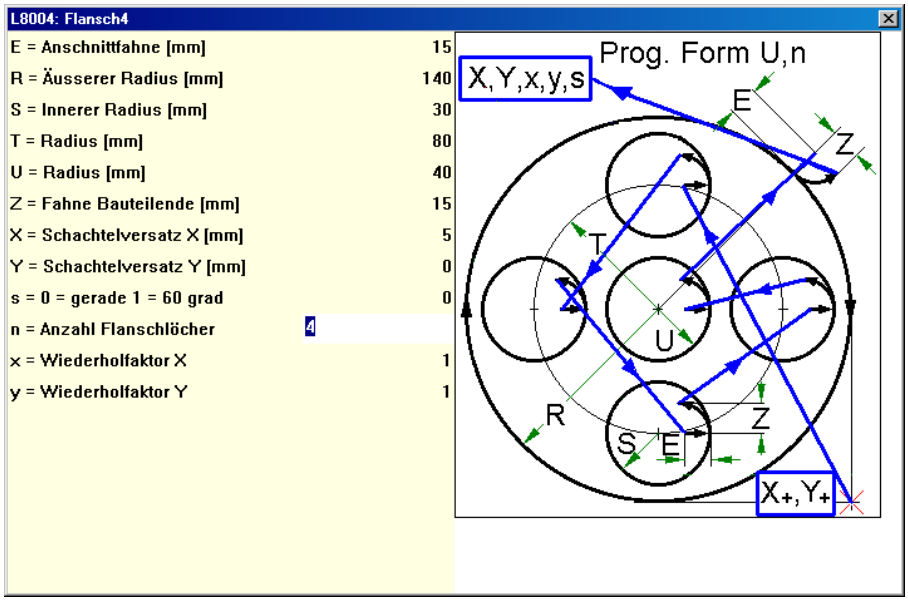
The actual program call and the transmission of the parameters is written at the end of the program starting with block number 10000 (see StdHMI installation manual Delphmmi.ini startcycle).

6.17.1.1 Operation of the cycle

Example:

```
%1
G22 J10000 (L8004: Flansch4)
M30

N10000
P1200=15 P1201=140 P1202=30 P1203=80 P1204=40
P1205=15 P1206=5   P1207=0  P1208=0  P1209=4  P1210=1
P1211=1
G22 L8004
G99
```



After selecting the function or a cycle, the corresponding entries are made in the DIN file. The input is made at the cursor position. If this is not a blank line, the available lines are shifted down.

6.17.2 Change cycle

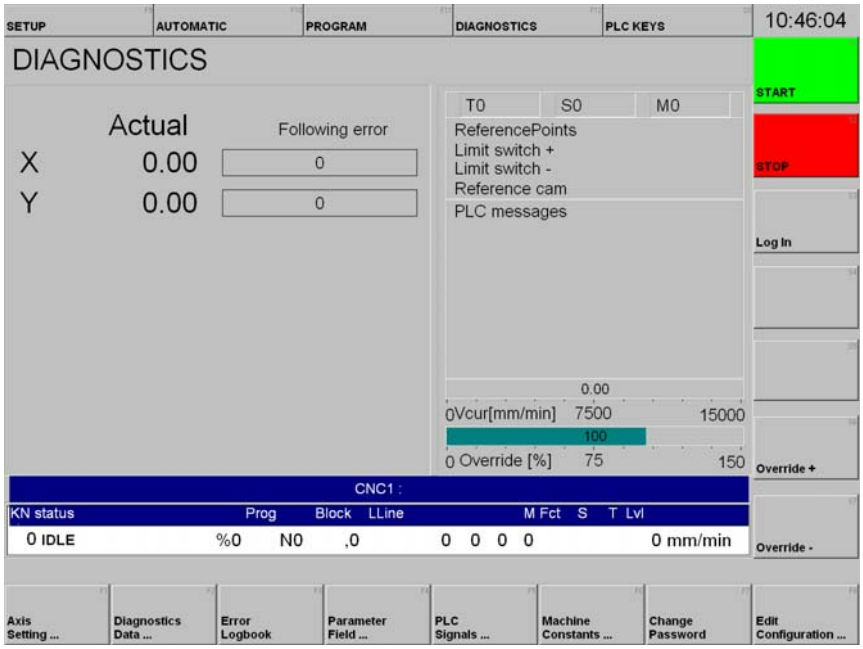
If the cursor is in a line that starts with "G22 Jxxxxx", this cycle can be edited and the data can be modified - provided all information is available. The same input dialog is provided as for *Insert cycle*.

6.17.3 Delete cycle

If the cursor in the editor is in a line *G22 Jxxxxx*, this cycle (call up and parameter part) can be removed from the DIN file.

7 Operating mode DIAGNOSIS

The operating mode DIAGNOSIS is primarily intended for service and maintenance staff. DIAGNOSIS provides functions to support axis alignment, to check inputs and outputs as well as parameters, to check and change machine constants as well as internal states. Moreover, the error log can be accessed that contains all errors occurred up to now.



In the main screen, the displays already specified in section *General Operation* are made, i.e.:

- Operating mode line
- Output line
- Actual value indicator
- Status fields

7.1 Menu structure Diagnosis

7.1.1 Horizontal softkeys

1st level	**2nd level**	**3rd level**	**Respective vertical soft-key set**
Axis setting	Modal traversing		2
	Configuration	Save + load	3
		Only load	
		Save	
		Save as	
		Save as + load	
		Save as default	
		Back	
	Lag/Mod/Set p.		2
	Single block		
	Back		
Diagnostics data	NC-timing information		1
	Trace		
	Backup		
	Dump		
	DPR		
	Version information		
	Back		
Error logbook			1
Parameter field	Read P-field		1
	Edit P-field		
	Permanent display		
	P-field display		
	Back		
PLC signals	MMI<>PLC		1
	PLC enabling		
	Local on/off binary		
	Remote on/off binary		
	Cards on/off	back	4
	Back		1

1st level	2nd level	3rd level	Respective vertical soft-key set
Machine constants	EDS		1
	Configuration	Save + load	3
		Load only	
		Save	
		Save as	
		Save as + load	
		Save as default	
		Back	
	Modify MC file	Save + load	3
		Load only	
		Save	
		Save as	
		Save as + load	
		Save as default	
		Ready	
	Notepad: edit MC		1
	Change current MC		
	Load MC file to NC		
	Back		
Change password			
Configuration	Delphmmi.ini		
	Interpreter.ini		
	Change parameter		
	Gateway		
	Netconf		
	Back		

7.1.2 Vertical softkeys

	Vertical softkey set 1	Vertical softkey set 2	Vertical softkey set 3	Vertical softkey set 4
S1	START	START		
S2	STOP	STOP	STOP	STOP
S3	Log IN	Move +		
S4		Move -		
S5		Axis		
S6	Override +	Override +		
S7	Override -	Override -	Open MC file	

7.2 Horizontal softkey: Axis setting

Displays are activated to support the axis alignment. Softkeys are provided for selecting the traversing function and the display, as well as the traversing keys and the override (as described in Setup). Operation corresponds to the SETUP operating mode.

- **Modal traversing**

  The selected axis is traversed as long as the softkey "Move +" or "Move -" is activated. The axis is selected by means of the "Axis" function or by activating the cursor keys.

- **MC configurator**

  Axes can be defined and configured here with the support of several dialogs. Moreover, all MC can be modified.

- **Lag / mod / set p.**

  Changeover of display between:

  - Position lag in input unit[mm]
  - Set position
  - Modal position

- **Single block**

  Single block makes the input of a single block possible (e.g. G, S, T and M functions). The execution is triggered by ENTER.

- **Back**

  Back to the previous level.

7.3 Horizontal softkey: Diagnostics data

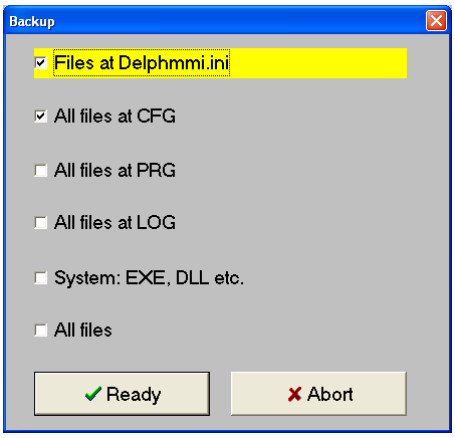
7.3.1 Horizontal softkey: NC timing information

With this function, various internal controller-specific data are displayed. It is only intended for internal use or for trained service staff. The display can be exited by activating the ESC key.

7.3.2 Trace

A dialog for activation of events that are to be recorded is opened via Trace. Individual traces can be selected from the list of traces by doubleclicking and can be activated with Start. A prompting is made to enter a file name (Default:\log\StdHMI3.TRC). The events will be recorded in this file. This activation is reset when the HMI is exited.

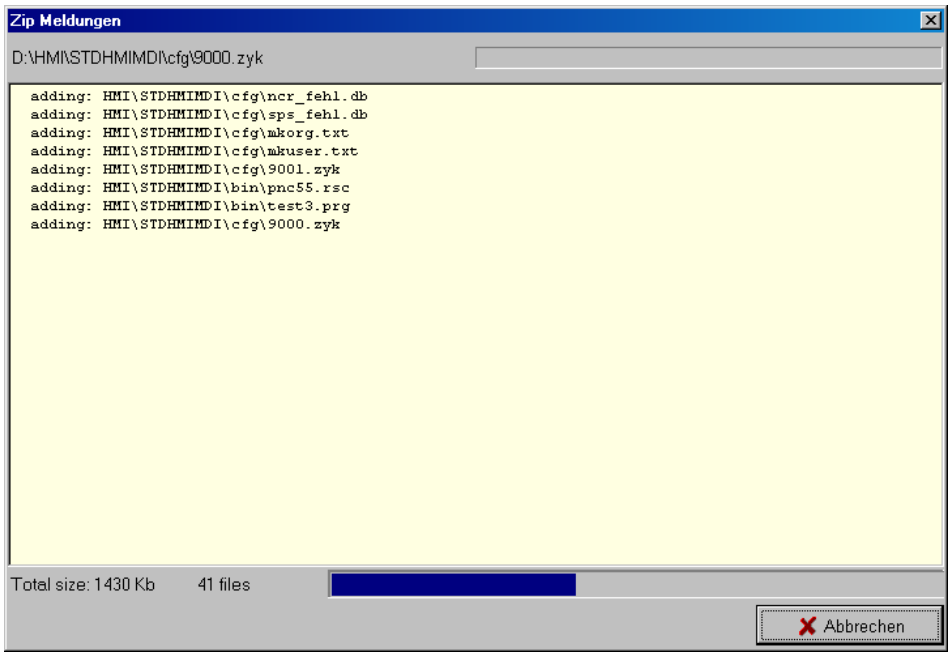
7.3.3 Backup



The files belonging to the HMI can be put together in a ZIP file. A selection can be made which group of files is to be saved.

Upon clicking on button *Ready*, a "*Save as* dialog"-screen is displayed. Input the directory and the file name of the ZIP archive to be generated.

Subsequently, a screen is displayed with the archiving progress. The screen is closed upon completion of archiving.



No archive file is generated in case of an abort of archiving. A file available with the selected name is deleted.

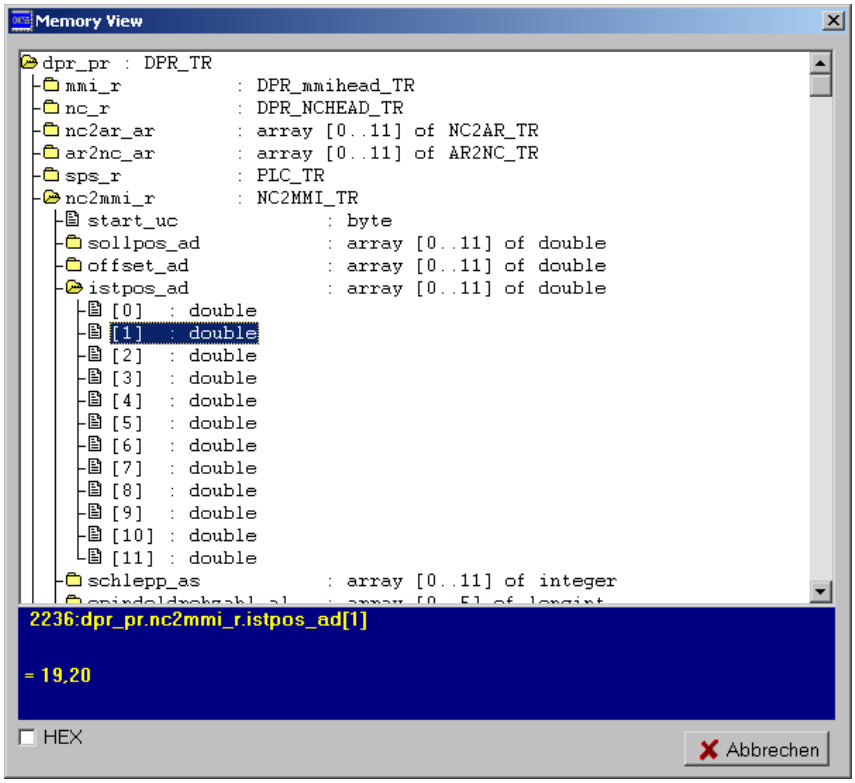
7.3.4 Dump

A file IBprot.txt is generated in the \log directory and is displayed that contains a series of information regarding the system (Delphmmi.ini, current machine constants, current tool data, contents of the P-fields etc.). In this way, the relevant data can be put together in case of problems.

7.3.5 DPR

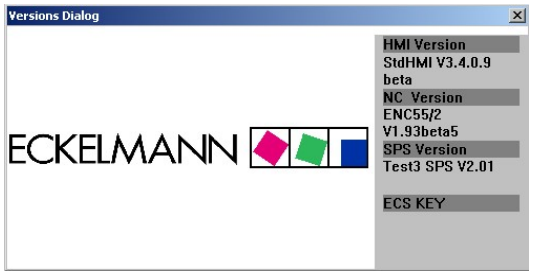
With this function, the structure of the entire DPR is displayed with the current values.

Example: Display of the actual position of the second configured axis.



7.3.6 Version information

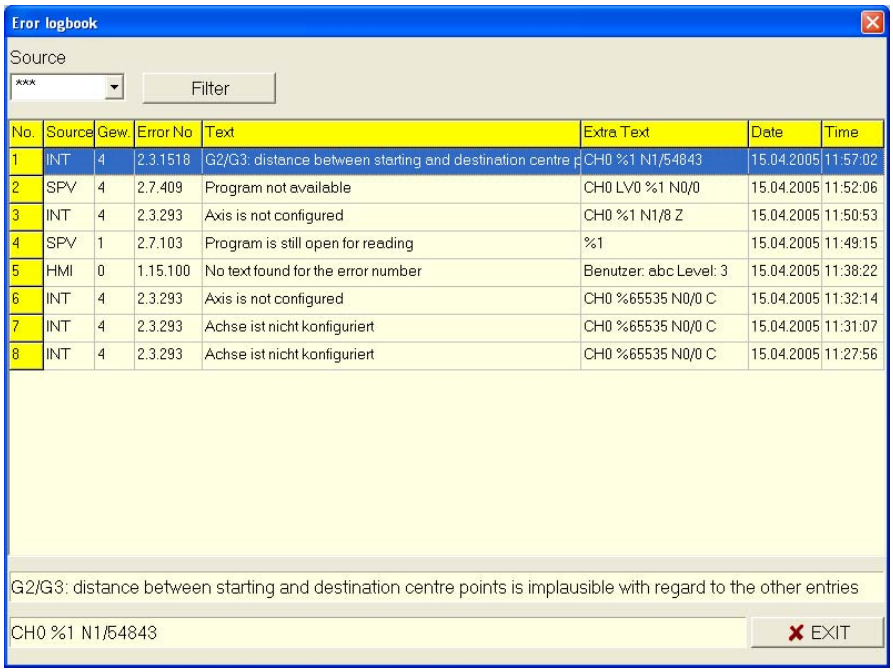
This screen displays the following version numbers:



- HMI version: version of the StdHMI program
- NC version: firmware version of controller
- PLC version: version of PLC software
- ECS KEY: enabling code of controller (only if a EXC66 is used)

7.4 Horizontal softkey: Error logbook

If errors occur during the communication of PC, FIPC21.9, PLC, NC and during programming, they are logged in a file (log\errorlog.txt) together with the date and time of their occurring. The error messages can be displayed using the *Error log* function. A scroll through the individual errors is possible using the cursor keys (Pg up, Pg down, Home and End). The display can be exited using <ESC> or the EXIT button.



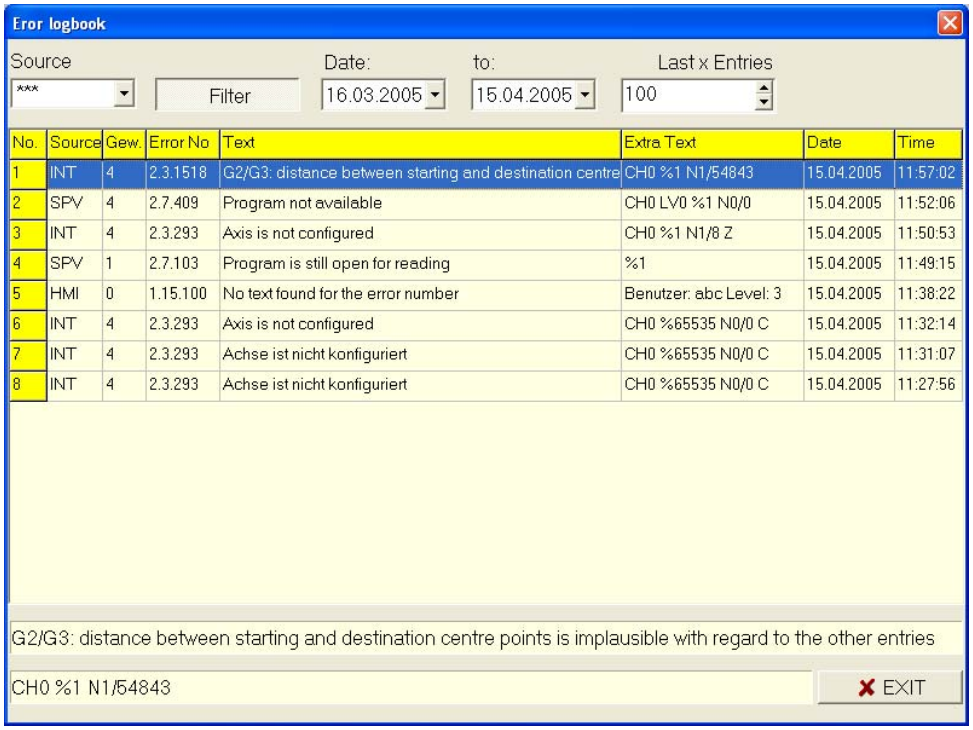
Column	**Meaning**
No	Sequential number
Source	Indicates the module that has reported the error
Gew	Indicates the weighting of the error. 1: information, to 4: fatal error leading to abort
Error no	Unambiguous identification of the error
Text	Error text from one of the error text files *_Fehl.DB
Extra text	Additional information regarding the module that provides important indications as to the cause of the message.

The texts of the currently selected error are displayed again in the lower section. If e.g. an additional text is not visible in full in the table, it can be read here.

With *Source*, a module is selected the errors of which are to be displayed. With *** the messages of all modules are displayed.

Errors which are older than 30 days are removed from the log, so that the file does not grow infinitely.

Upon activating of *Filter*, further options for filtering the messages are available: time period and the number of messages to be displayed.



7.5 Horizontal softkey: Parameter field

Valid for all inputs: The ENTER key serves as an acknowledgment of the input, the ESC key aborts it.

- **Read P-field**

Used to display the value of a parameter field. The P-field number is input in the input line, the subsequent output of the contents is made in the display line. When selected, the last input number is automatically provided. Another number can be input immediately, without deleting the previous display.

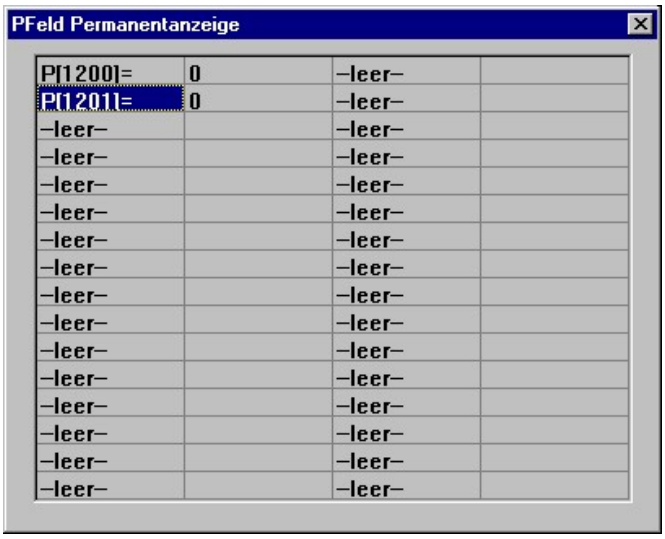
- **Edit P-field**

The value of the required parameter field can be modified. Both inputs are made in the input line. For the input of digits, the same is valid as for *Read P-field*.

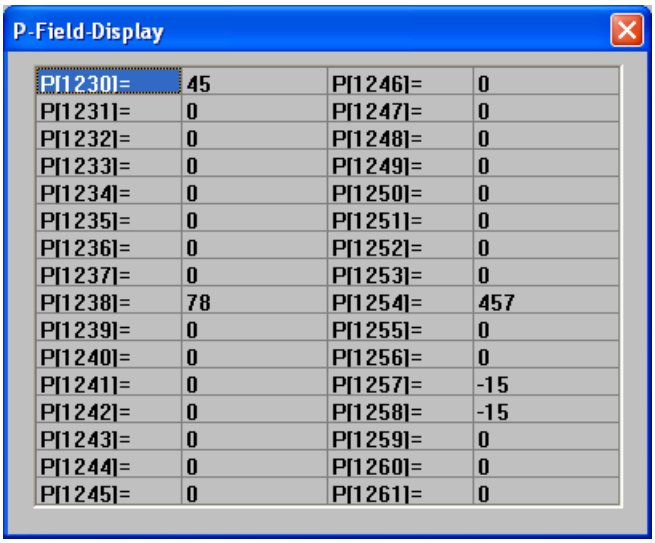
➢ Permanent display

Open a separate screen containing a list of 32 parameters. Value updating is made permanently. Currently, the values are displayed until the dialog screen is closed by activating the ESC key.

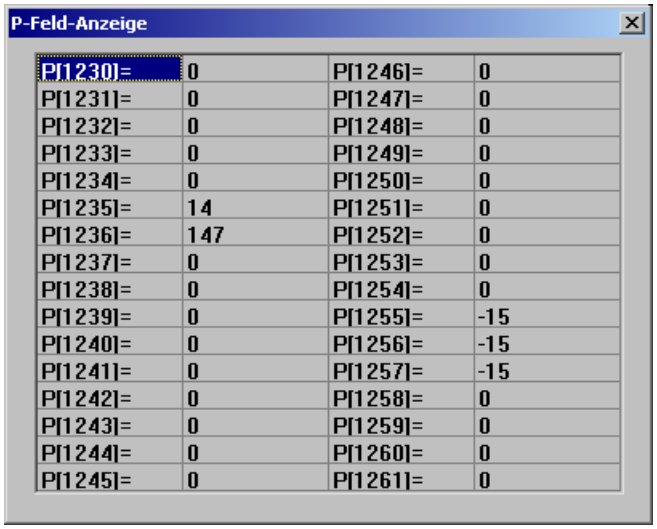
Input P-fields are displayed permanently in this screen:



The parameters are selected by highlighting a cell by means of the cursor keys and by opening an input screen with the space bar. The desired P-field number is input here. When the screen is called, the P-fields specified in the configuration file are displayed automatically. These numbers may be overwritten at any time. With P-field index–1, an input is set empty.



- **P-field display**



P[1230]=	0	P[1246]=	0
P[1231]=	0	P[1247]=	0
P[1232]=	0	P[1248]=	0
P[1233]=	0	P[1249]=	0
P[1234]=	0	P[1250]=	0
P[1235]=	14	P[1251]=	0
P[1236]=	147	P[1252]=	0
P[1237]=	0	P[1253]=	0
P[1238]=	0	P[1254]=	0
P[1239]=	0	P[1255]=	-15
P[1240]=	0	P[1256]=	-15
P[1241]=	0	P[1257]=	-15
P[1242]=	0	P[1258]=	0
P[1243]=	0	P[1259]=	0
P[1244]=	0	P[1260]=	0
P[1245]=	0	P[1261]=	0

Opens a separate screen containing a list of 32 consecutive parameters. These values are not updated automatically.

Keys:

<BLANK> or <ENTER> or doubleclick: input of the P-field index, or change of the value.

<Pg up>, <Pg down>, display of the next or the previous 32 P-fields

<ESC> Exit dialog

- **Back**

Back to the previous level

7.6 Horizontal softkey: PLC signals

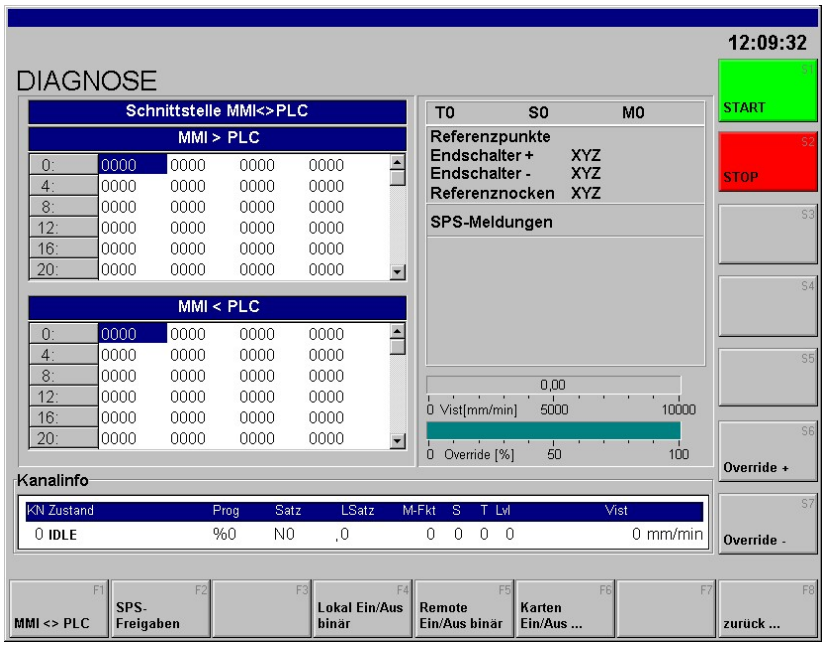
This function provides various options for checking the communication between the HMI and PLC as well as for monitoring the states of the PLC inputs and outputs. For further detailed information about the PLC signals please check the NC computer documentation.

➢ **MMI<>PLC**

Two data fields are displayed that show the data exchange between the HMI and the PLC via data block DB2.

Data sent by the HMI program to the PLC are displayed in the top window. Data sent by the PLC to the HMI are displayed in the bottom window.

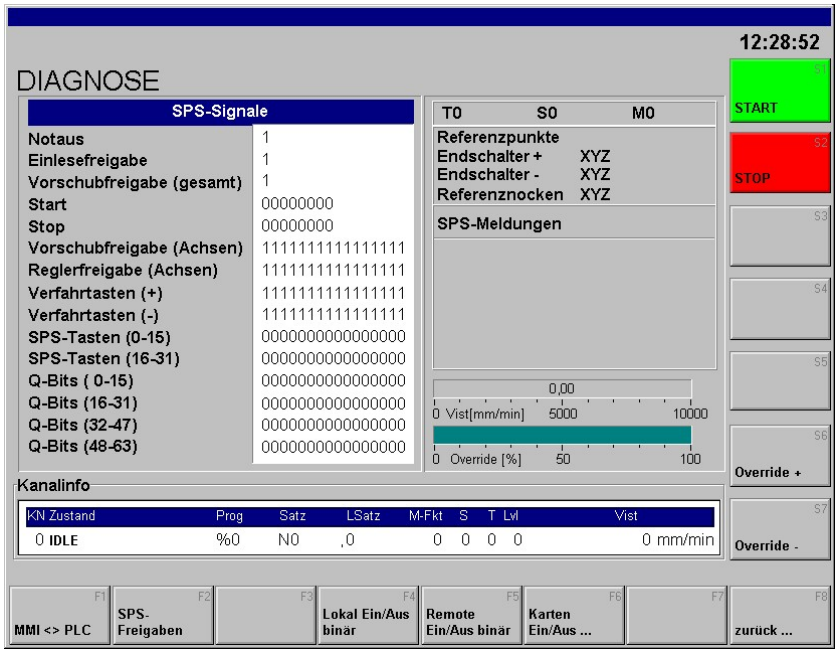
You can switch between the windows using the TAB key and scroll through the display by means of the cursor keys.



The input of a value is possible in the above screen via <BLANK>. Such an input must be made only with utmost care.

➢ **PLC enabling**

The PLC enabling function is used to check the most important interface signals between PLC and NC.



➢ **Local on / off binary**

Input and output states of the EC-IO card(s) are displayed in binary form (0 – input/output not set). The function is only important if the system is equipped with the respective hardware.

➢ **Remote on / off binary**

Input and output states of the external E/A modules connected via CAN bus are displayed in binary form (0 – input/output not set). The function is only important, if the system is equipped with the respective hardware.

➢ **Cards on / off ...**

The list of all configured input-output cards and/or CAN bus modules is displayed. The inputs and outputs of the selected cards are displayed next to the list. A text can be stored in the language file for each input and output (see StdHMI installation manual).

➢ **Back**

Back to the previous level

7.7 Horizontal softkey: Machine constants

Machine constants are necessary for the system to be configured correctly. They are located in an ASCII file that is sent to the NC when the HMI standard software is started (provided there is no operating system running on the NC yet).

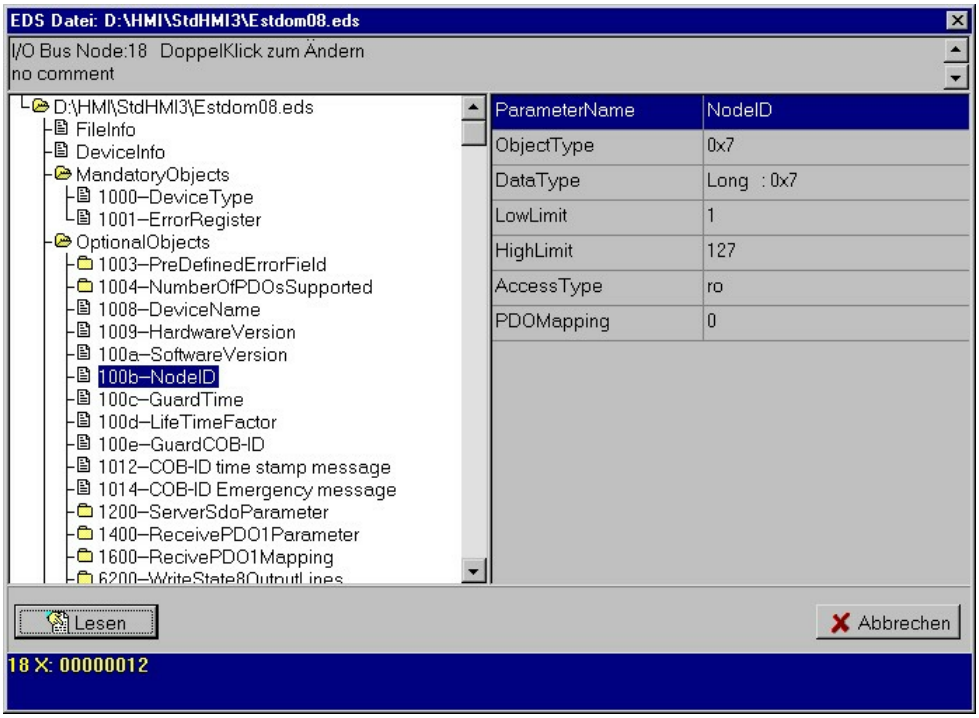
- **EDS**

  With EDS, the description file of a CAN module manufacturer can be loaded. All defined code digits can then be read out. The code digits released for writing can be overwritten with new values. For details, please check the module description provided by the manufacturer of the CAN modules.

  When the softkey is pressed, a selection of the CAN buses is displayed (1: I/O bus, 2: drive). The node number of the desired module must then be specified. In the following dialog, the description file (*.eds) of the module type is selected. The selected module can then be accessed.

  For a display of a module of the same type with a different node number, the node number can be changed by making a doubleclick on the respective field.

It is not checked whether the node number is valid and whether it fits the specified EDS file. The responsibility lies exclusively with the operator.



Example configuration Dom08: NodeID (CAN node number) 18 Hex 12 was read from code digit 100b.

- **MC configurator**

  Axes can be defined and configured with the support of several dialogs. Moreover, all MC can be changed (see chapter 1.1.1 MC configuration).

- **Modify MC file**

  An MC-file is loaded into the MC editor and can be changed.

- **Notepad: directly edit MC**

  The current MC file is opened in Notepad.

- **Change current MC**

  The MC of the controller are loaded into the MC screen and can be changed.

- **Load MC file to NC**

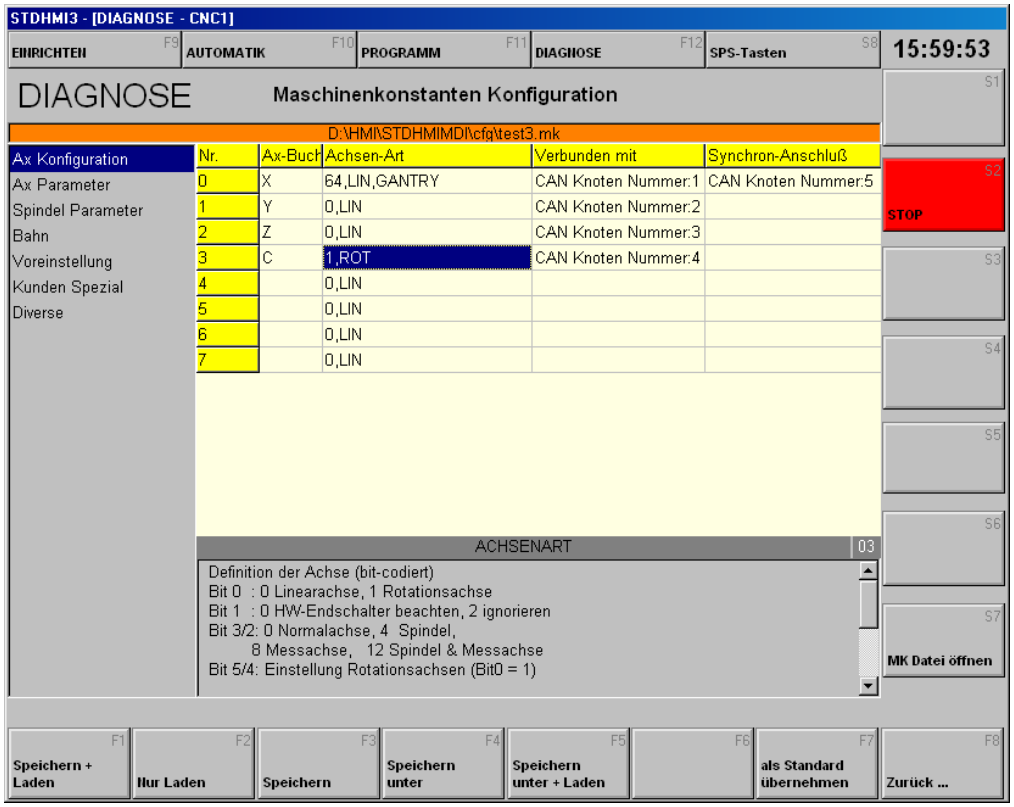
  A MC file is selected and subsequently transmitted to the controller.

- **Back**

  Back to the previous level

7.7.1 MC configurator

In screen Machine constants – configuration, the configured axes are displayed. The table contains the maximum possible number of axes of the respective NC as lines (example 8 axes 0..7). The number of lines can be higher or lower depending on the type of the NC.



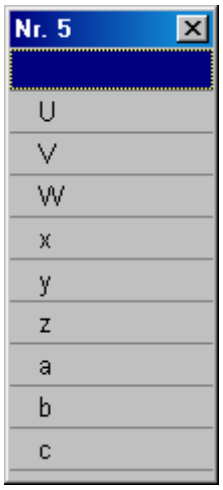
Within the MC configuration, the machine constants are subdivided into seven groups:

- Ax configuration
- Ax parameters
- Spindle parameters
- Path
- Presetting
- Client special
- Various

7.7.1.1 Column: No

This column indicates the sequential number of an axis. Up to 12 axes can be connected depending on the extension state of your controller.

7.7.1.2 Column: Axis letter

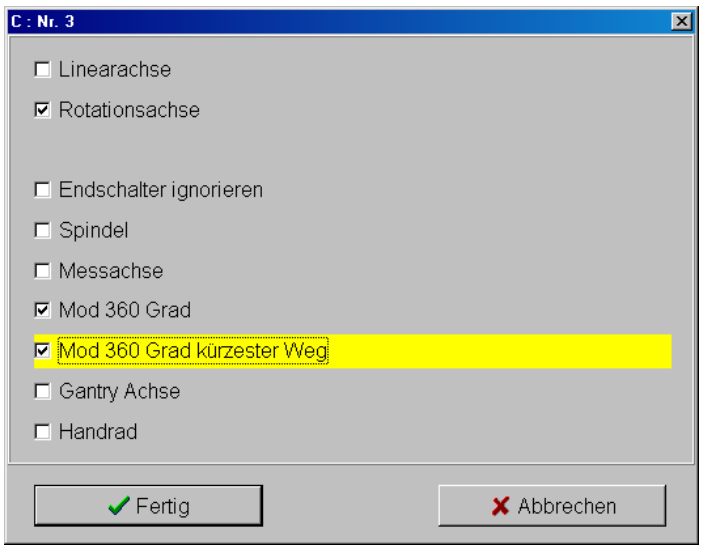


In column Ax letter, logic axes are assigned to the physical axes via axis letters. This is made by means of a table with the following entries:

Ax-letter: An axis letter is assigned to each axis to make a clear identification of the axis possible.

All possible axis letters not yet assigned are offered in a selection dialog screen.

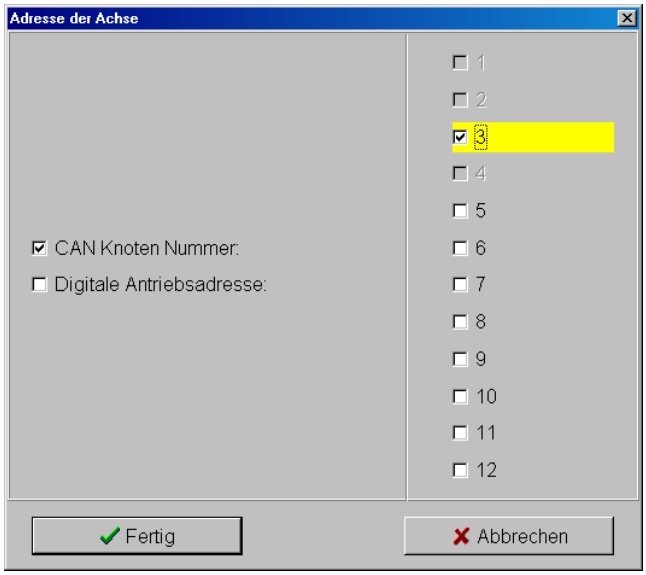
7.7.1.3 Column: Axis type



In the dialog the type of axis is indicated:

- Linear or rotary axis
- Ignore limit switch
- Spindle
- Measuring axis
- Modulo 360° (only in case of rotary axes)
- Modulo 360° shortest way (only in case of rotary axes)
- Gantry axis
- Handwheel

7.7.1.4 Column: Connected with



Connected with address of the axis.

Depending on the controller, different connections of the axis are supported:

- Analog connection
- CAN bus
- ESAB (Sercos)
- Virtual axis

After pre-selection of the bus system (left part in the screen) the number of the drive for the bus system has to be selected (right part in the screen).

The possible connections and the maximum selectable number will be transmitted by the respective machine constant of the NC.

Connection of the axis via	**Selection of**
CAN bus	**CAN node number** of the axis
Analog connection	**Physical channel** of the axis
ESAB bus	**Digital drive address** of the axis
Virtual axis	**Axis number simulated by the NC**

Addresses already activated cannot be selected. The axis is de-activated if no address has been selected.

7.7.1.5 Column: Synchronous connection

A second axis can be physically assigned to the axis letter. For the controller, the two axes are treated as one (for further information please check E•CONTROL - CNC55 configuration). A synchronous axis must be of the same type as the master axis.

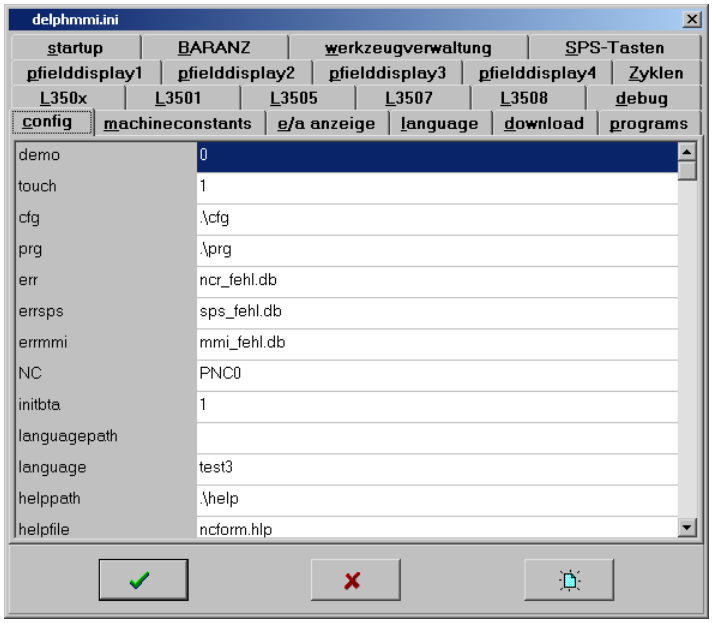
7.8 Horizontal softkey: Change password

After activating the softkey, an input screen is displayed for the password. First the password for authorization of the password changes must be entered (specialist: PW level 3). A selection list is displayed in which the password to be changed is to be selected. Subsequently, the new password is prompted twice to avoid possible incorrect inputs. New passwords are active immediately after the change.

7.9 Horizontal softkey: Configuration

- **Delphmmi.ini**

  Loads the "DELPHMMI.INI" configuration file on the screen and permits changes. Each tab contains a section of the Ini file. With the button on the right, a new entry can be added within a section. For example in section *programs*, cycles can be input that are to be loaded during startup. By selecting *OK* (by the TAB key and ENTER), the file is saved; if *Cancel* is selected the configuration file is quit without the changes being saved. For further detailed information about the configuration file please check the StdHMI installation manual.



- **Interpreter.ini**

  Loads the configuration file Interpreter.ini for a parameterizing of the graphics for the display of DIN programs. Determined modifications are only accepted after a restart. For further information please check the StdHMI installation manual

7.9.1 Change parameters

This softkey is used to configure the parameter list which can be displayed in Automatic mode. In the upper part, the current parameter list is displayed. In the center part, details are displayed regarding the selected line. Here the inputs can be changed. The horizontal softkeys are used for parameter list management.

The list is managed with the help of the following horizontal softkeys:

- **New list**

  A new list is generated with a new index. The previously displayed list is copied.

- **Save list**

  The currently displayed parameter list is saved

- **Delete list**

  The currently displayed parameter list is deleted.

- **New entry**

  A new line is added to the parameter list. First the type of element is to be selected.

- **Delete entry**

  The currently selected line of the parameter list is deleted.

- **Copy entry**

  The currently selected line is copied into the buffer

- **Insert entry**

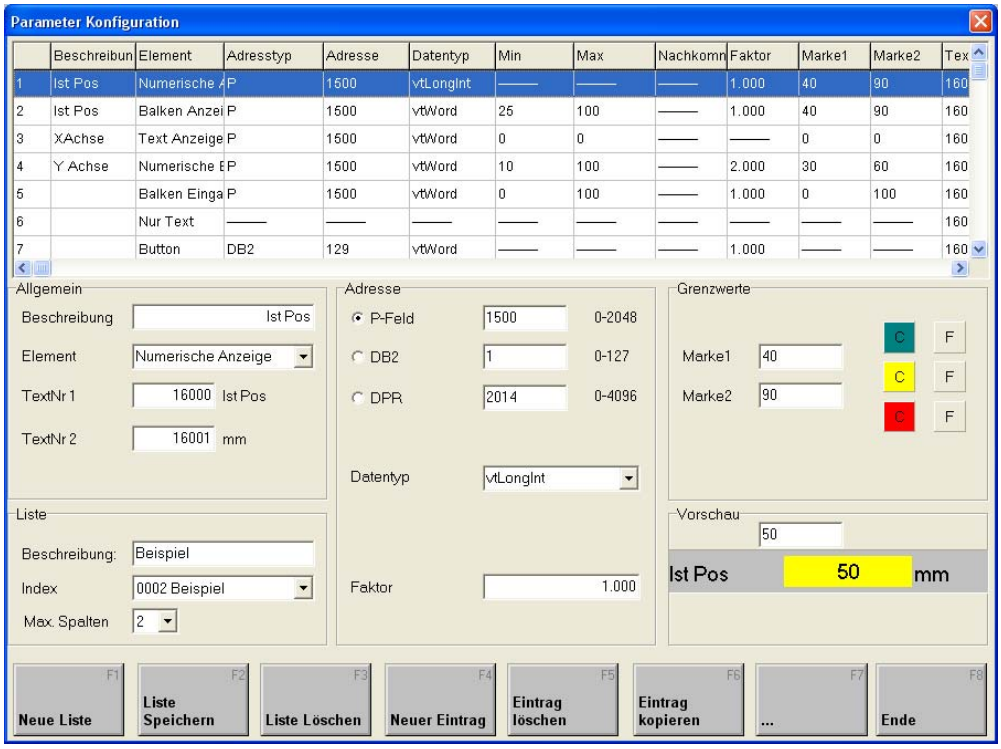
  The line of the buffer is copied on top of the currently selected line.

- **End**

  End parameter input and exit dialog. Upon request a prompting is made whether the changes are to be saved or not.

The elements of the parameter list already presented in section 5.8 can be configured as follows.

7.9.1.1 Numerical display



The following parameters can be configured for the element:

- **General**

  Description: The user may include a text here for the designation of the element which is, however, not displayed in Automatic mode.

  Element: The type of element is determined in this place (numerical display, bargraph, text display, numerical input, bar input, text only, button)

  TextNo1: The text referenced here by means of the number in the language file is displayed in front of the parameter.

  TextNo2: The text referenced here by means of the number in the language file is displayed behind the parameter. Physical units such as m or mm are normally displayed here.

- **List**

  These parameters are displayed in the list with all parameters, they are, however, available only once!

  Description: The user may include a text here for the designation of the list.

  Index: If several lists are used, a changeover is made between the different lists during parameterizing. The displayed index is always supplemented by the description text.

  Max. columns: The max. number of columns is established in the parameter list which is displayed in *Automatic* mode.

- **Address**

  The parameter position is assigned to one of these three memory areas by changeover between **P-field, DPR** or **DB2**. In addition, a valid address is to be established within the specified limits.

  Data type: The previously established memory address is interpreted in compliance with the established data type (vtByte, vtIteger, vtWord, vtSingle, vtDouble).

  Factor: The value read of a previously defined address is multiplied with this factor and is displayed.

- **Limit values**

  Mark1: Displayed values smaller than Mark1 are highlighted with the first background color.

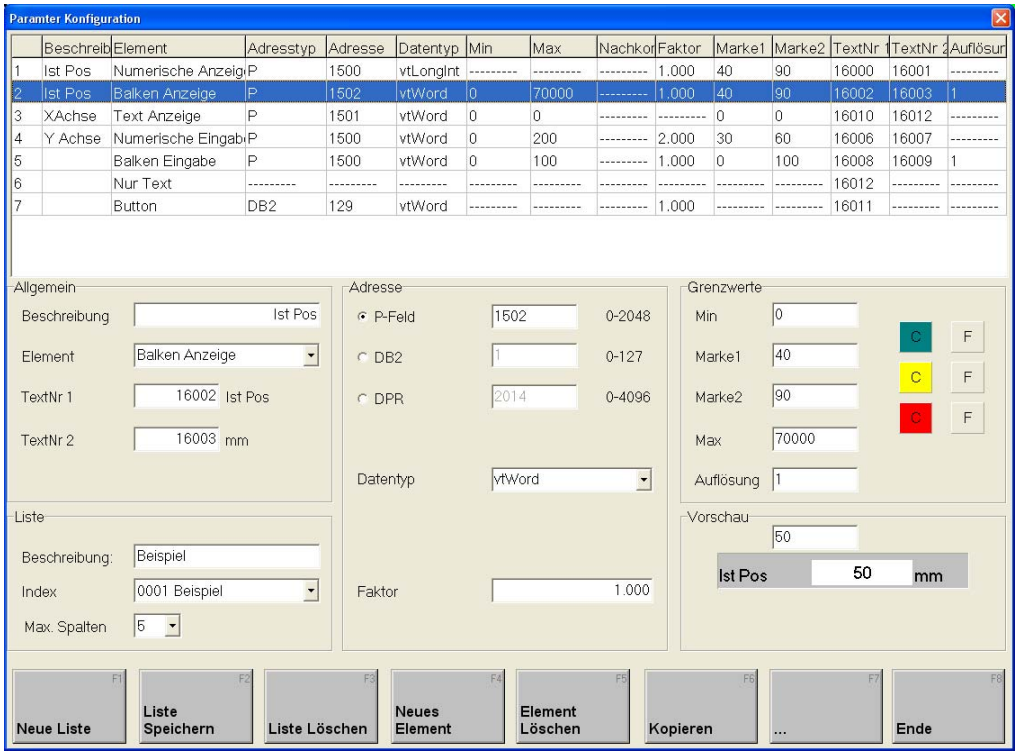
  Mark2: Values bigger than Mark1 and smaller than Mark2 are highlighted with the second background color. Displayed values exceeding this value are represented with the third background color.

  The three background colors of the display of display <Mark1, Mark1< display<Mark2 and display >Mark2

- **Preview**

  The preset parameters can be checked in this representation. In addition, a value can be input with regard to the display. No values, however, are displayed of the preset address.

7.9.1.2 Bargraph



The parameters of the bargraph include the following items in addition to the setting options already specified under Numerical display as per 7.9.1.1:

- **Limit values**

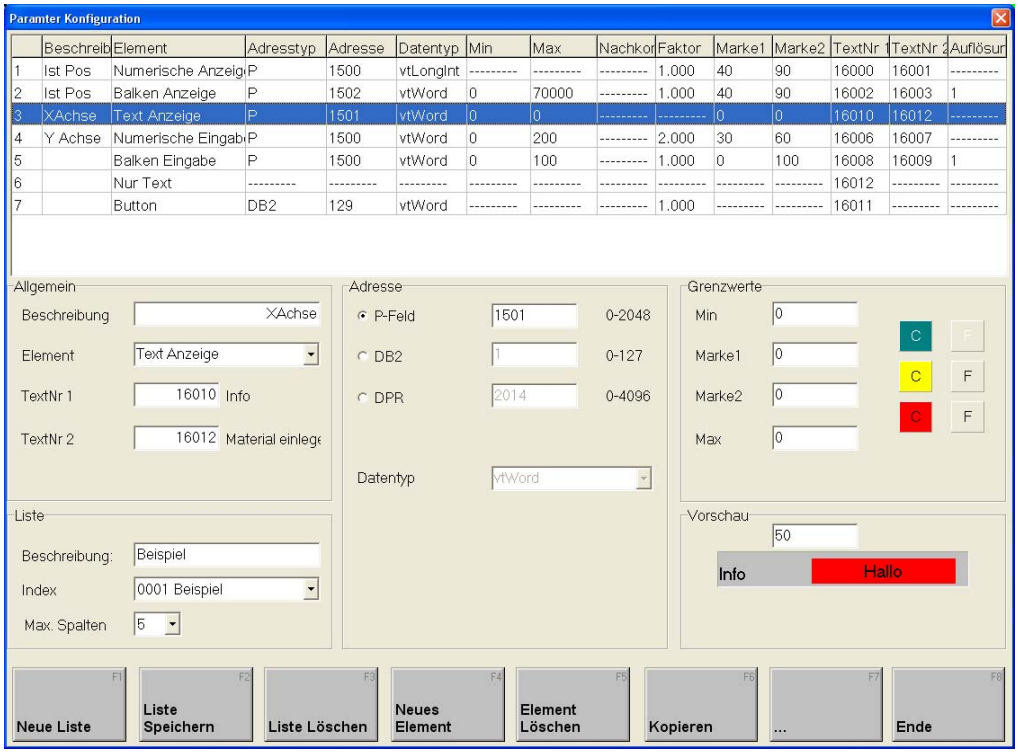
  The established background colors determine the color of the bar and not the entire background color of the element.

  Min: This value is assigned to the left position of the bar, i.e. the bar is not visible if the value to be represented corresponds to the min. parameter or if it is smaller.

  Max: This value is assigned to the right position of the bar. Values bigger than or equal to the max. parameter display the bar at max. width (full scale).

  Resolution: If numbers with floating point are to be displayed, the resolution of the bargraph can be established by means of this parameter, e.g. a resolution value of 0.1 makes the representation possible of 10 intermediate values on the bar at an interval between two integers.

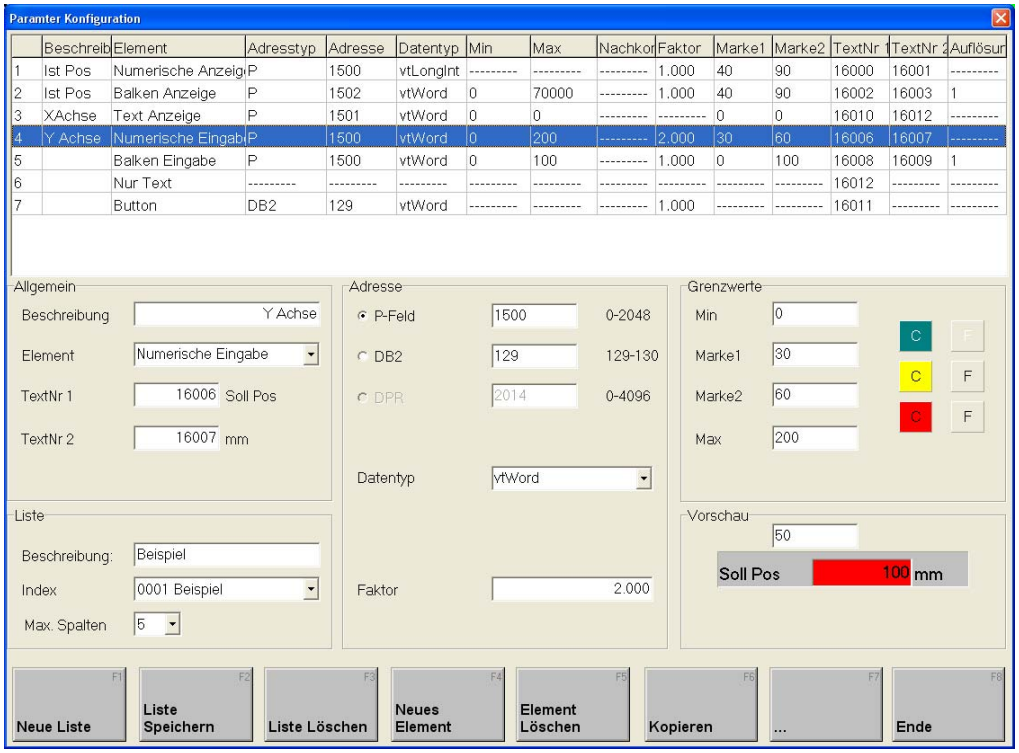
7.9.1.3 Text display



➢ **General and list**

The parameters of the boxes „General“ and „List“ have the same function than that described under Numerical display as per 7.9.1.1. The address can be assigned only to a P-field.

7.9.1.4 Numerical input



- **General, list and address**

  The parameters of these boxes have the same function than that described under Numerical display as per 7.9.1.1.

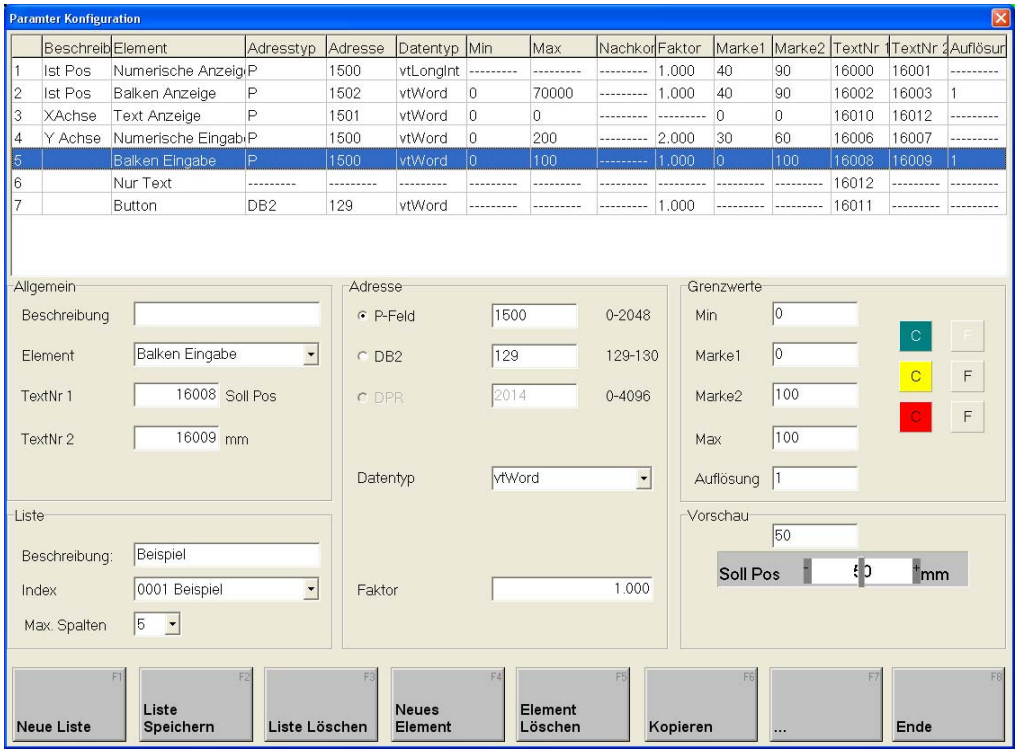
- **Limit values**

  The following parameters are available in addition to the description as per 7.9.1.1

  Min: Only values bigger than or equal to the parameter „Min“ can be input.

  Max: Only values smaller than or equal to the parameter „Max“ can be input.

7.9.1.5 Bar input



For the bar input, the following parameters are available in addition to the setting options already specified under Numerical display as per 7.9.1.1:

- **Limit values**

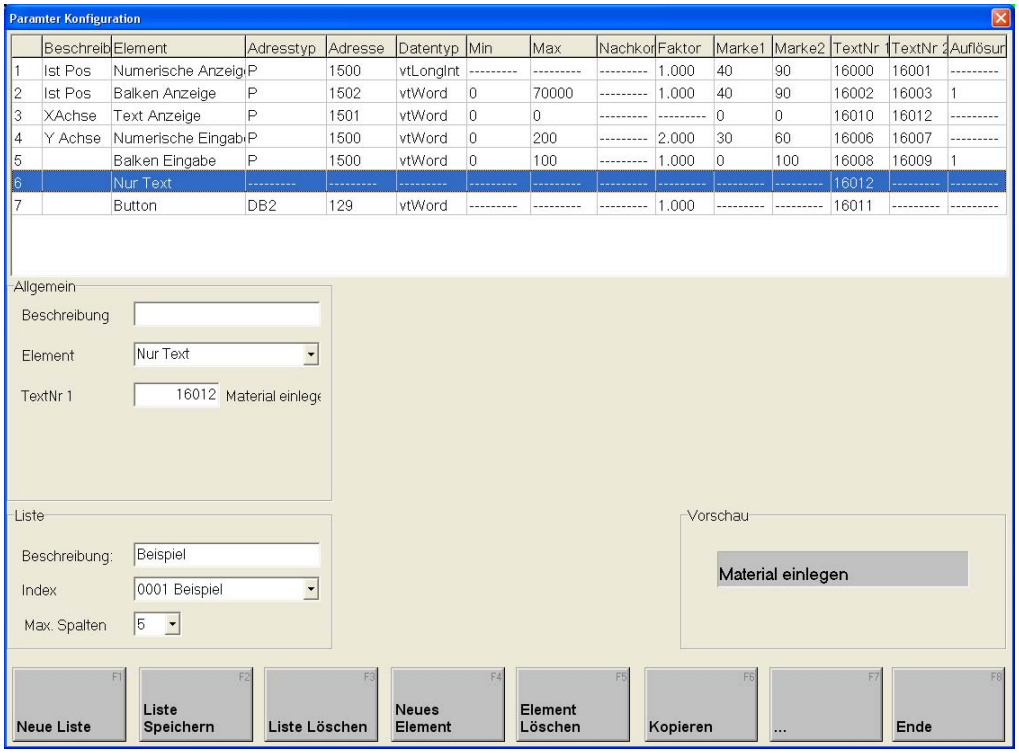
  The established background colors determine the color of the bar.

  Min: This value is assigned to the left position of the bar, i.e. the bar is not visible if the value to be represented corresponds to the min. parameter or if it is smaller. The input of a value by means of the slider cannot be smaller than the limit established in *Min*.

  Max: This value is assigned to the right position of the bar. Values bigger than or equal to the max. parameter display the bar at max. width (full scale). The input of a value by means of the slider cannot be bigger than the limit established in *Max*.

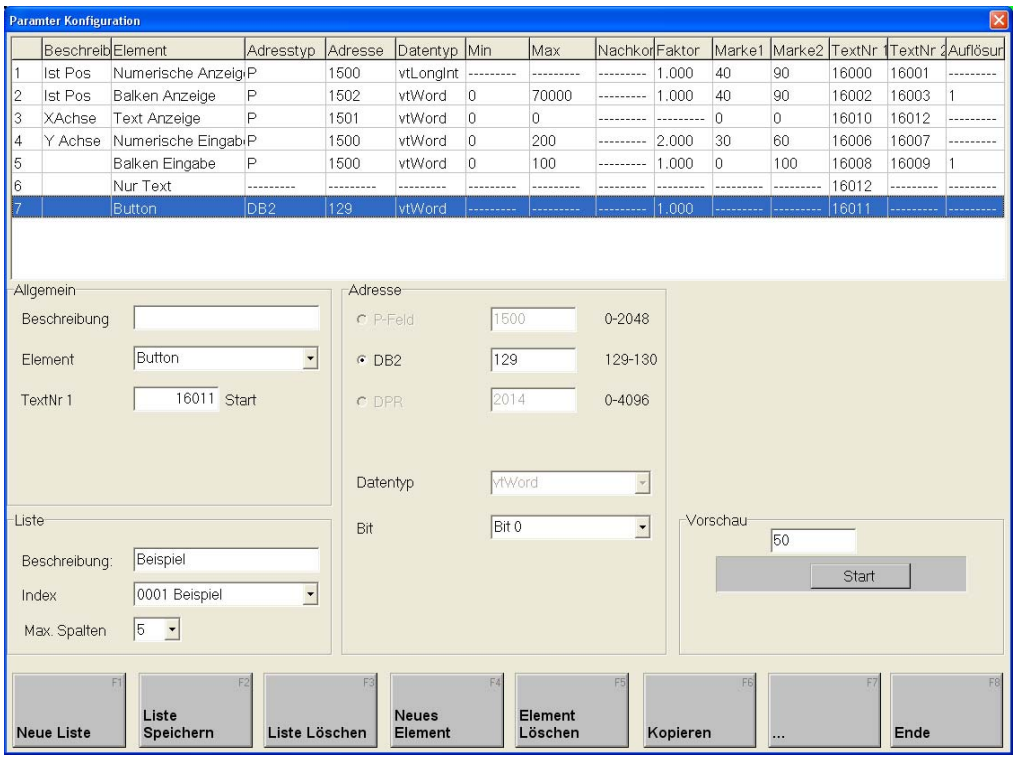
  Resolution: This parameter determines the increment used to make a value change on the bar by actuating the +- - buttons

7.9.1.6 Text only



Only the text of the respective language file is displayed. The text selection is made via the value in *TextNo 1*.

7.9.1.7 Button



The following parameters are available for the element Button:

- **General**

  Description: The user may include a text here for the designation of the element which is, however, not displayed in Automatic mode.

  Element: The type of element is determined in this place (numerical display, bargraph, text display, numerical input, bar input, text only, button)

  TextNo1: The text referenced in the language file is used to label the button.

- **Address**

  The parameter value always comes from **DB2**. A valid address is to be established in the preset limits.

  Data type: Data type is always Word.

  Bit: One of the 16 bits (Bit0-Bit15) can be selected from the data word which sets the button or which accepts the status of the button.

7.10 Softkeys in the menus (3rd level)

- **Save + load**

  The current machine constants are saved under the known name (indicated in the headline) and are transmitted to the controller.

- **Load only**

  The machine constants are transmitted to the controller, they are, however, not saved. During the next start, the original machine constants are loaded again.

- **Save as + load**

  The machine constants are saved under a different name and are transmitted to the controller. During the next start, however, the machine constants are loaded which are entered in the ini file. See StdHMI instruction manual.

- **Save as**

  The machine constants are saved under a different name, they are, however, not transmitted to the controller.

- **Save**

  The machine constants are saved under the known name that is indicated in the headline.

- **Save as default**

  The current MC file (name is indicated in the headline) is loaded into the controller after the next start.

- **Ready**

  The screen is closed.

7.11 Vertical softkey set 1

- **START**

  This softkey starts the selected program, i.e. the block-by-block processing in single block operation.

- **STOP**

  Immediately ends the program execution, all axes are stopped using the set brake ramps. With a re-start, the processing must be started from the beginning.

- **Log In**

  By means of *Log In*, a change is made to a different access authorization. In other operating modes, this is possible by actuating the shortcut key CNTR + L.

  Box *User name* is to be filled in. Each Login event is registered in the error log, indicating name and authorization.

  In the box *Your password please,* enter the password for the required access level. If an invalid password is input or if the input is aborted, access is made to the authorization level without password.

7.12 Vertical softkey set 2

- **Move +**

  Manual traversing key for positive axis direction of the selected axis

- **Move -**

  Manual traversing key for negative axis direction of the selected axis

- **Axis**

  In case of all axis-related traversing functions, the current axis that is to be moved can be selected by means of this function. The selection can also be made by means of the cursor keys.

- **Override +**

  Increase of override percentage of the configured/set axis or path speed. Above 10%, the value is changed in 10% increments and below 10%, it is made in 1% increments The maximum permissible override value is specified in a machine constant.

- **Override -**

  Reduction of override percentage for the configured/set axis or path speed. Above 10%, the value is changed in 10% increments, and below 10%, it is made in 1% increments.

7.13 Vertical softkey set 3

- **Open MC file**

  Being in this configuration, a different MC file can be loaded to the environment by means of *Open MC file*.

7.14 Operating mode PLC keys

These keys are application-specific. The keys can be parameterized and programmed by an operator (see StdHMI installation manual).