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Application note 5039: Machine with standard screens

Brief Description	This application notes describes the possibility to control the surface of PA-CONTROL out of the PA-CONTROL programs: ■ Display texts ■ Input values ■ Guide the operator

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1 History of Changes

Code of document	Date	Release and Changes
APP5039_EN_1139203_PA-CONTROL_MaschineWithStandardScreens_R1a.doc	November 2015	Translation of the original German Application into the English version: APP5039_DE_1139202_PA-CONTROL_ MaschineStandardOberflaechen.doc
APP5039_EN_1139203_PA-CONTROL_MaschineWithStandardScreens_R1b.doc	January 2017	Revision of Touch70 with new program examples

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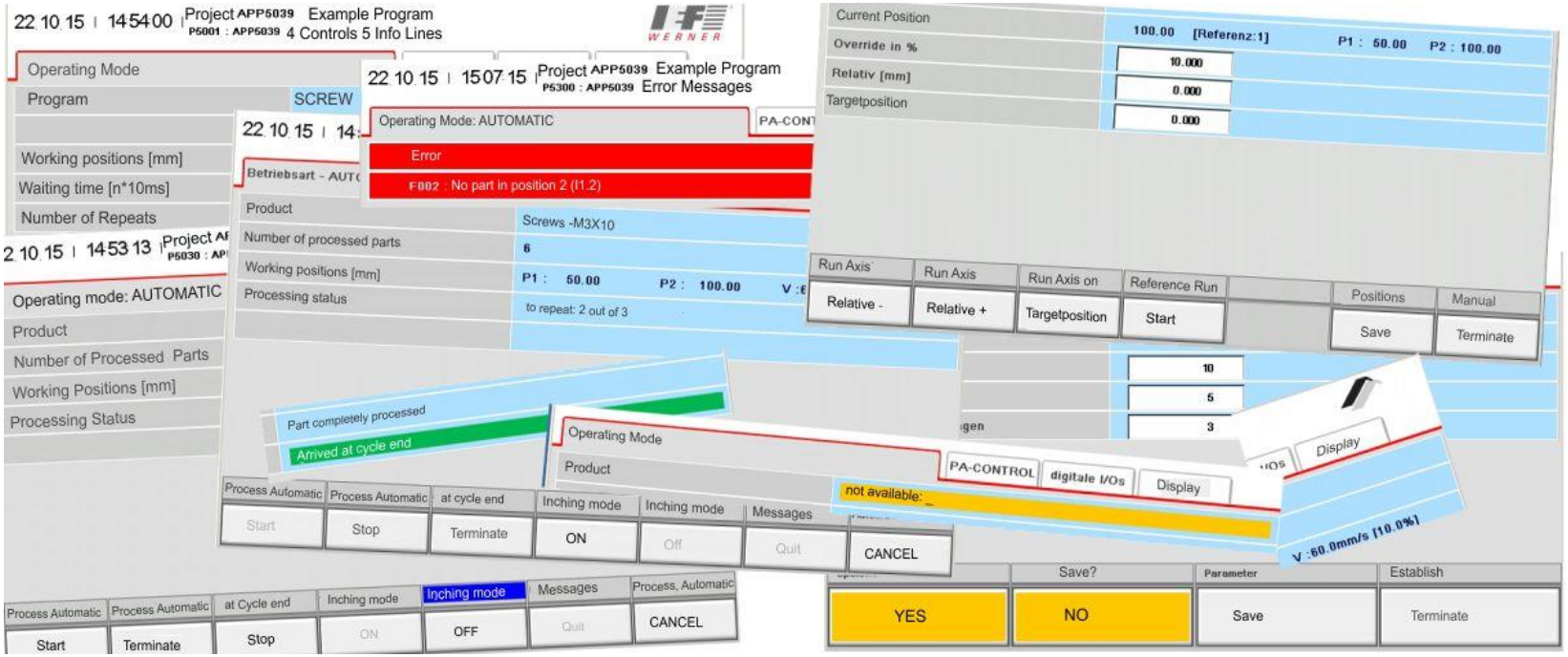
2 General Informations

If you like to create your own user interface for an application with PA-CONTROL Touch, but not using TSwin, the PA-Control offers the possibility to use ready-made images (image 5000...).

These images can be supplied with data and called up of PA-CONTROL programs.

The program will respond to the action of the operator.

In this application are explained images and their functions.



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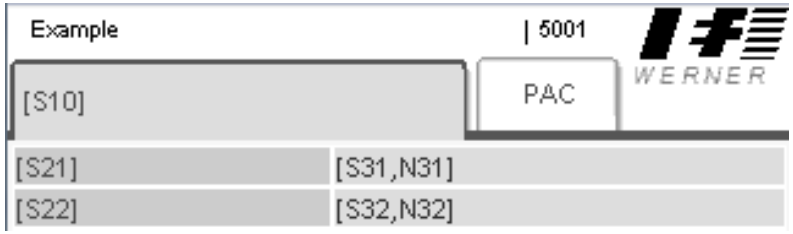
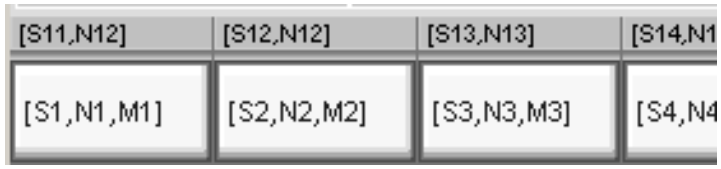
3 Standard images of PA-CONTROL Touch35

3.1 Text output, buttons and input fields

3.1.1 Texts within the text output fields and texts in the buttons

The texts within the text output fields, buttons and captions are given by PA-CONTROL-Strings.

Image	PA-CONTROL Element	Example program line
	[S10] : PAC-String 10 [S21] : PAC-String 21 [S31] : PAC-String 31	S10:="S[10]" S21:="[S21]" S31:="[S31,N31]
	[S11,N11] : PAC-String 11 [S12,N12] : PAC-String 12 [S13,N13] : PAC-String 13	S11:="[S11,N11]" S12:="[S12,N13]" S13:="[S13,N13]"

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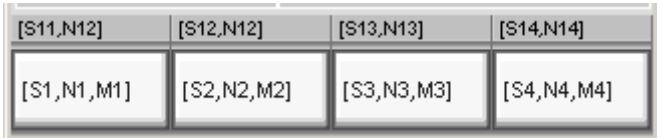
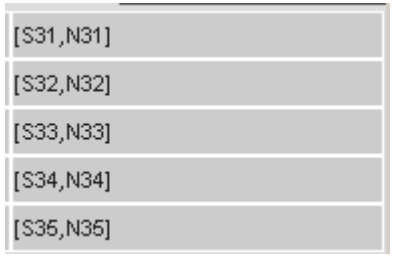
3.1.2 Coloured presentation of texts and buttons

The type of display and the behavior of output fields and buttons can be set via dynamic attributes.
For this purpose an N-Register has been assigned to the corresponding input fields and buttons.



N1 : dynamic attributes button 1
N2: dynamic attributes button 2
N3: dynamic attributes button 3
N4: dynamic attributes button 4
N5: dynamic attributes button 5
N6: dynamic attributes button 6
N7: dynamic attributes button 7
N8: dynamic attributes button 8

N11: dynamic attributes texts about button 1
N12: dynamic attributes texts about button 2
N13: dynamic attributes texts about button 3
N14: dynamic attributes texts about button 4
N15: dynamic attributes texts about button 5
N16: dynamic attributes texts about button 6
N17: dynamic attributes texts about button 7
N18: dynamic attributes texts about button 8



N31 : dynamic attributes, text output right column, line 1
N32 : dynamic attributes, text output right column, line 2
N33 : dynamic attributes, text output right column, line 3
N34 : dynamic attributes, text output right column, line 4
N35 : dynamic attributes, text output right column, line 5

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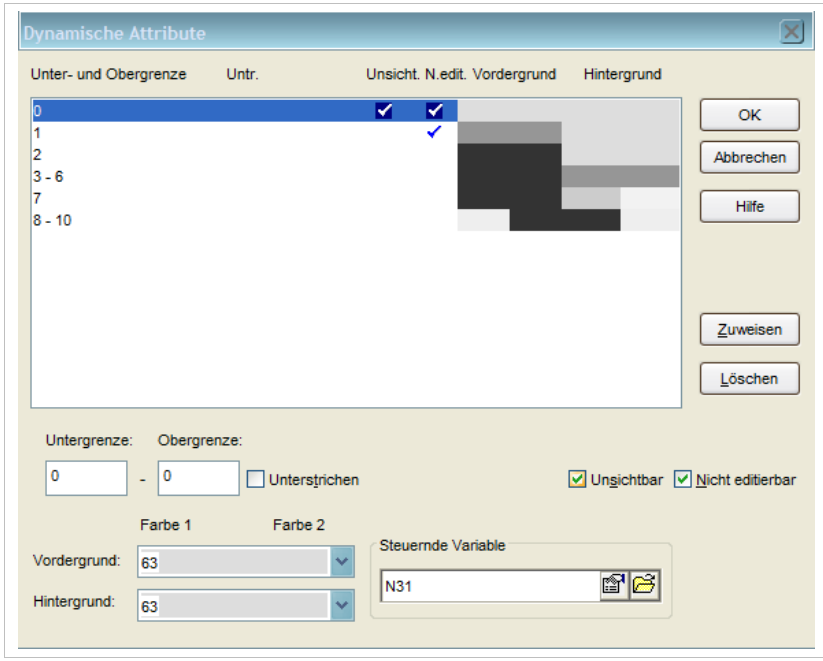
The dynamic attribute is adjusted when creating the text fields or buttons in TSwin. It is adjusted in the same way for all buttons and output fields.



Value - N-Register	Behavior	Colour foreground	Colour background
0	invisiable		
1	not editable, button has no function	grey	light grey
2	editable button has function	black	light grey
3-6		black	dark grey
7		black	light grey blinking
8-10		light grey/ black blinking	black / light grey blinking

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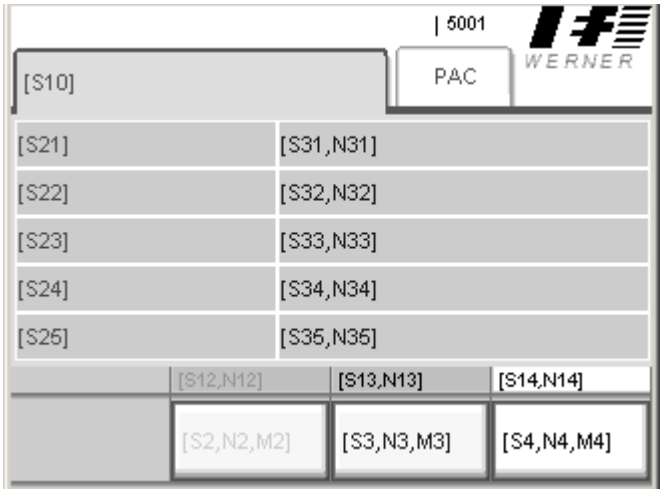
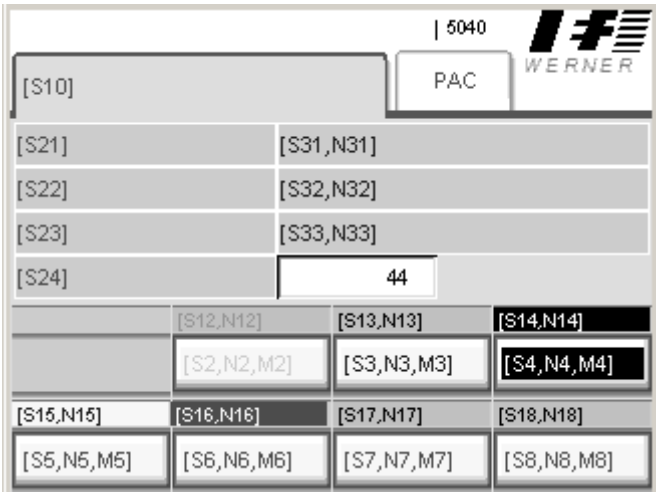
Examples





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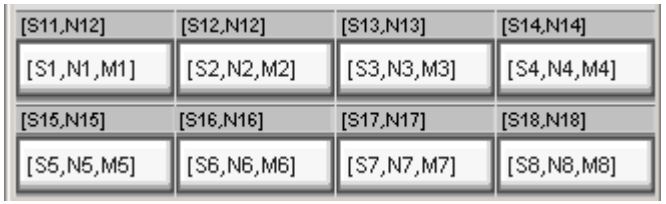
3.1.3 Function of the buttons

Function of the button	
Button is pressed	Flag is set
Button is released	Flag is reseted



Assignment of buttons and flags	
Button	Flag of PA-CONTROL
1 [S1,N1,M1]	M1
2 [S2,N2,M2]	M2
3 [S3,N3,M3]	M3
4 [S4,N4,M4]	M4
5 [S5,N5,M5]	M5
6 [S6,N6,M6]	M6
7 [S7,N7,M7]	M7
8 [S8,N8,M8]	M8

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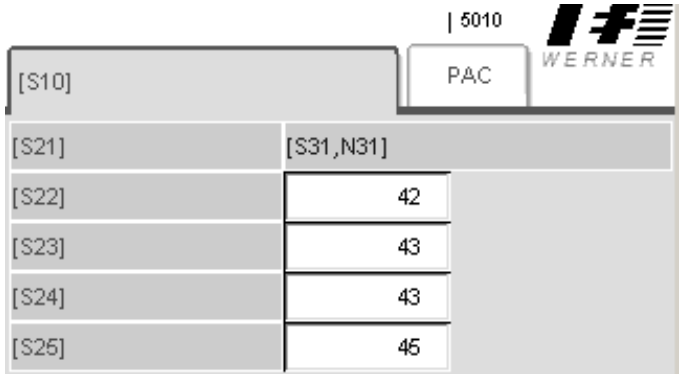
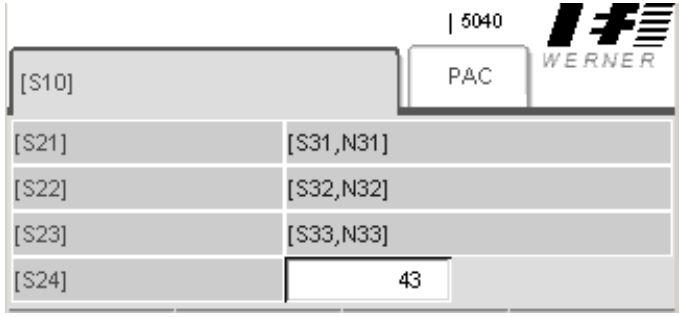
3.1.4 Input fields for N-Registers

In the images 5010 and 5040 input fields are available for N-Register.





Input field for N-Registers	Lower limit for monitoring of the input	Upper limit for monitoring of the input	Input field visible / invisible 0: invisible 1: visible
N42	N52	N62	M42
N43	N53	N63	M43
N44	N54	N64	M44
N45	N55	N65	M45

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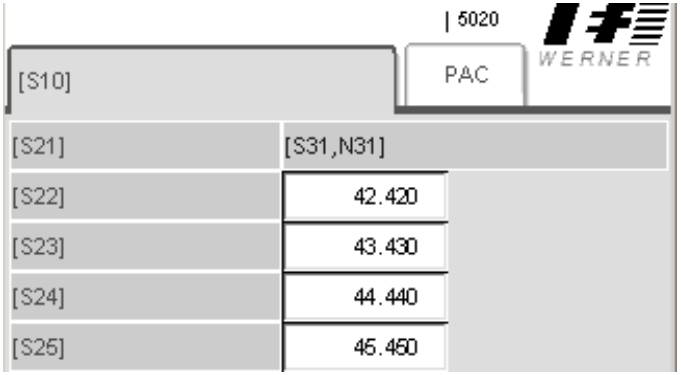
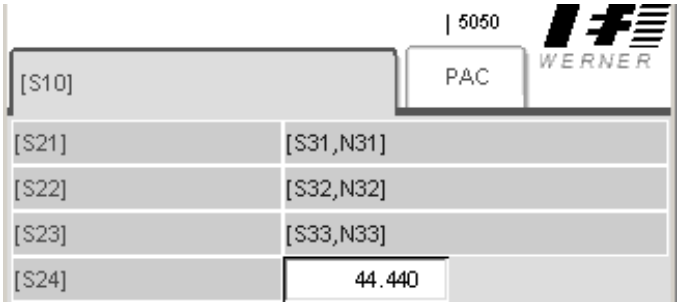
3.1.5 Input field for R-Registers

In the images 5020, 5050, 5051and 5052 input fields are available for R-register.





Input field for R-Register	Lower limit for monitoring of the input	Upper limit for monitoring of the input	Input field visible / invisible 0: invisible 1: visible
R42	R52	R62	M42
R43	R53	R63	M43
R44	R54	R64	M44
R45	R55	R65	M55

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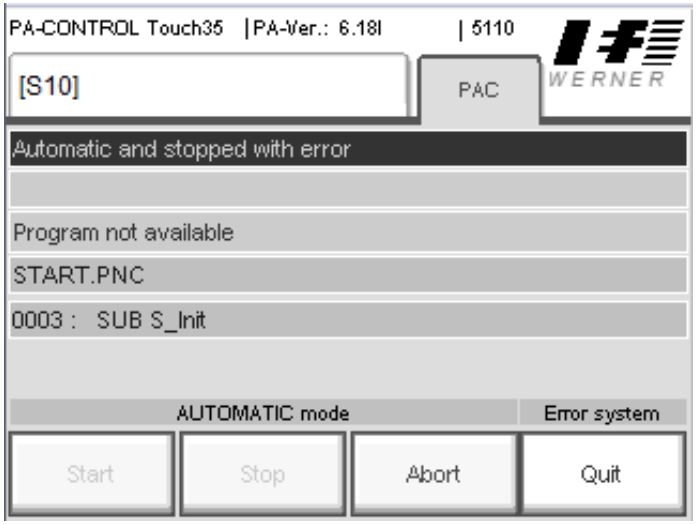
3.2 The button of PA-CONTROL (Image 5110)

The button of the PA-CONTROL enables the user to switch to the image of the operating system.	
The user can change to the main images of the PA-CONTROL and change the automatic mode (to stop, to terminate, fault confirmation...) By using button "[S10]" it can be switched back to the previous image.	

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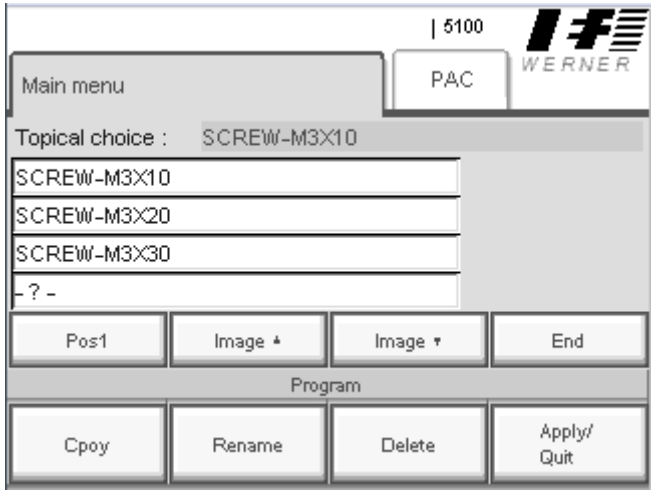
3.3 Product Management - Image 5100

If various products are to be processed in the application, it can be realized via image 5100.
You can find more information in the manual "MAN_EN_1109387_PA-CONTROL_Touch.pdf".

NOTE: Image 5100 is used for “Current Selection“ the PA-CONTROL String "S20".



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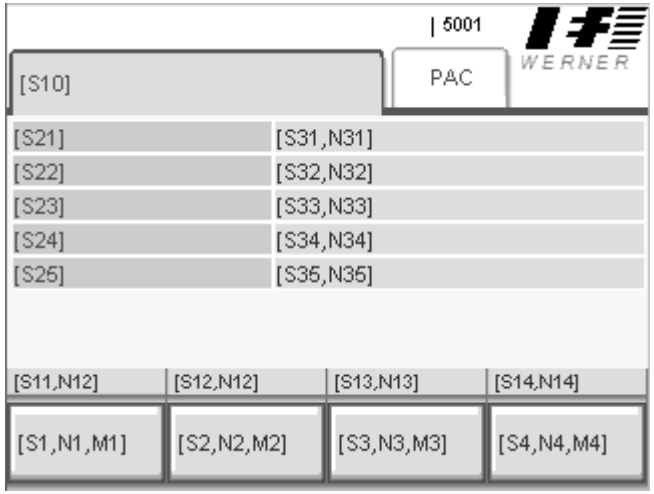
3.4 Image 5001 – 4 Buttons, 5 Info Lines

- 4 buttons
- 5 text lines with left and right column



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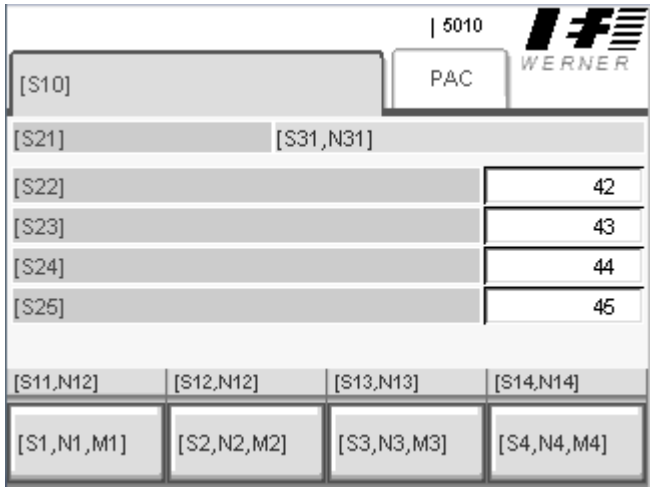
3.5 Image 5010 - 4 Buttons, 4 Input Fields for N-Register

- 4 buttons
- left column 5 text lines
- right column
  - 1 text output field
  - 4 text input fields for N-Register



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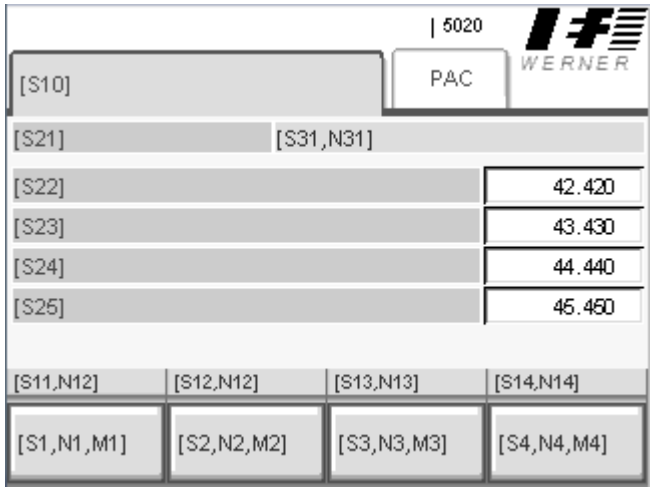
3.6 Image 5020 - 4 Buttons, 4 Input Fields for R-Register

- 4 buttons
- left column 5 text lines
- right column
  - 1 text output field
  - 4 text input fields for R-Register



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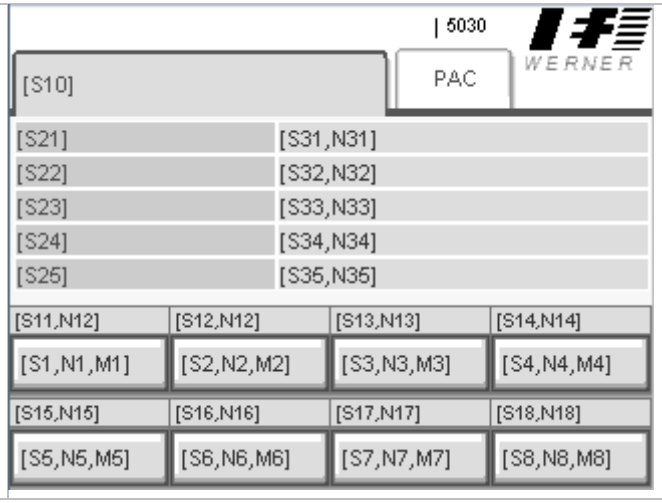
3.7 Image 5030 - 8 Buttons, 5 Info Lines

- 8 buttons
- 5 text lines with left and right column



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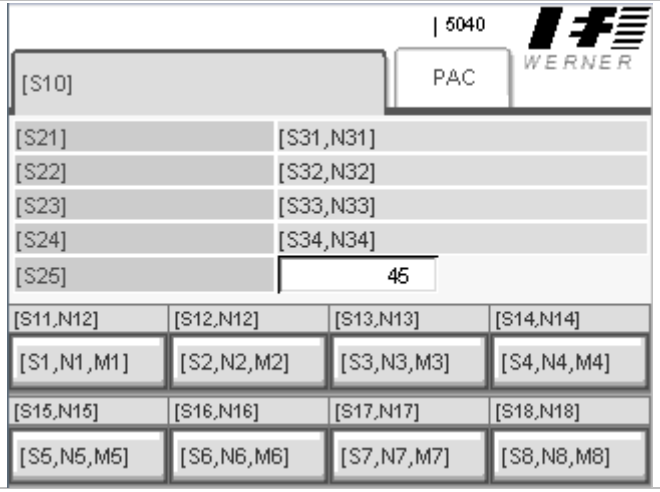
3.8 Image 5040 - 8 Buttons, 1 Input Field for N-Register

- 8 buttons
- left column 5 text lines
- right column
  - 4 text output fields
  - 1 text input field for N-Register



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3.9 Image 5050 - 8 Buttons, 1 Input Field for R-Register

- 8 buttons
- left column 5 text lines
- right column
  - 4 text output fields
  - 1 input field for R-Register

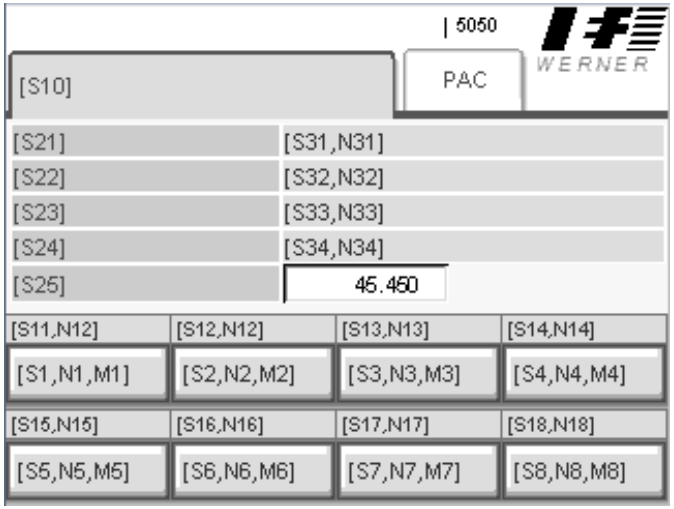


Image 5051

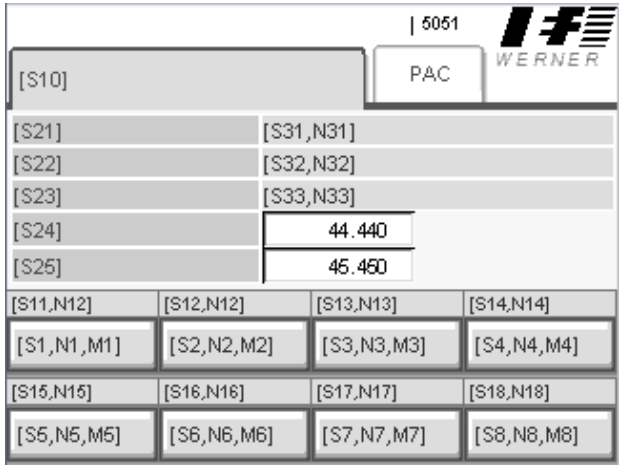
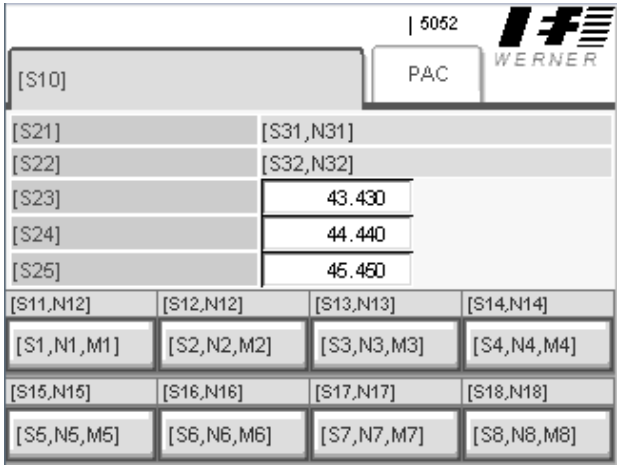


Image 5052



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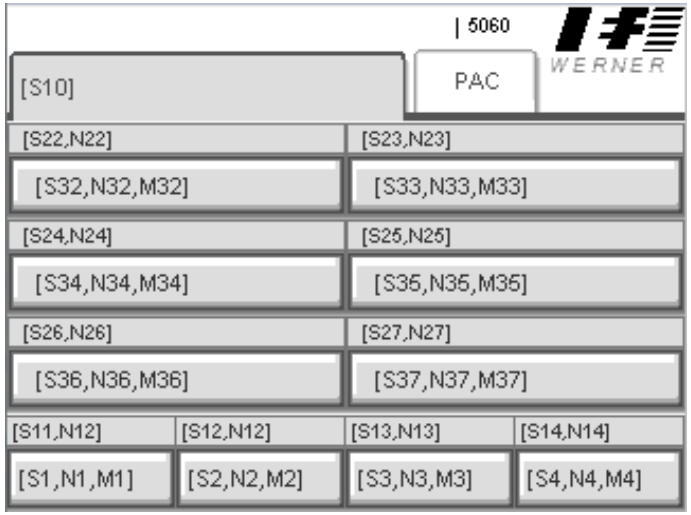
3.10 Image 5060 - 4 buttons with 6 Info Lines each with one button

- 4 buttons
  - 6 info lines
  - 6 buttons



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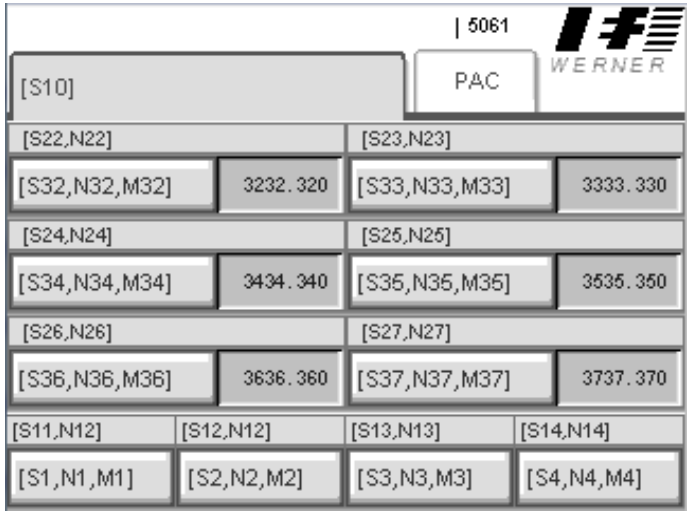
3.11 Bild 5061- 4 Buttons with 6 Info Lines each with one button and values

- 4 buttons
  - 6 info lines
  - 6 buttons with values



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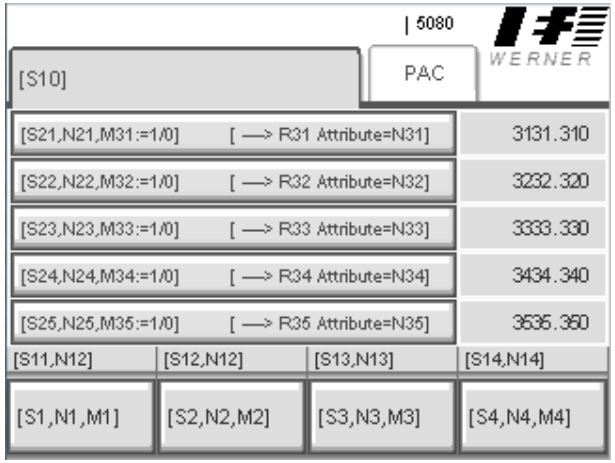
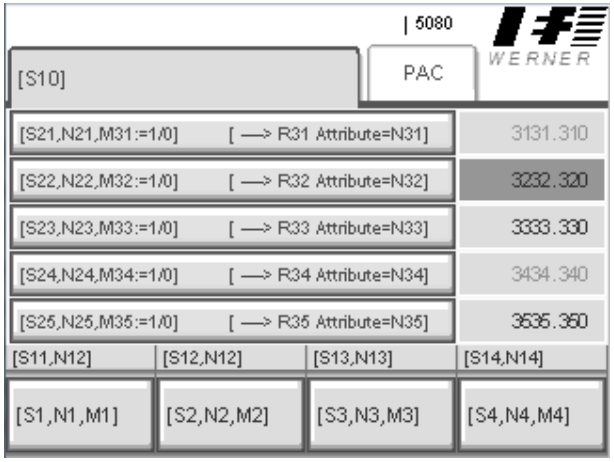
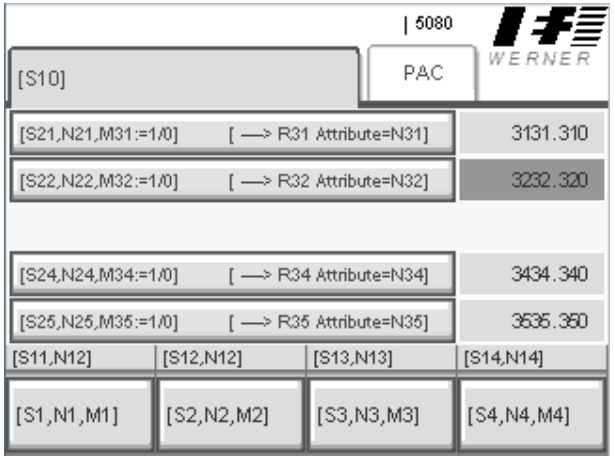
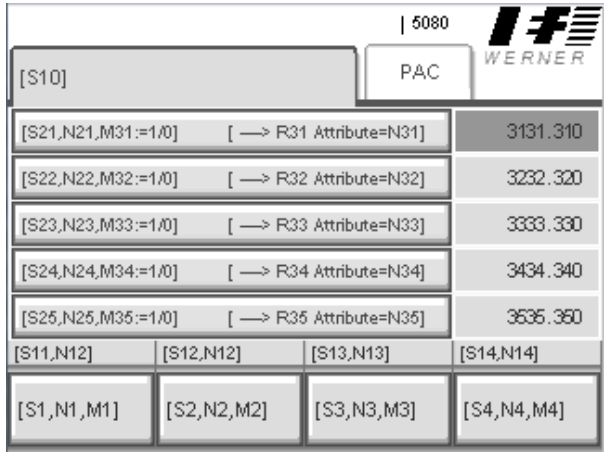
3.12 Image 5080 - 4 Buttons, 5 Selection lines with buttons and dynamic attributes

- 4 buttons
- 5 selection lines









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3.13 Image 5090 ... 5094 - 4 Buttons, 7 Info Lines with Variants of Status Display 0/1

- 4 buttons
- 7 Info lines with state of a flag

Bild 5090

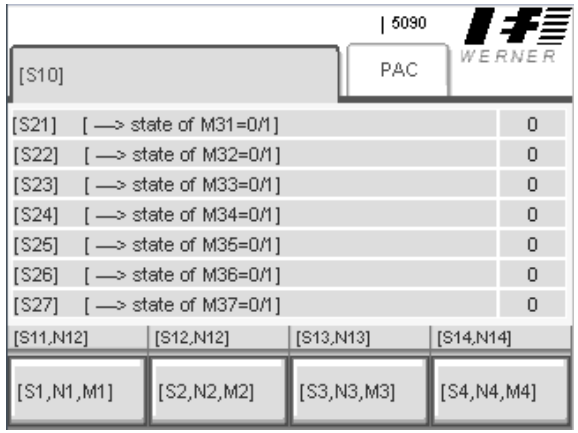


Bild 5091

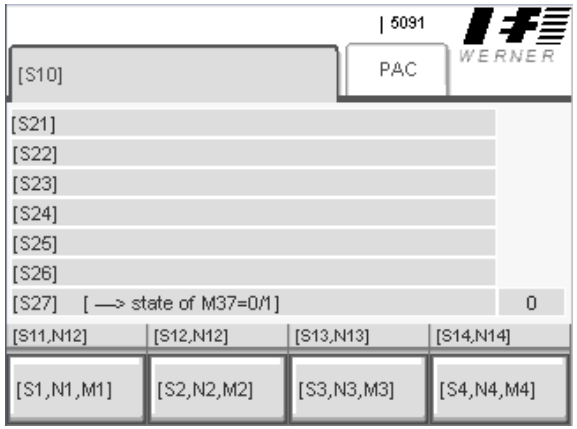


Bild 5092

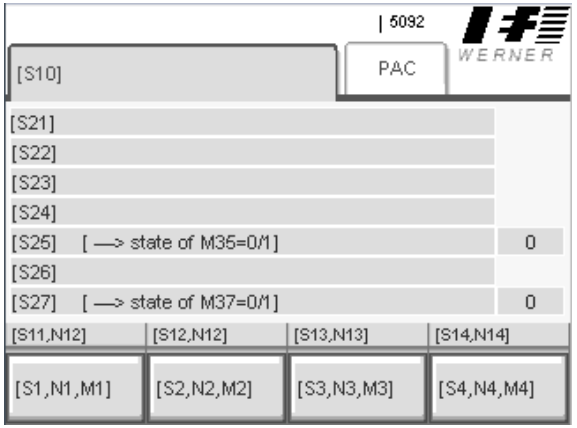


Bild 5093

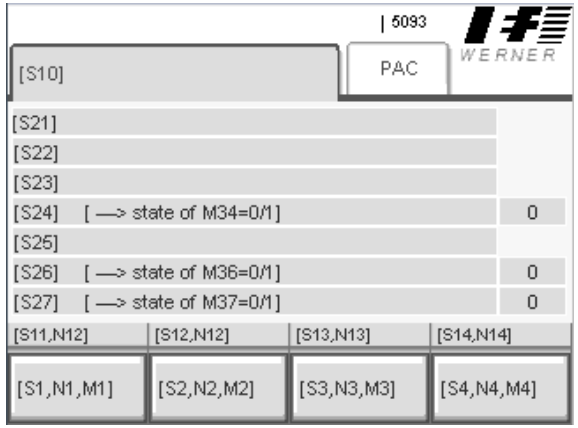
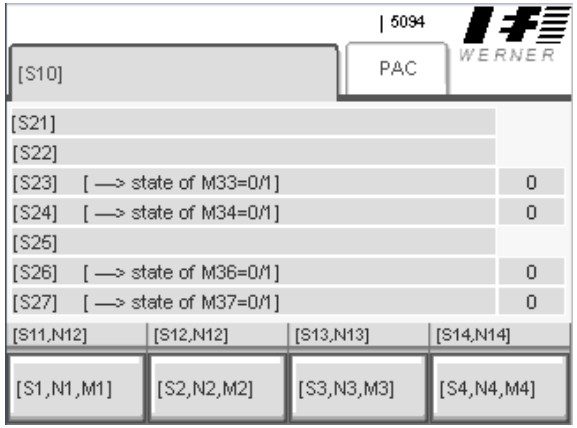


Bild 5094



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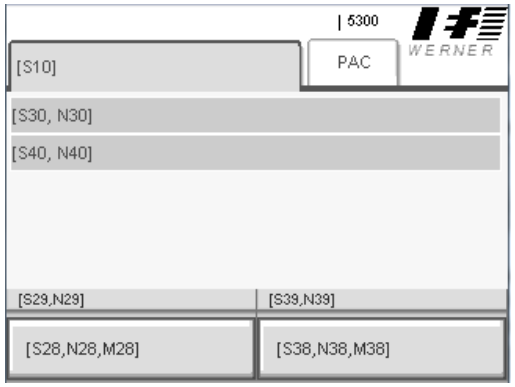
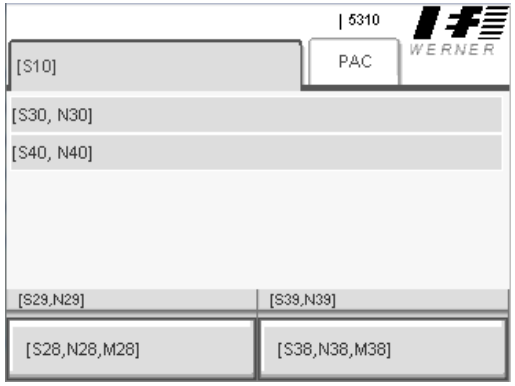
3.14 Messages

3.14.1 Image 5300 – Error Messages

Image 5300 was created for the output of error messages. Via PA-CONTROL -Strings N-Registers and flags were used for texts and buttons, which were not used in any other image of the 5000 group. Thus the image 5300 can be called up in the event of fault, without distroying the content in the current image.	

3.14.2 Image 5310 – Messages

Image 5310 was created for the output of messages. Via PA-CONTROL -Strings N-Registers and flags were used for texts and buttons, which were not used in any other image of the 5000 group. Thus the image 5310 can be called in the event of fault, without distroying the content in the current image.	

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3.15 Image 5200 - Selection of Axes for Manual, Teaching or Setting

Images 5200, 5201, 5202, 5203, 5210, 5211, 5212 and 5213 have been created for the operating modes “manual”, “teaching” or “setting” of the machine, in which the axes should be proceeded via touch of a button.

On basis of the hardware configuration only the present axes are provided. The text for labelling the controls can be extracted of the symbol file.

Image 5200, 5201, 5202 and 5203 – Selection of axes with 2 controls

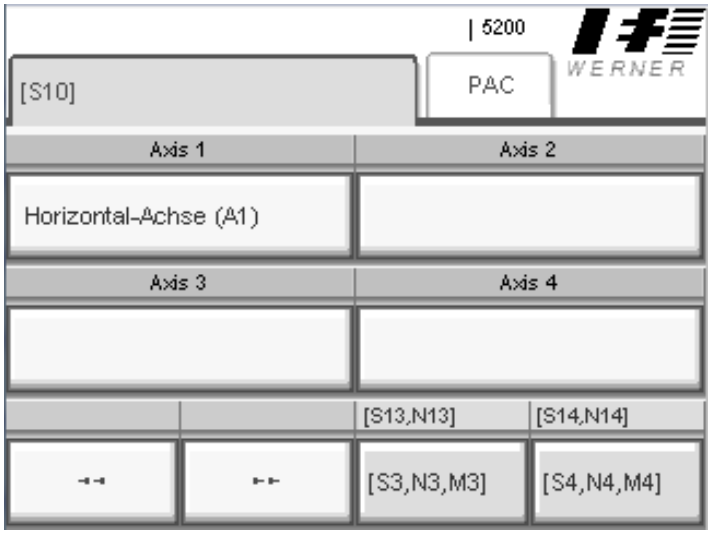
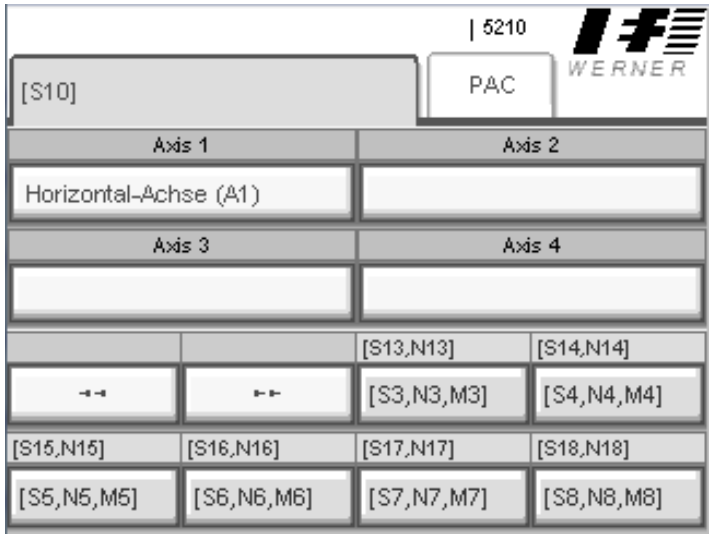


Image 5210, 5211, 5212 and 5213 – Selection of axes with 6 controls



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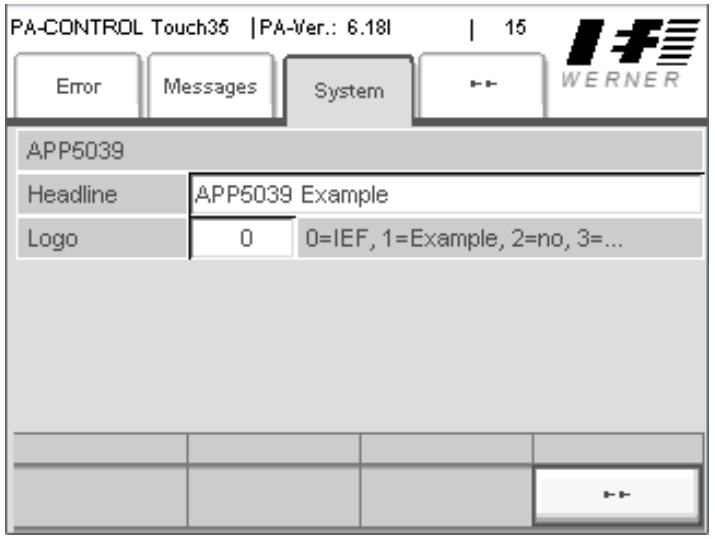
3.16 Header line and Logo

In the “System” tab, the text for the header line can be entered for the images in the 5000 group (Admin password necessary).

Logo can be chosen.



Possible Logos:

Logo: IEF

Logo: Sample

Logo: None

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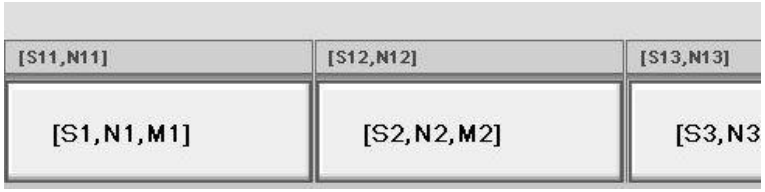
4 Standard images PA-CONTROL Touch70

4.1 Text output, Buttons and Input Fields

4.1.1 Texts in the text output fields and the buttons

The texts in the text output fields, buttons and labels are prescribed via PA-CONTROL-Strings.

Image	PA-CONTROL Element	Example program line
	[S10] : PAC-String 10 [S21] : PAC-String 21 [S31] : PAC-String 31	S10:="S[10]" S21:="[S21]" S31:="[S31,N31]
	[S11,N11] : PAC-String 11 [S12,N12] : PAC-String 12 [S13,N13] : PAC-String 13	S11:="[S11,N11]" S12:="[S12,N13]" S13:="[S13,N13]"

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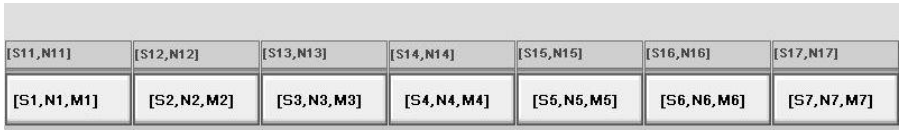
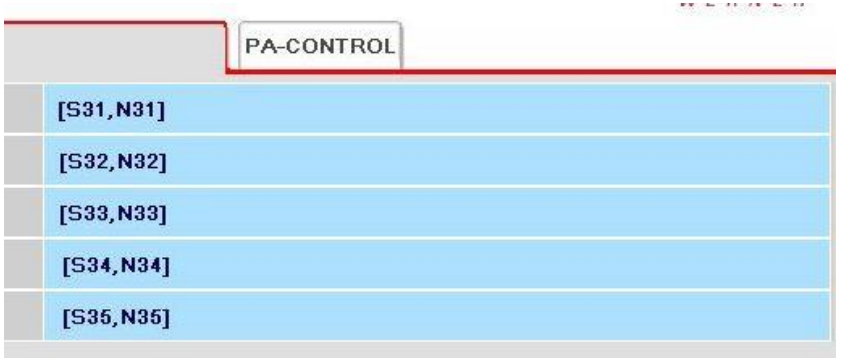
4.1.2 Colour display of Texts and Buttons

The type of representation and the behaviour of output fields and buttons can be adjusted via “dynamic attributes”. For this purpose the corresponding output fields and buttons have been assigned an N-Register.



N1 : dynamic attribute control 1
N2: dynamic attribute control 2
N3: dynamic attribute control 3
N4: dynamic attribute control 4
N5: dynamic attribute control 5
N6: dynamic attribute control 6
N7: dynamic attribute control 7

N11: dynamic attribute text about control 1
N12: dynamic attribute text about control 2
N13: dynamic attribute text about control 3
N14: dynamic attribute text about control 4
N15: dynamic attribute text about control 5
N16: dynamic attribute text about control 6
N17: dynamic attribute text about control 7



N31 : dynamic attribute text output right column, line 1
N32 : dynamic attribute text output right column, line 2
N33 : dynamic attribute text output right column, line 3
N34 : dynamic attribute text output right column, line 4
N35 : dynamic attribute text output right column, line 5

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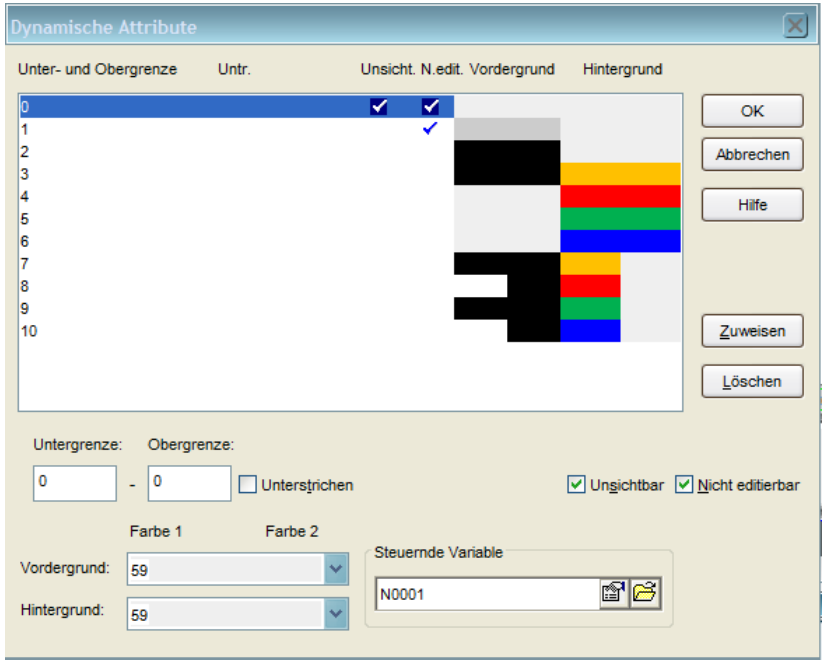
The dynamic attribute is adjusted when creating the text fields or controls in TSwin. It is adjusted equal for all buttons and output fields.



Value N-Register	Behavior	Colour foreground	Colour background
0	invisiable		
1	not editable button has no function	grey	white
2	editable, button has function	black	white
3		black	yellow
4		white	red
5		white	green
6		white	blue
7		black	yellow white blinking
8		white black blinking	red white blinking
9		black	green white blinking
10		white black blinking	blue whihe blinking

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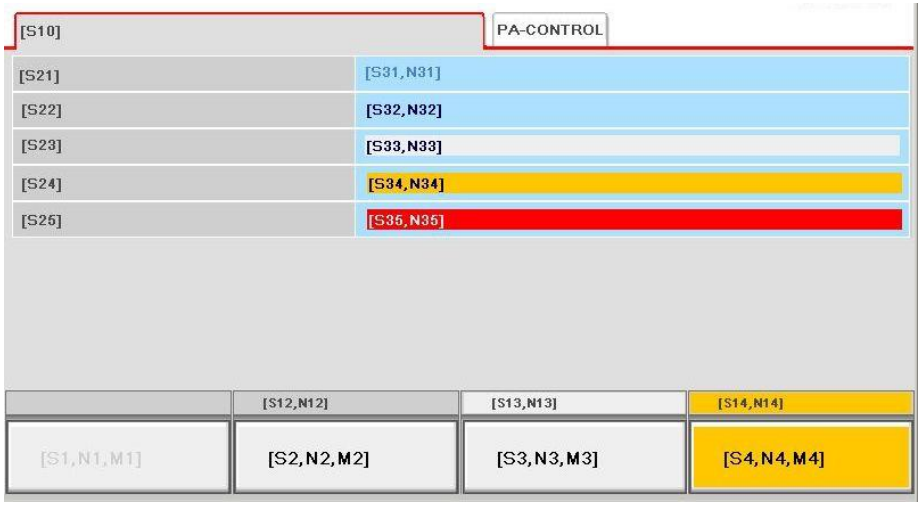
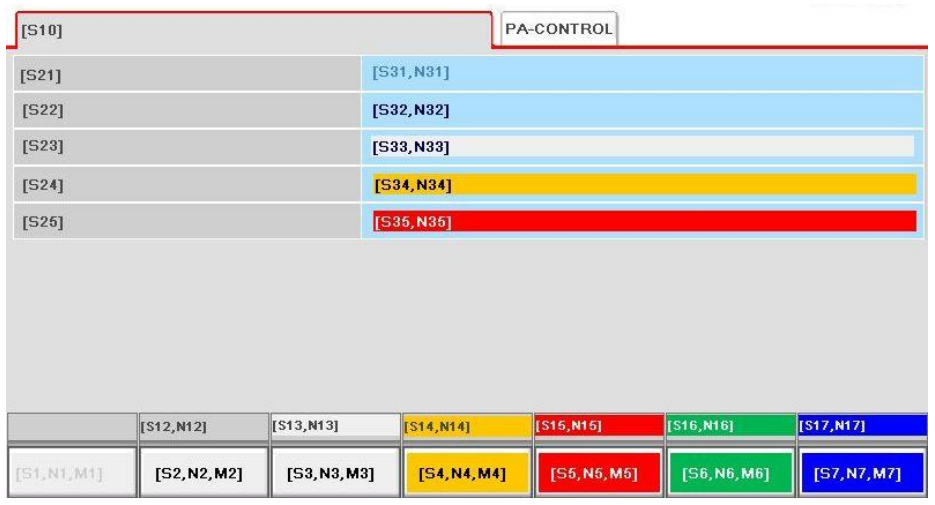
Examples:





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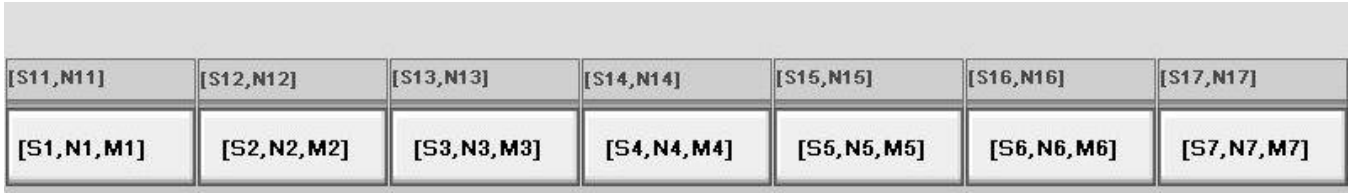
4.1.3 Function of buttons

Function of button	
Button is pressed	Flag is set
Button is released	Flag is reseted



Assignment of buttons and flags	
Buttons	Flags in PA-CONTROL
1 [S1,N1,M1]	M1
2 [S2,N2,M2]	M2
3 [S3,N3,M3]	M3
4 [S4,N4,M4]	M4
5 [S5,N5,M5]	M5
6 [S6,N6,M6]	M6
7 [S7,N7,M7]	M7

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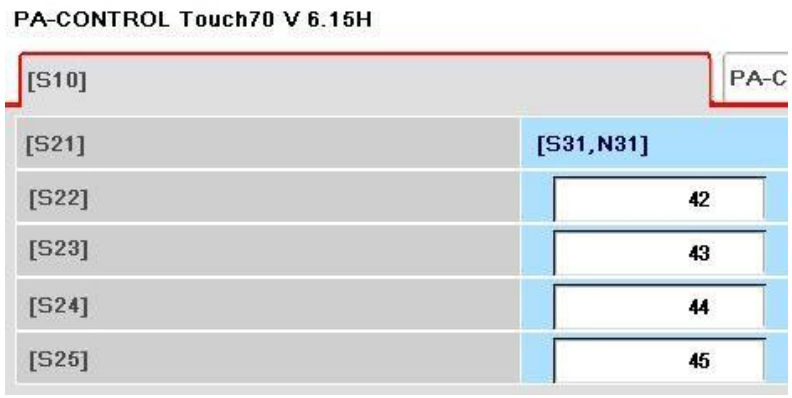
4.1.4 Input fields for N-Register

For N-Registers there are input fields in the images 5010 and 5040.



Input field for N-Register	Lower limit for monitoring of the input	Upper limit for monitoring of the input	Input field invisible / visible 0: invisible 1: visible
N42	N52	N62	M42
N43	N53	N63	M43
N44	N54	N64	M44
N45	N55	N65	M45

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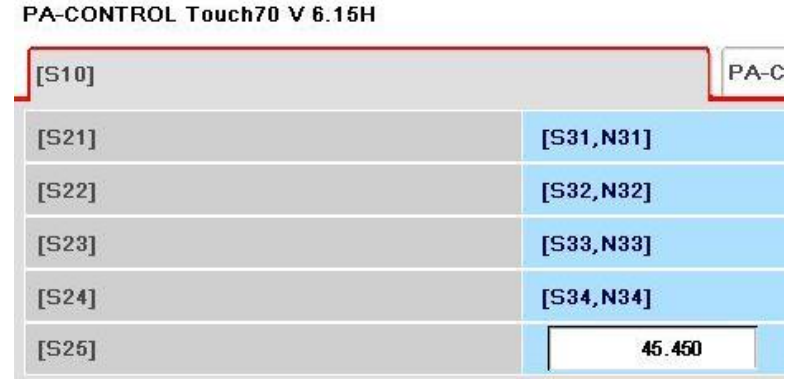
4.1.5 Input fields for R-Register

For R-Registers there are input fields in the images 5020 and 5050.



Input field for R-Register	Lower limit for monitoring of the input	Upper limit for monitoring of the input	Input field invisible / visible 0: invisible 1: visible
R42	R52	R62	M42
R43	R53	R63	M43
R44	R54	r64	M44
R45	R55	R65	M55

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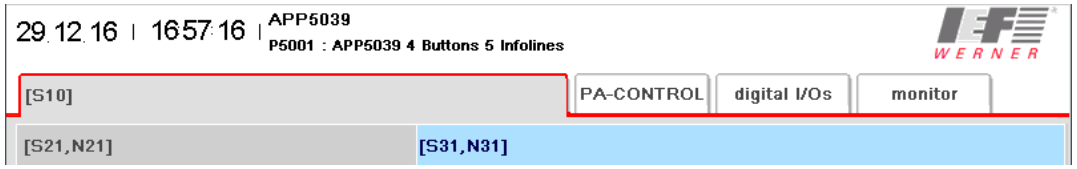
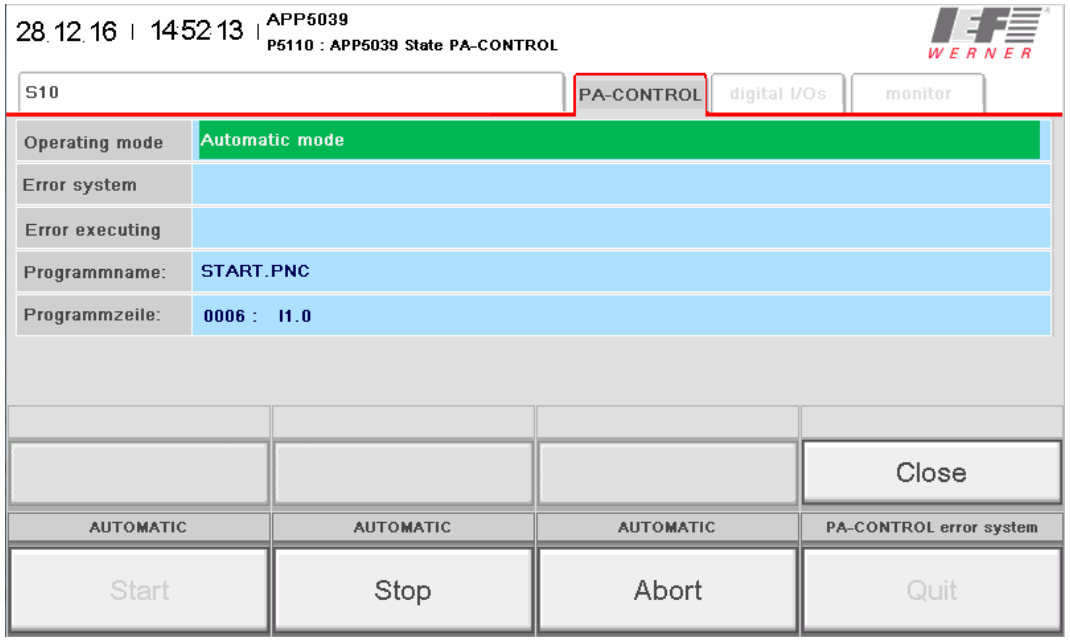
4.2 The Button PA-CONTROL (Image 5110)

The button PA-CONTROL enables the user to switch to the image of the operating system.



In this image the user operates in the operating type AUTOMATIK of PA-CONTROL (to stop, to terminate, ...)

Via the button "[S10]" can be switched back to the previous image.



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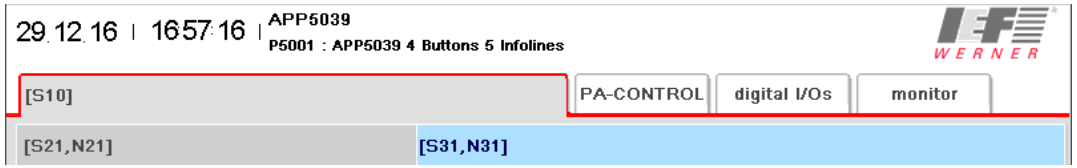
4.3 Button of the digital I/Os (Image 5111)

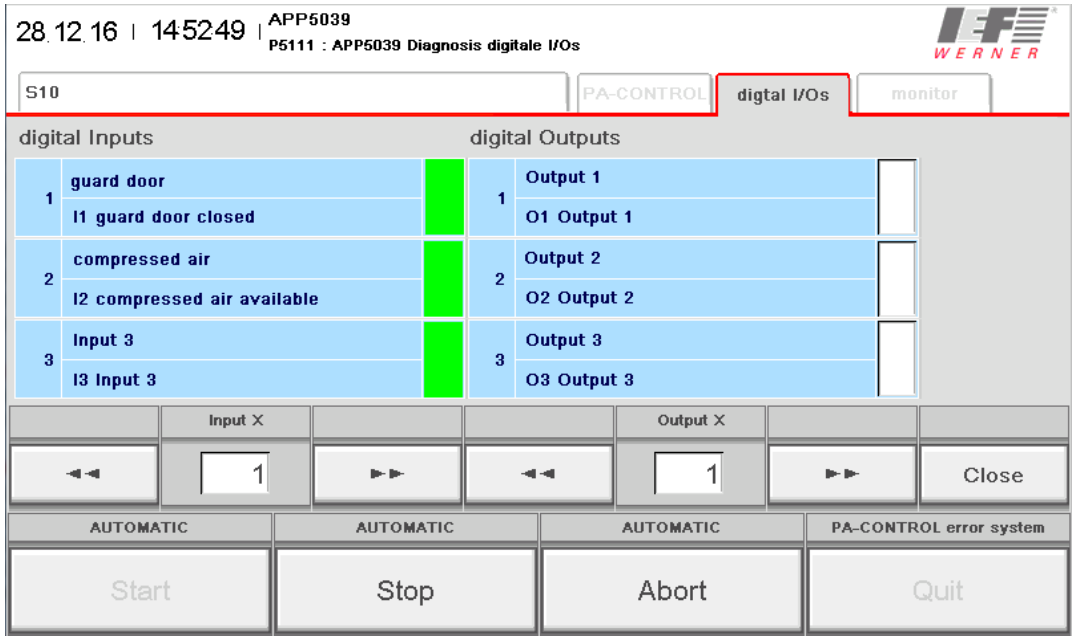
The button PA-CONTROL enables the user to switch to the image of the operating system.



At this image the user is able to diagnose the digital inputs and outputs of PA-CONTROL in the operating mode AUTOMATIC of PA-CONTROL.

The selection of the image requires the “Admin-Password”.

Via the button “[10] “or via the button “terminate" can be switched back to the previous image.



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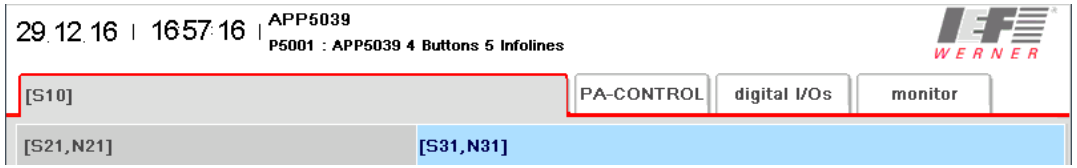
4.4 The Button Display (Image 5112)

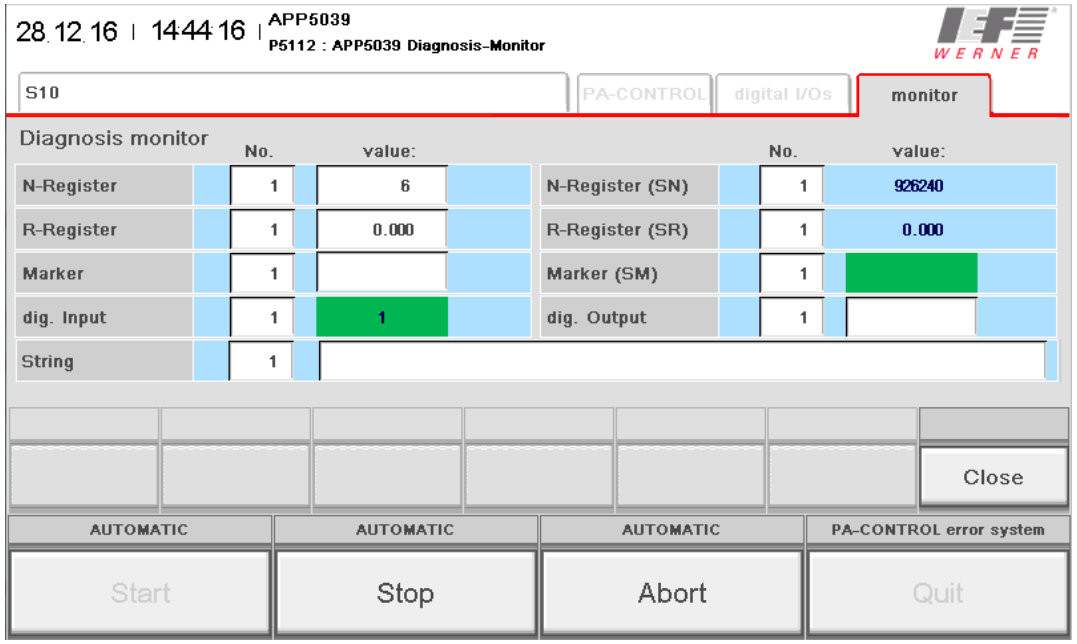
The button PA-CONTROL enables the user to switch to the image of the operating system.



In this image the user is able to diagnose many elements (N-Register, R-Register, flags, ...) of PA-CONTROL in the operating mode AUTOMATIC and change the value, if necessary.

The selection of this image requires the “Admin-Password”.

Via the button “[10] “or via the button “terminate" can be switched back to the previous image.



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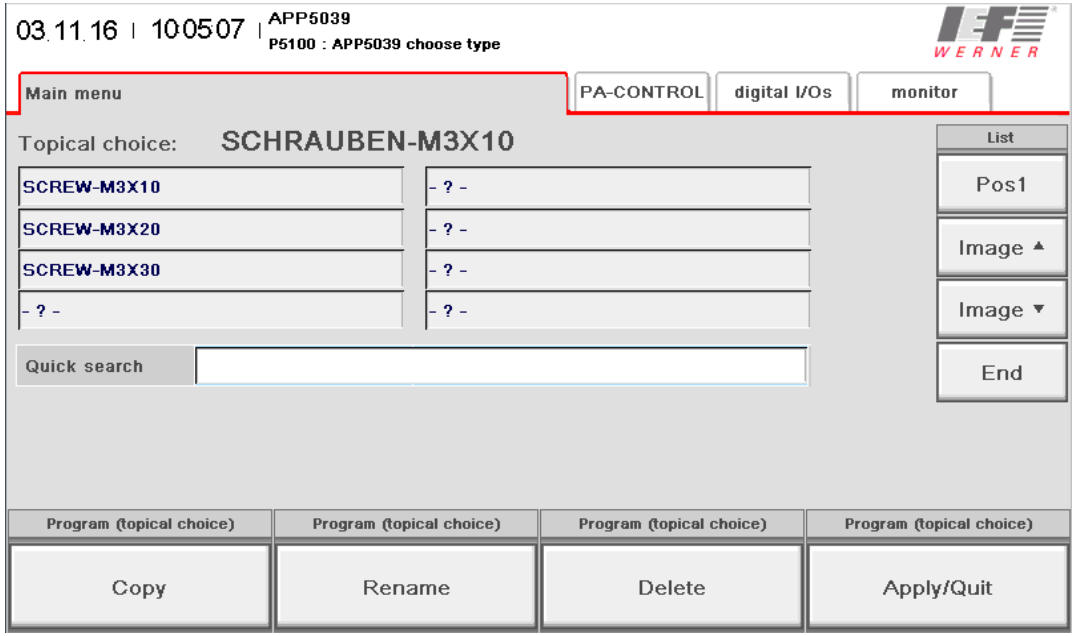
4.5 Product Management - Image 5100

If several products are to be processed in the application, can this be realised via image 5100.
You can find more information in the manual "MAN_EN_1109387_PA-CONTROL_Touch.pdf"

NOTE: Image 5100 uses for the “Current Selection“the PA-CONTROL String "S20".



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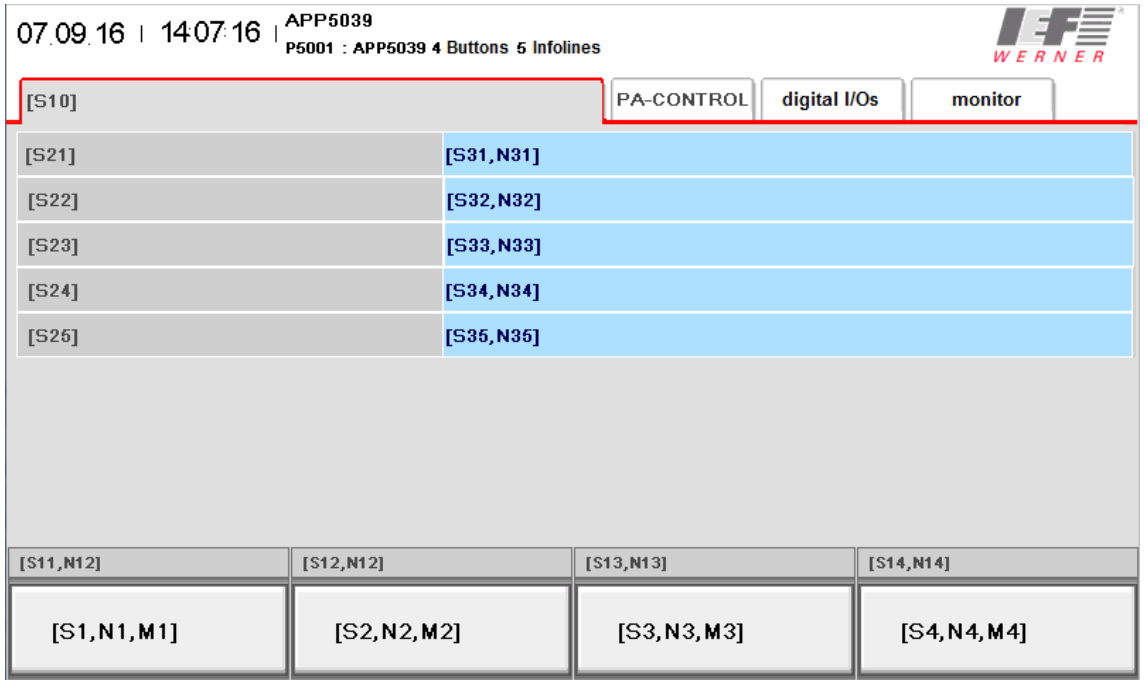
4.6 Image 5001 - 4 Buttons, 5 Info lines

- 4 buttons
- 5 text lines with left and right column



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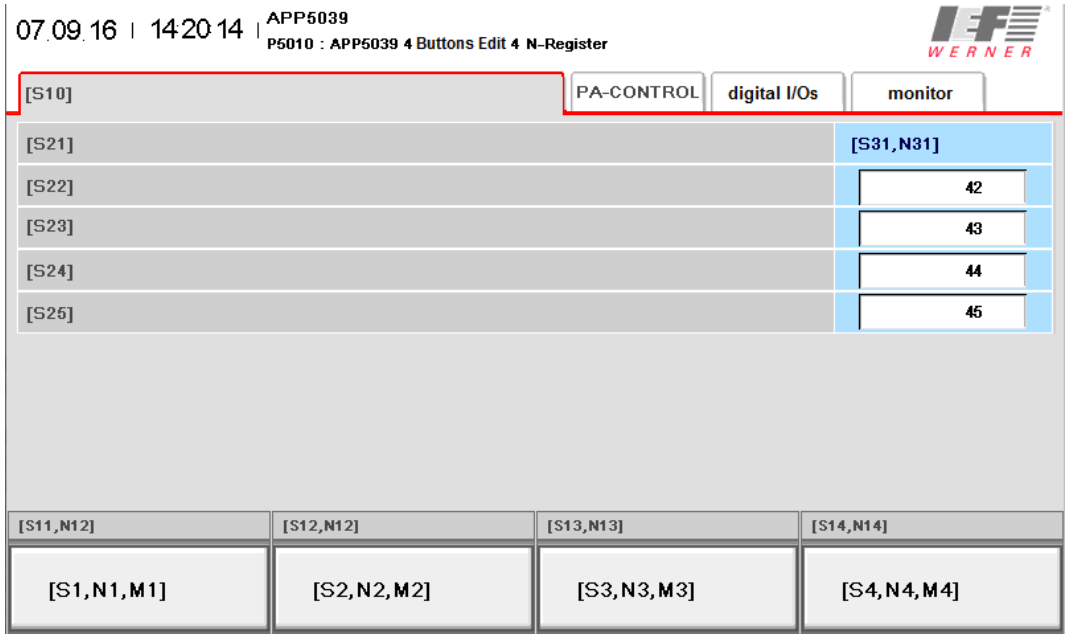
4.7 Image 5010 - 4 Buttons, 4 Input Fields for N-Registers

- 4 buttons
- left column 5 text lines
- right column
  - 1 text output field
  - 4 text input fields for N-Register



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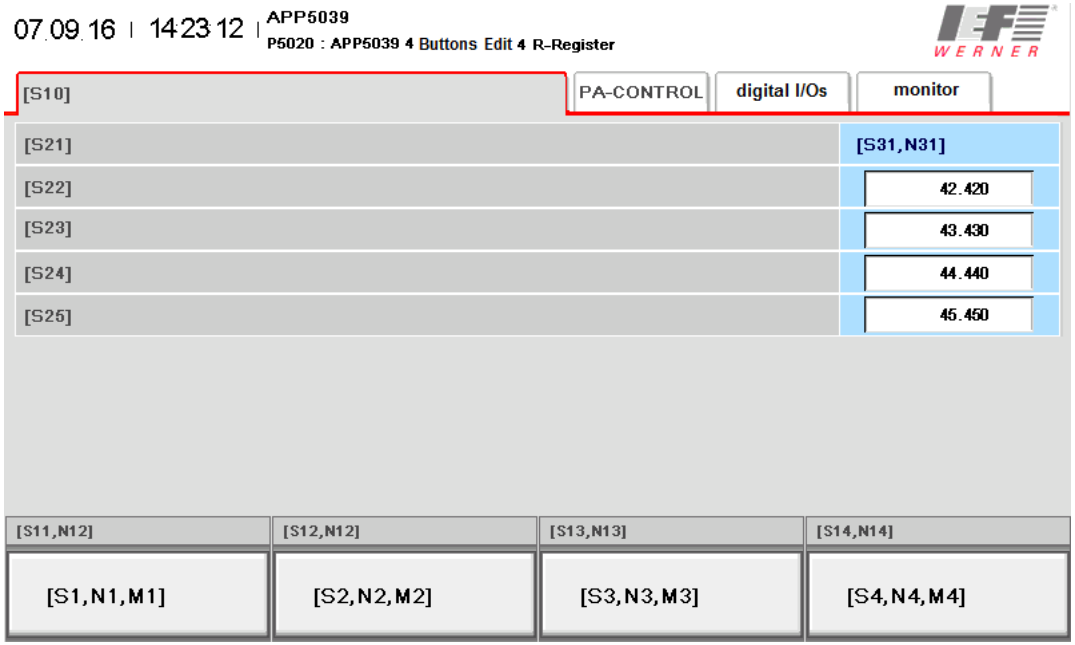
4.8 Image 5020 - 4 Buttons, 4 Input Fields for R-Registers

- 4 buttons
- left column 5 text lines
- right column
  - 1 text output field
  - 4 text input fields for R-Register



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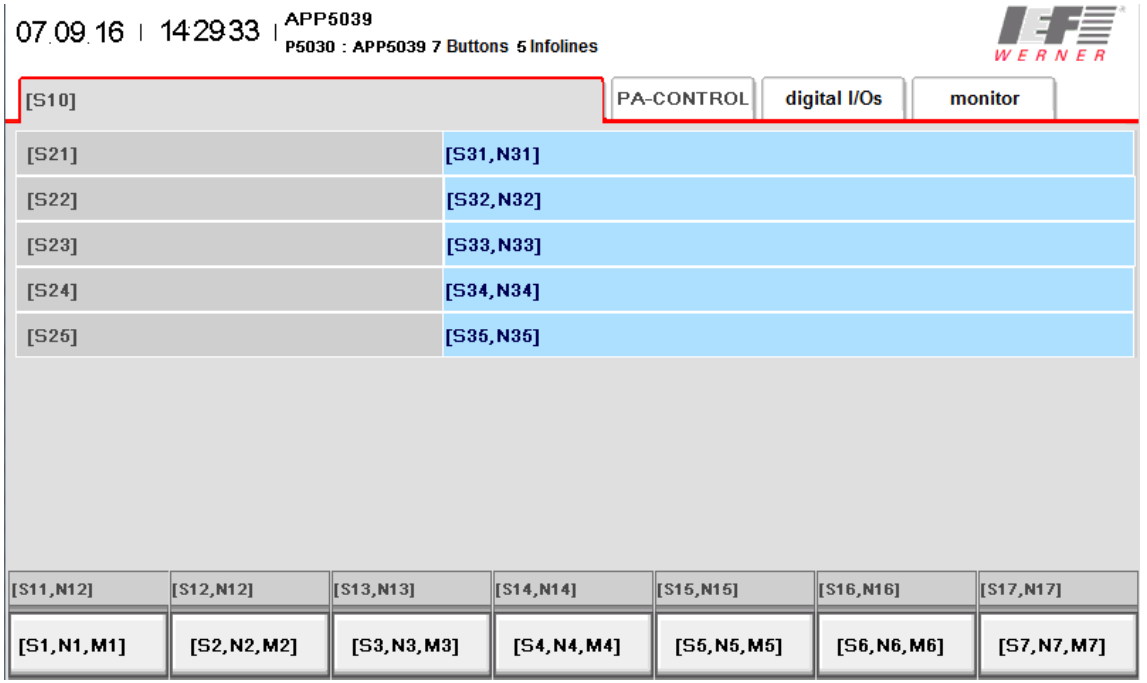
4.9 Image 5030 - 7 Buttons, 5 Info Lines

- 7 buttons
- 5 text lines with left and right column



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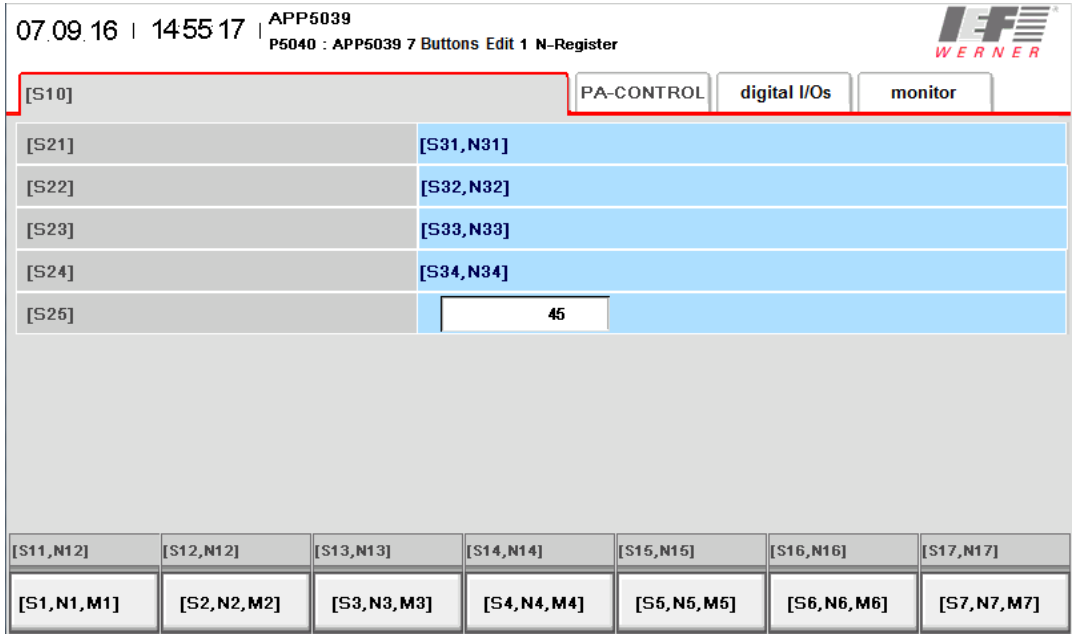
4.10 Image 5040 - 7 buttons, 1 Input Field for N-Registers

- 7 buttons
- left column 5 text lines
- right column
  - 4 text output fields
  - 1 text input field for N-Register



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4.11 Image 5050 - 7 Controls, 1 Input Field for R-Register

- 7 buttons
- left column 5 text lines
- right column
  - 4 text output fields
  - 1 text input field for R-Register

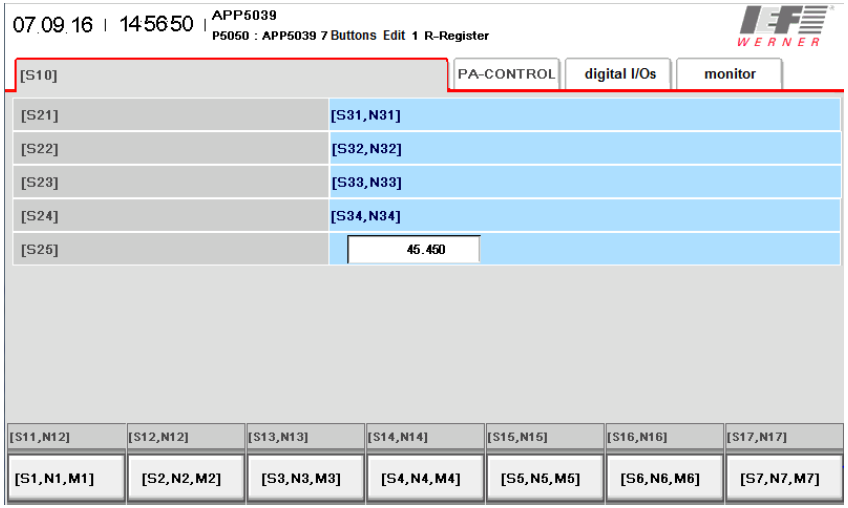


Image 5051

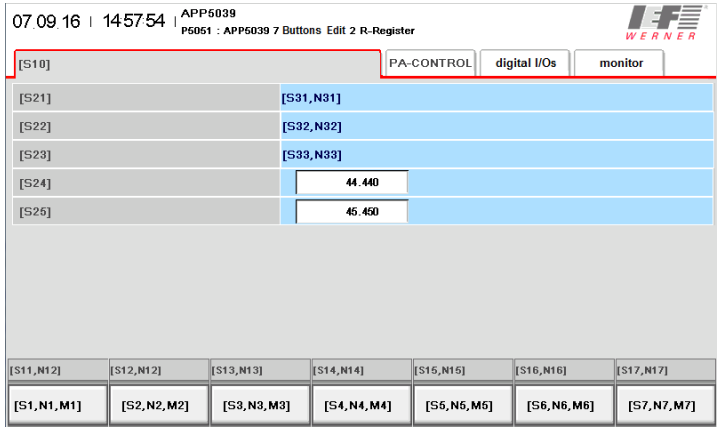
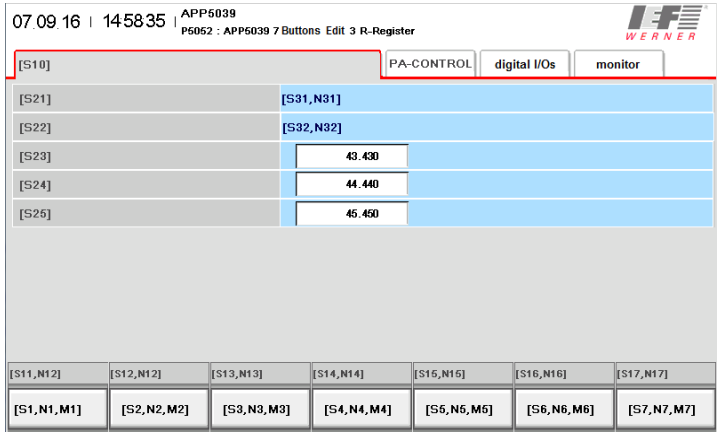


Image 5052



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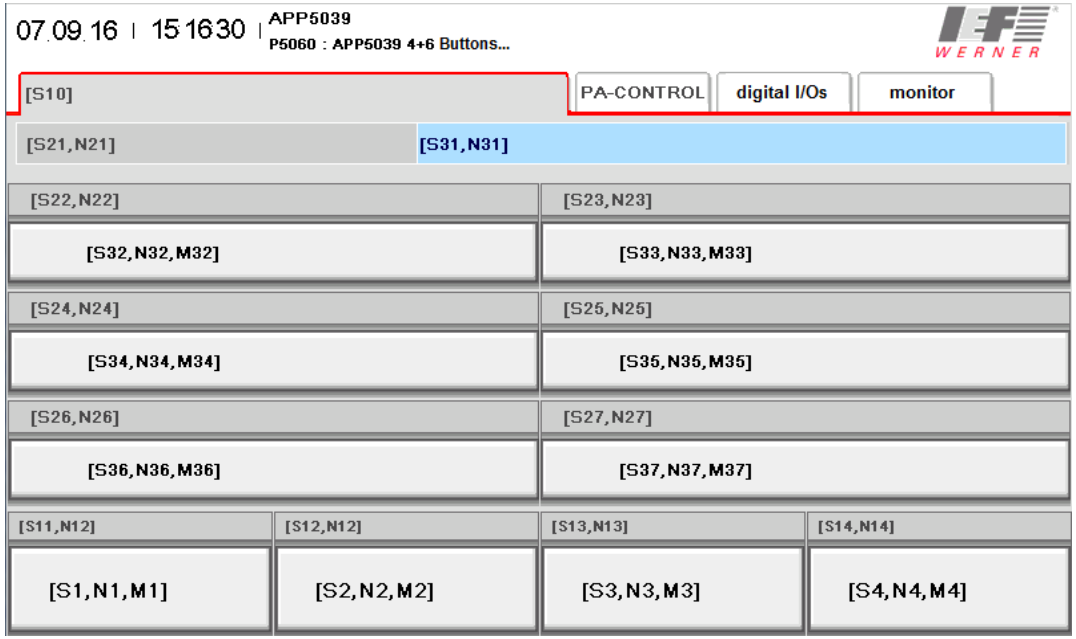
4.12 Image 5060 - 4 Buttons, 1 Info Line, 6 Buttons

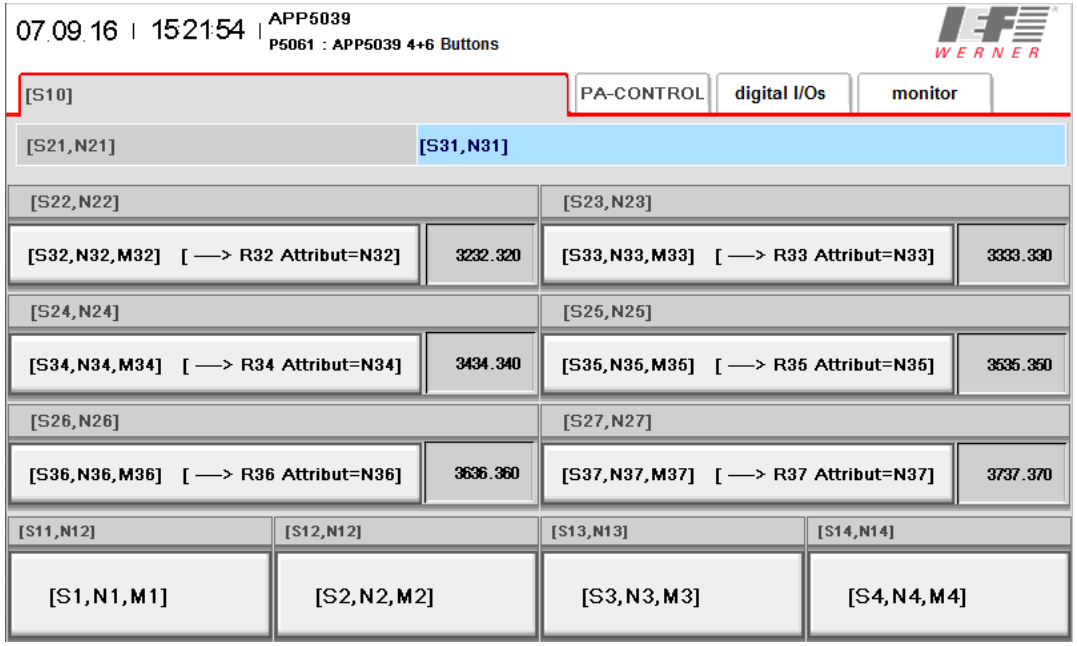
- 4 buttons
- One text line with right and left column
- 6 buttons



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.13 Image 5061 - 4 Buttons, 1 Info Line, 6 Buttons with values

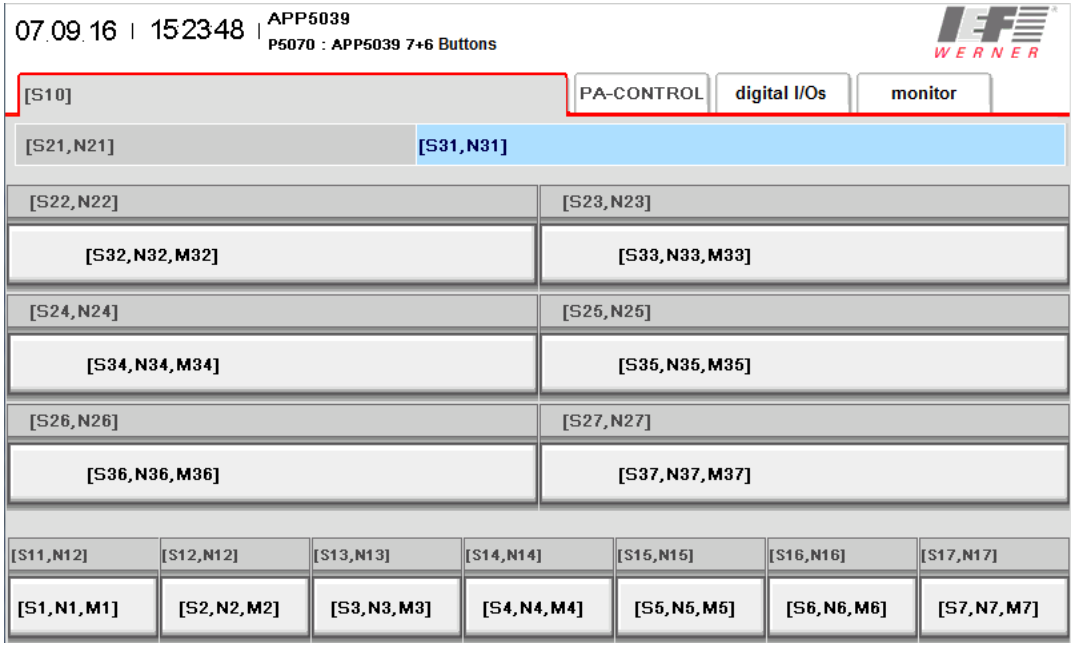
- 4 buttons
- One text line with right and left column
- 6 buttons with values



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.14 Image 5070 - 7 Buttons, 1 Info Line, 6 Buttons

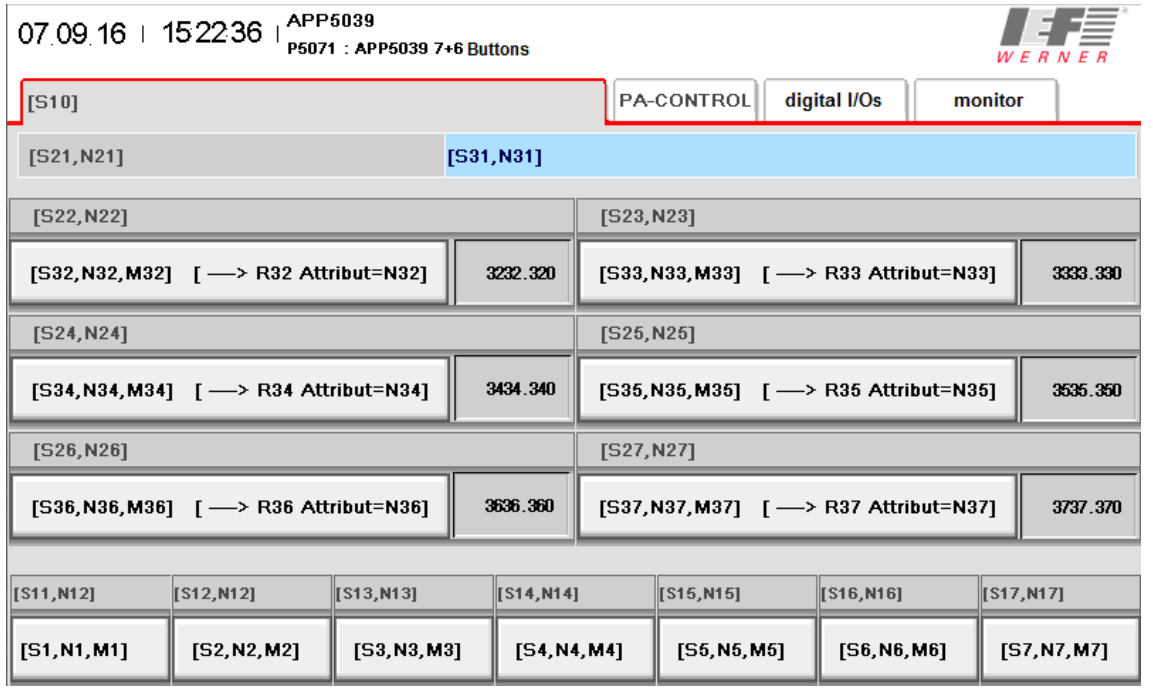
- 7 buttons
- One text line with right and left column
- 6 buttons



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.15 Image 5071 - 7 Buttons, 1 Info Line, 6 Buttons with Values

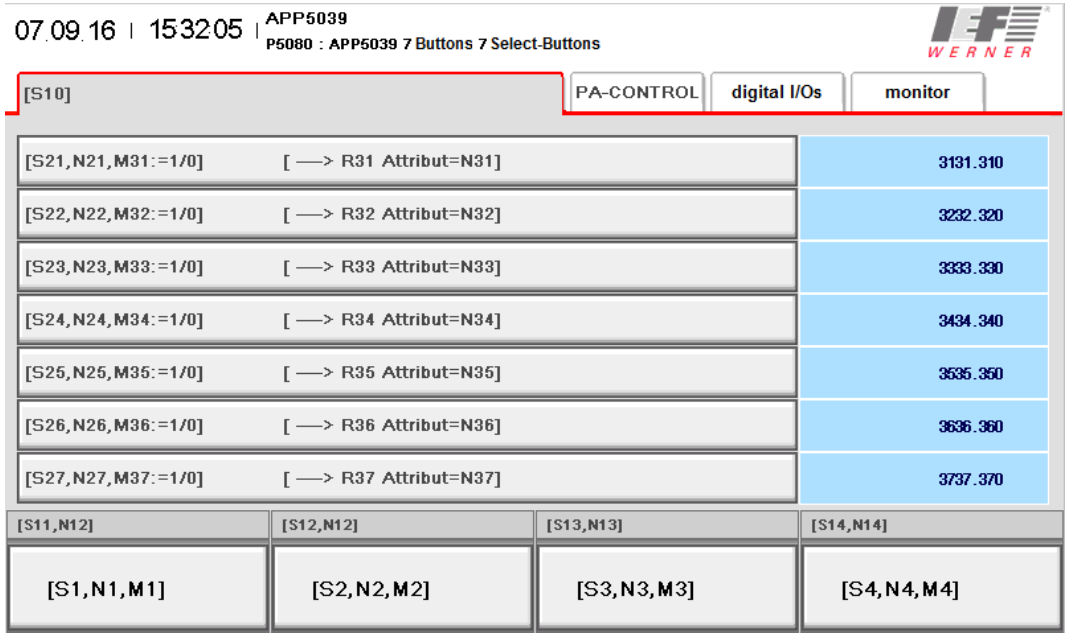
- 7 buttons
- One text line with right and left column
- 6 buttons with values

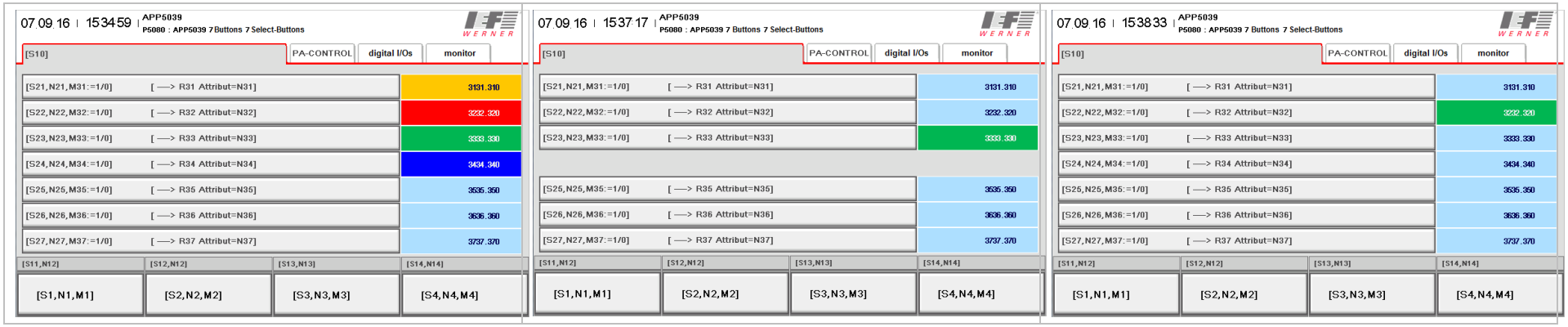


Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.16 Image 5080 - 4 Buttons, 7 Options with Buttons and dynamic Attributes

- 4 buttons
- 7 options

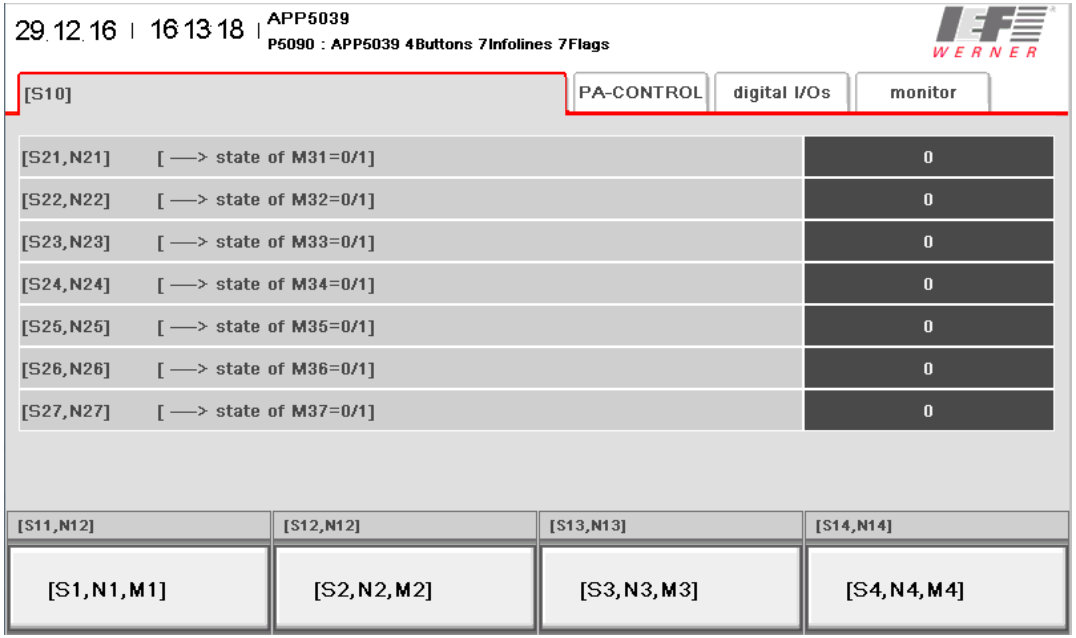




Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.17 Image 5090 - 4 Buttons, 7 Info Lines with Status Display 0/1

- 4 buttons
- 7 info lines with status display 0/1



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

4.18 Image 5091 ... 5096 - 4 Buttons, 7 Info Lines with variants of Status Display 0/1

Bild 5091

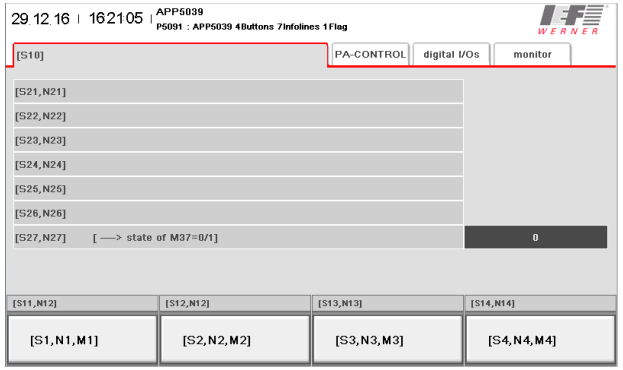


Bild 5092

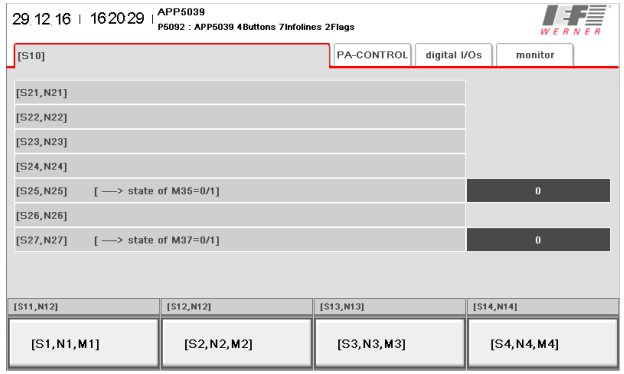


Bild 5093

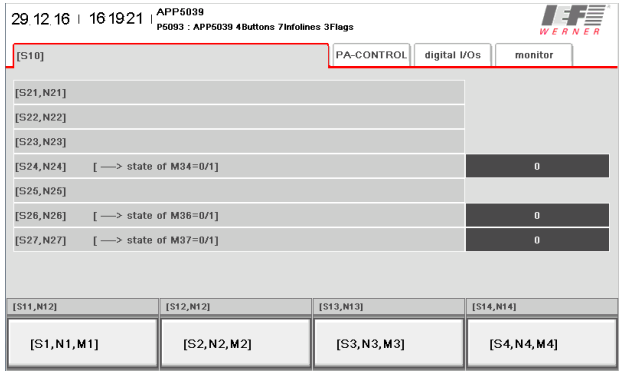


Bild 5094

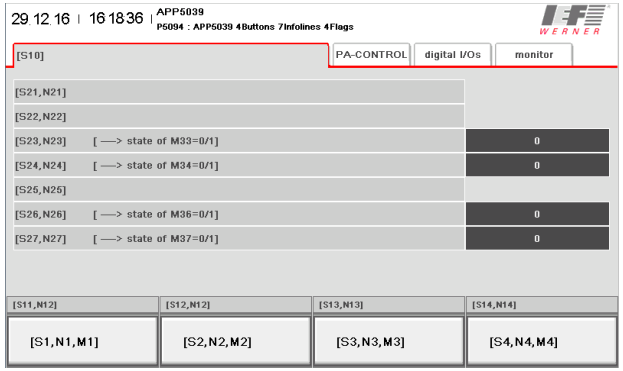


Bild 5095

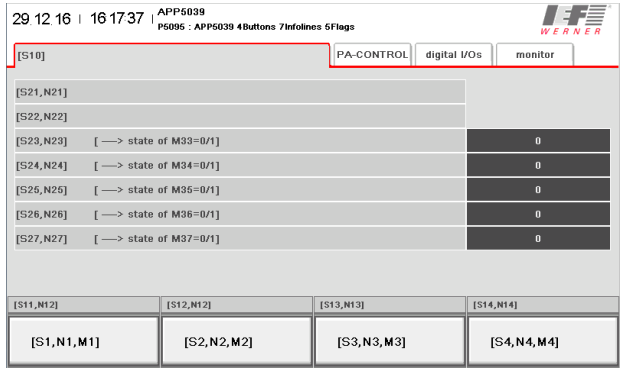
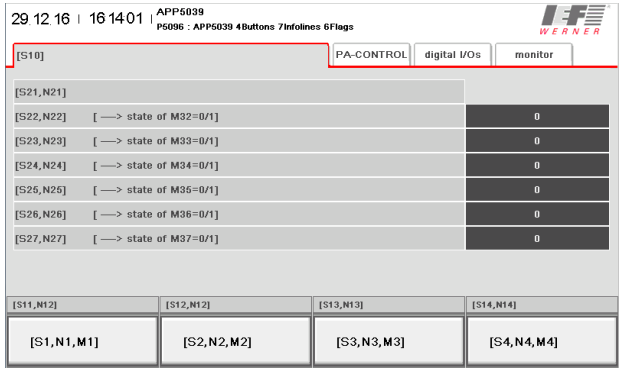


Bild 5096



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4.19 Messages

4.19.1 Image 5300 – Error Messages

Image 5300 was created for the output of error messages.

Via PA-CONTROL -Strings N-Registers and flags were used for texts and buttons, which were not used in any other image of the 5000 group.

Thus the image 5300 can be called in the event of fault, without the content in the current image will be destroyed.

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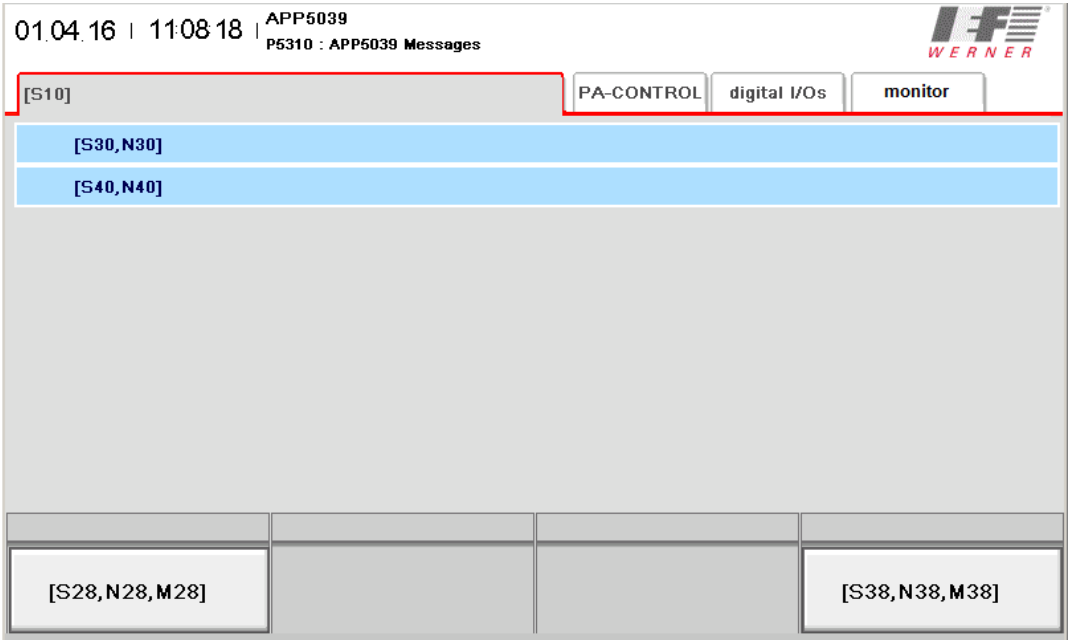
4.19.2 Image 5310 - Messages

Image 5310 was created for the output of messages.

Via PA-CONTROL -Strings N-Registers and flags were used for texts and buttons, which were not used in any other image of the 5000 group.

Thus the image 5310 can be called in the event of fault, without the content in the current image.



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4.20 Image 5200 - Selection of Axes for manual, teaching or Setting

Images 5200, 5201, 5210 and 5211have been created for the operating modes “manual”, “teaching” or “setting” of the machine, in which the axes should be proceeded via touch of a button.

On basis of the hardware configuration only the present axes are provided. The text for labelling the controls can be extracted of the symbol file.

Image 5200 and 5201 – Selection of axes with 2 buttons

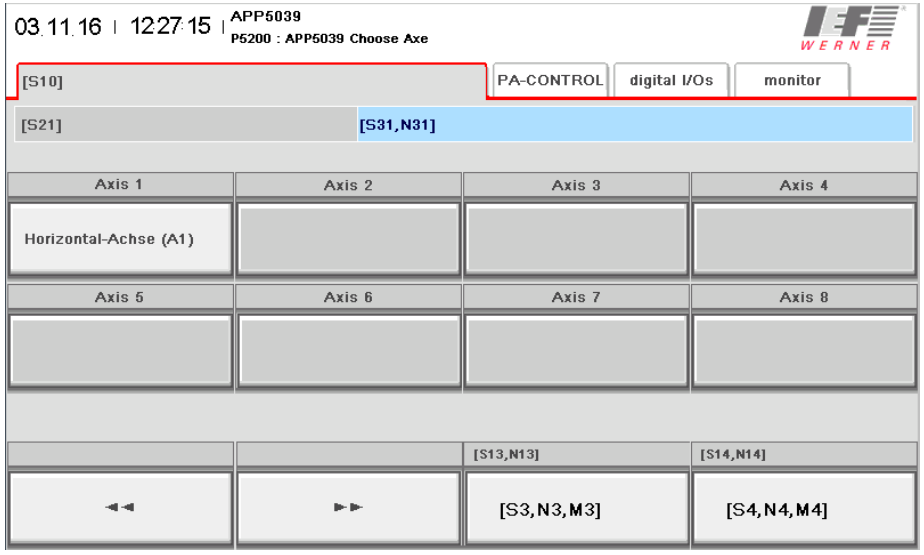
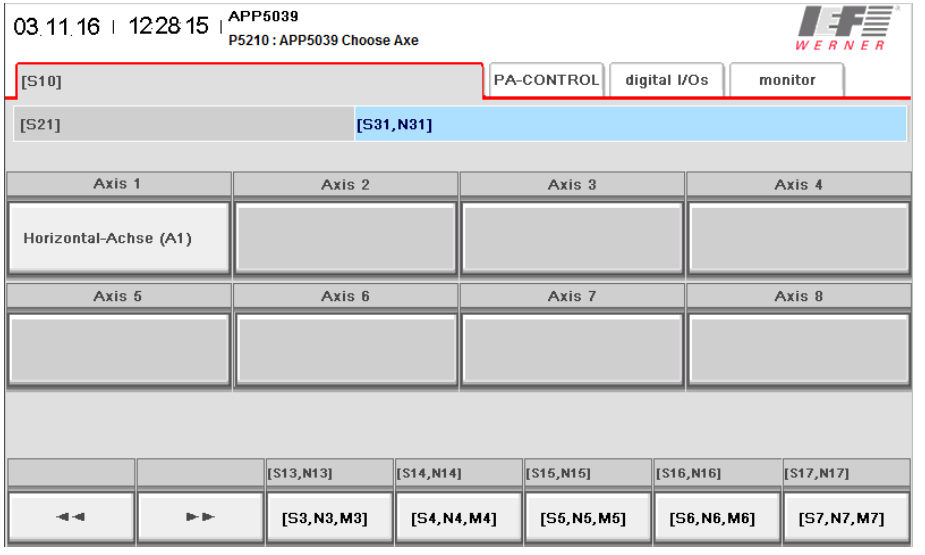


Image 5210 and 5211 – Selection of axes with 5 buttons



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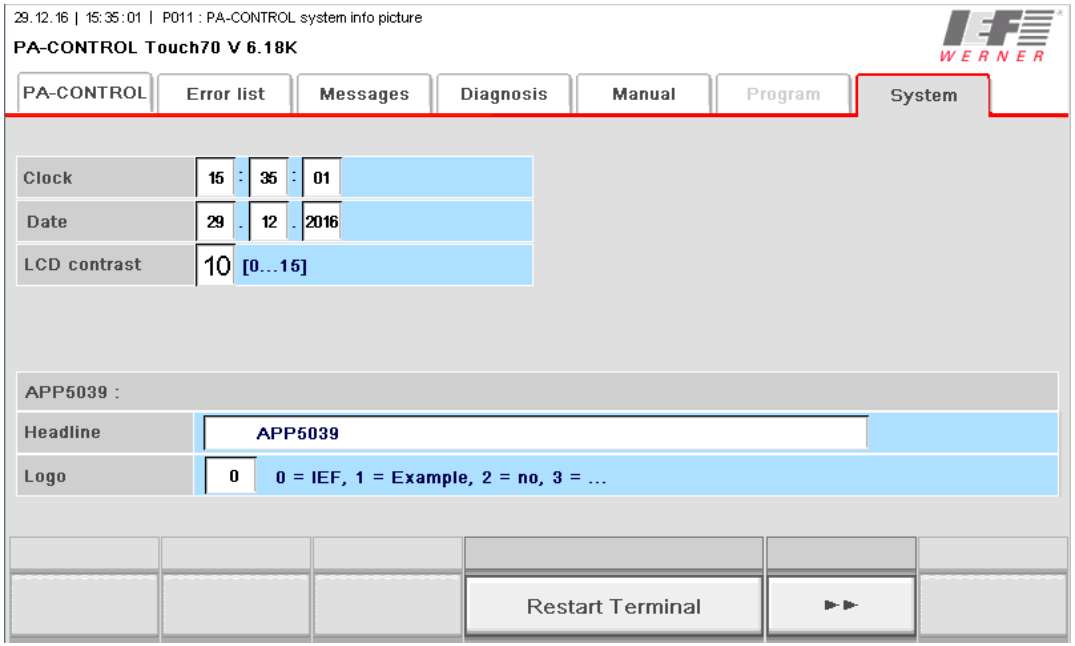
4.21 Header line and Logo

In the “System” tab, the text for the header can be entered for the images in the 5000 group
(Admin password necessary).

Logo can be chosen.



Possible Logos:

Logo: IEF

Logo: Sample

Logo: None

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5 Standard Images PA-CONTROL Touch105

The images of PA-CONTROL Touch105 are the same as PA-CONTROL Touch70. The only difference is in the “greater space” between text lines and controls.

Image 5001: PA-CONTROL Touch70

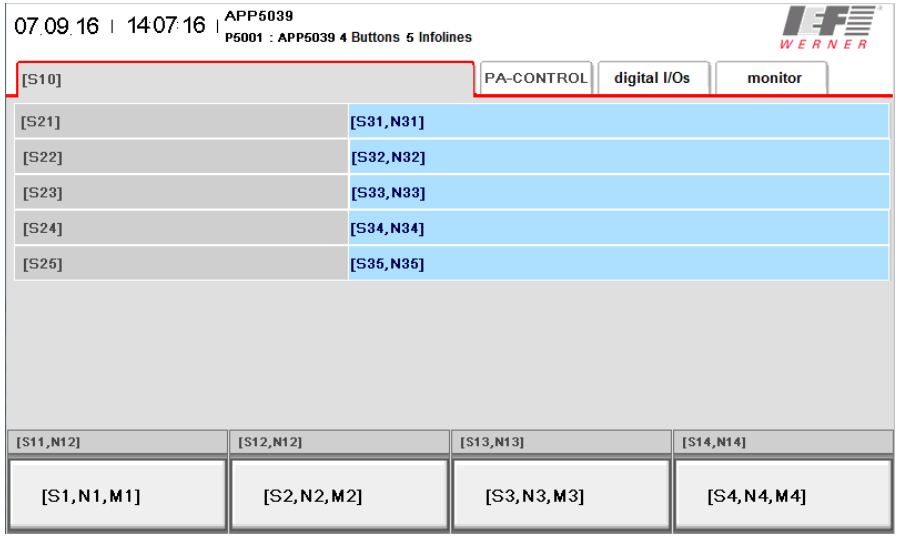
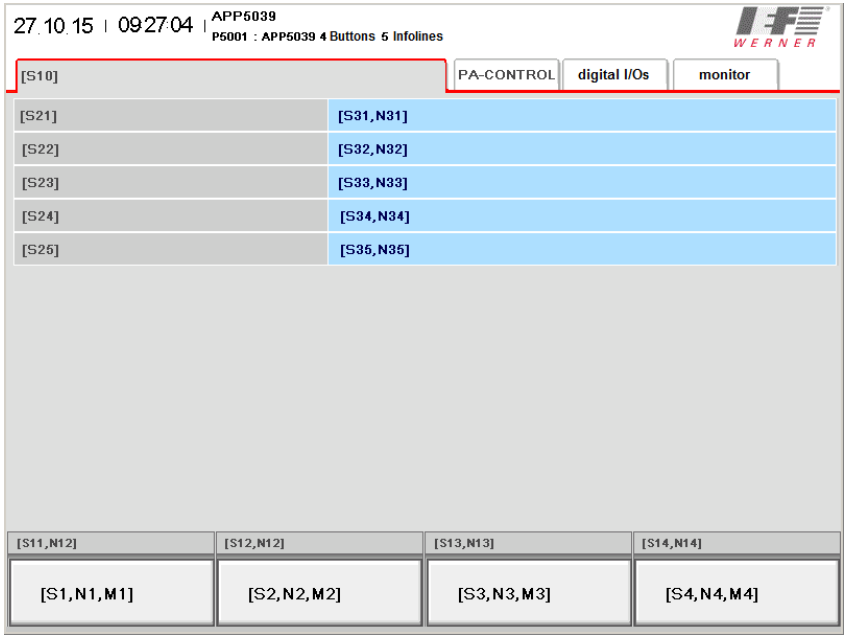


Image 5001: PA-CONTROL Touch105

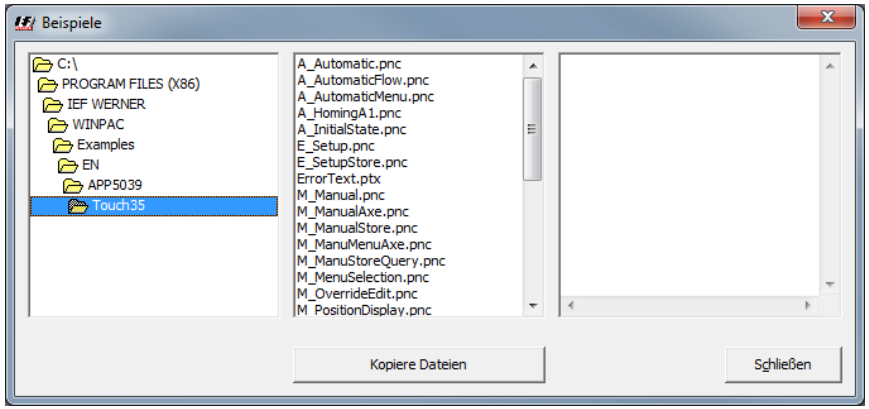


Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6 Examples PA-CONTROL Touch35

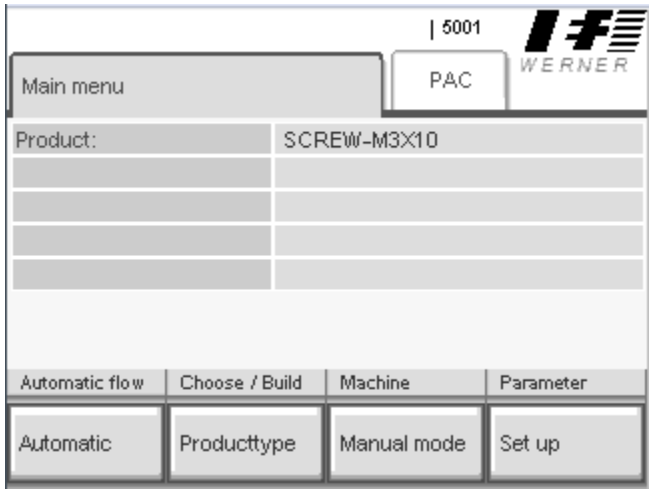
To demonstrate how these images can be used for a machine, sample programs were created.

These programs are copied to the PC when WINPAC is installed and can be copied and used from there.



Features of the machine:

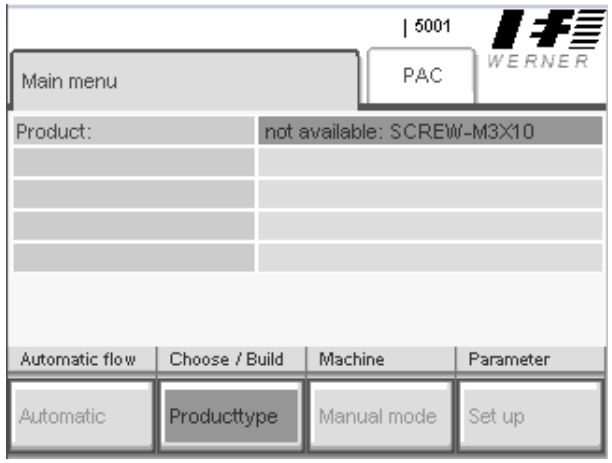
- Machine, for variable products
- create further product variants directly on PA-CONTROL
- To teach positions (password necessary), edit other product data (password necessary)
- Stop at the end of cycle
- Automatic operation with step-mode
- Automatic operation to stop and to terminate
- Output of error messages (error management,...)

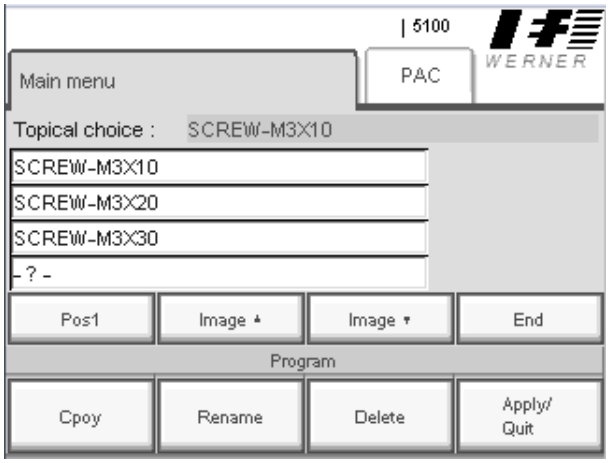


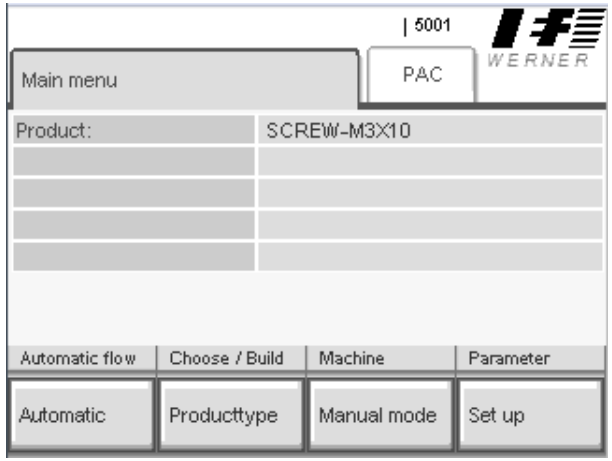
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6.1 Images

6.1.1 Basic position – Product selection





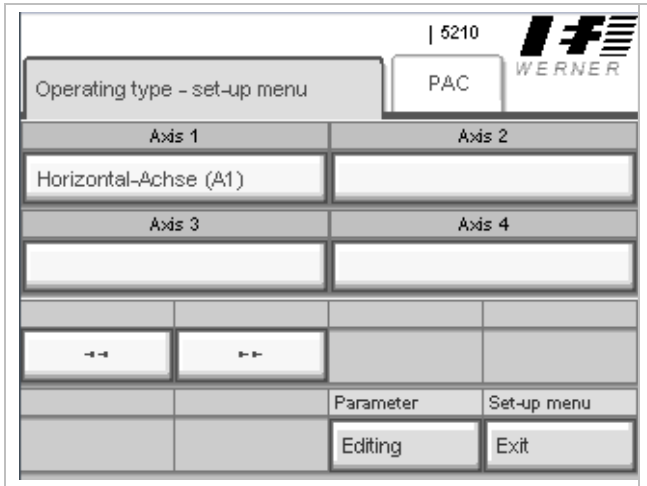


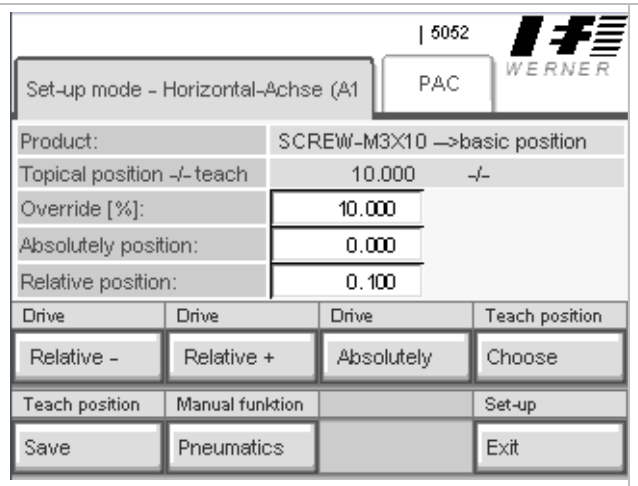
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

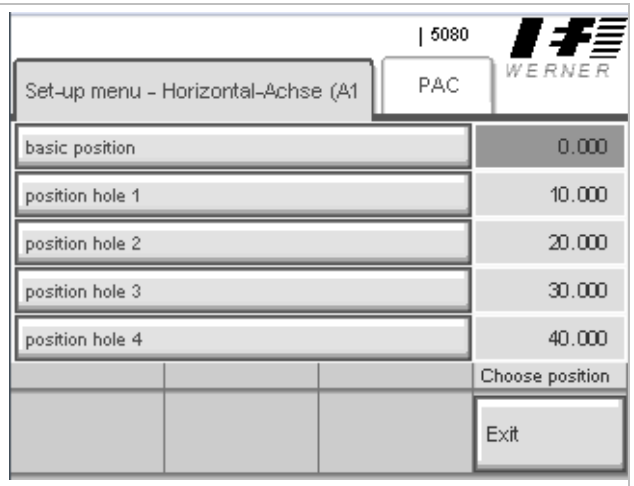
6.1.2 Automatic

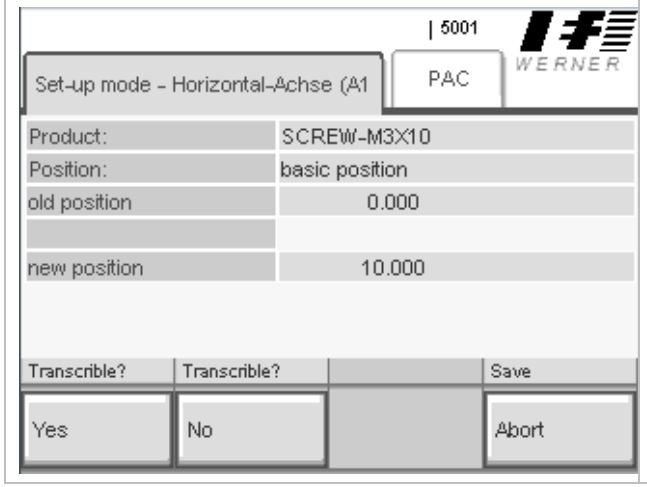
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6.1.3 Setting



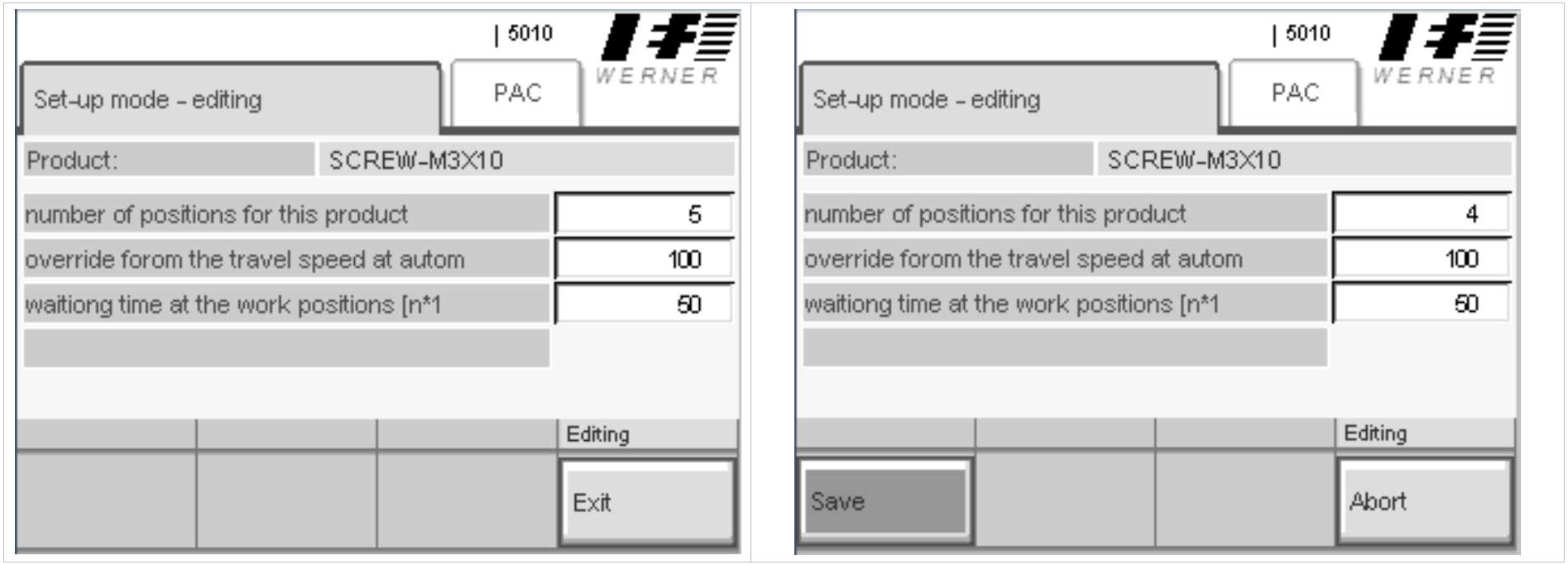






Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

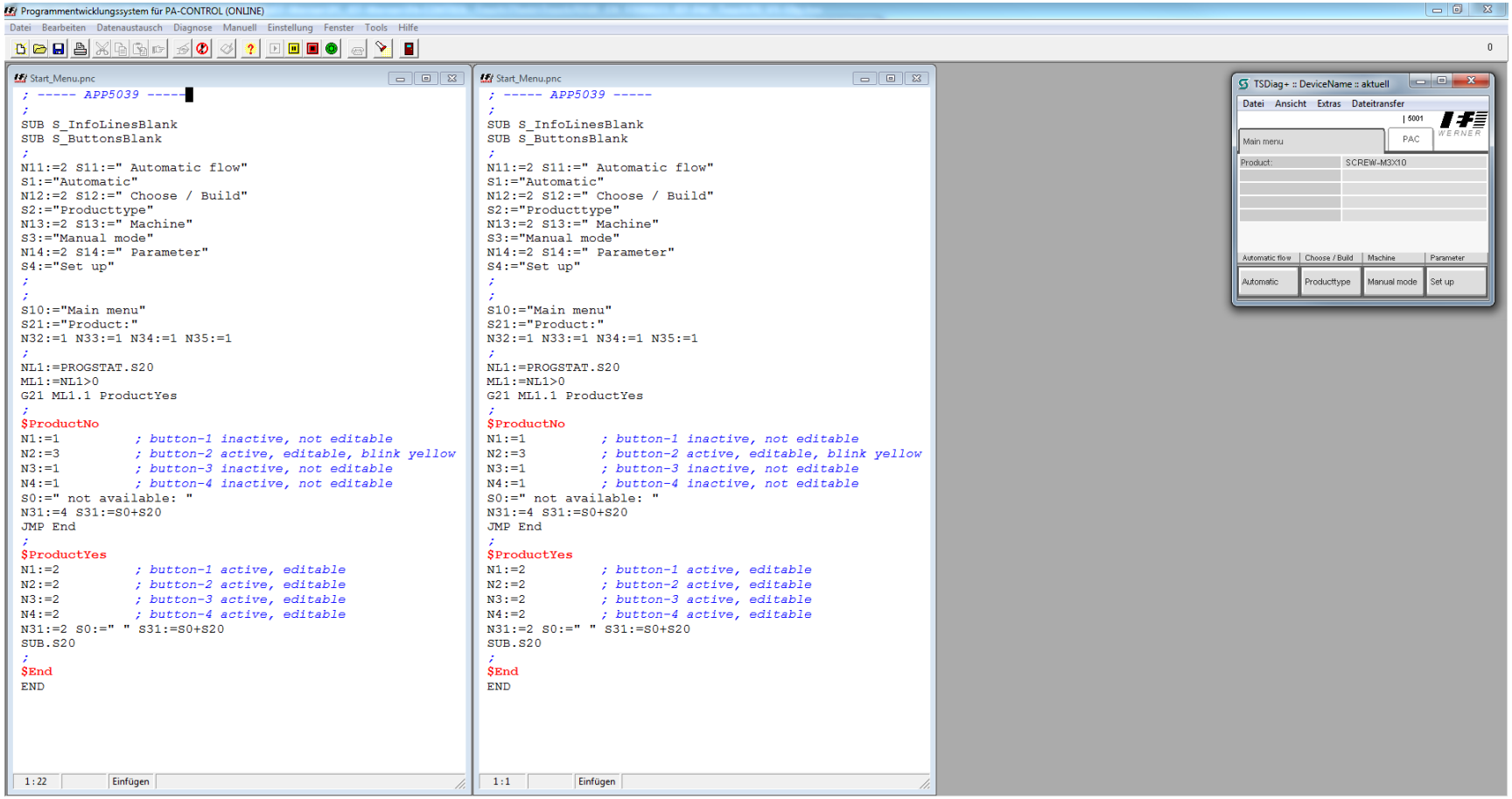
6.1.4 Editing



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

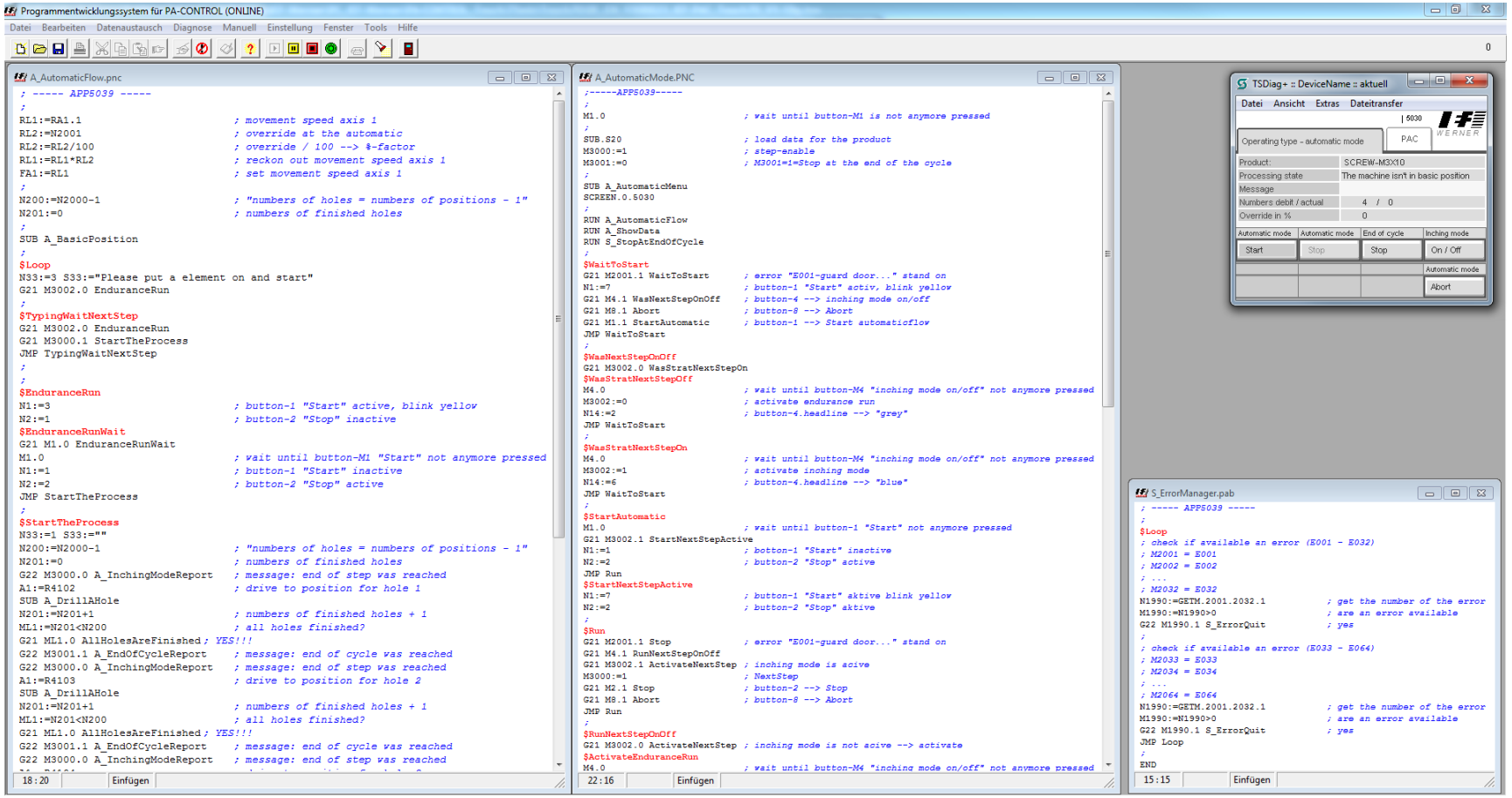
6.2 PA-CONTROL Programs

6.2.1 Basic position



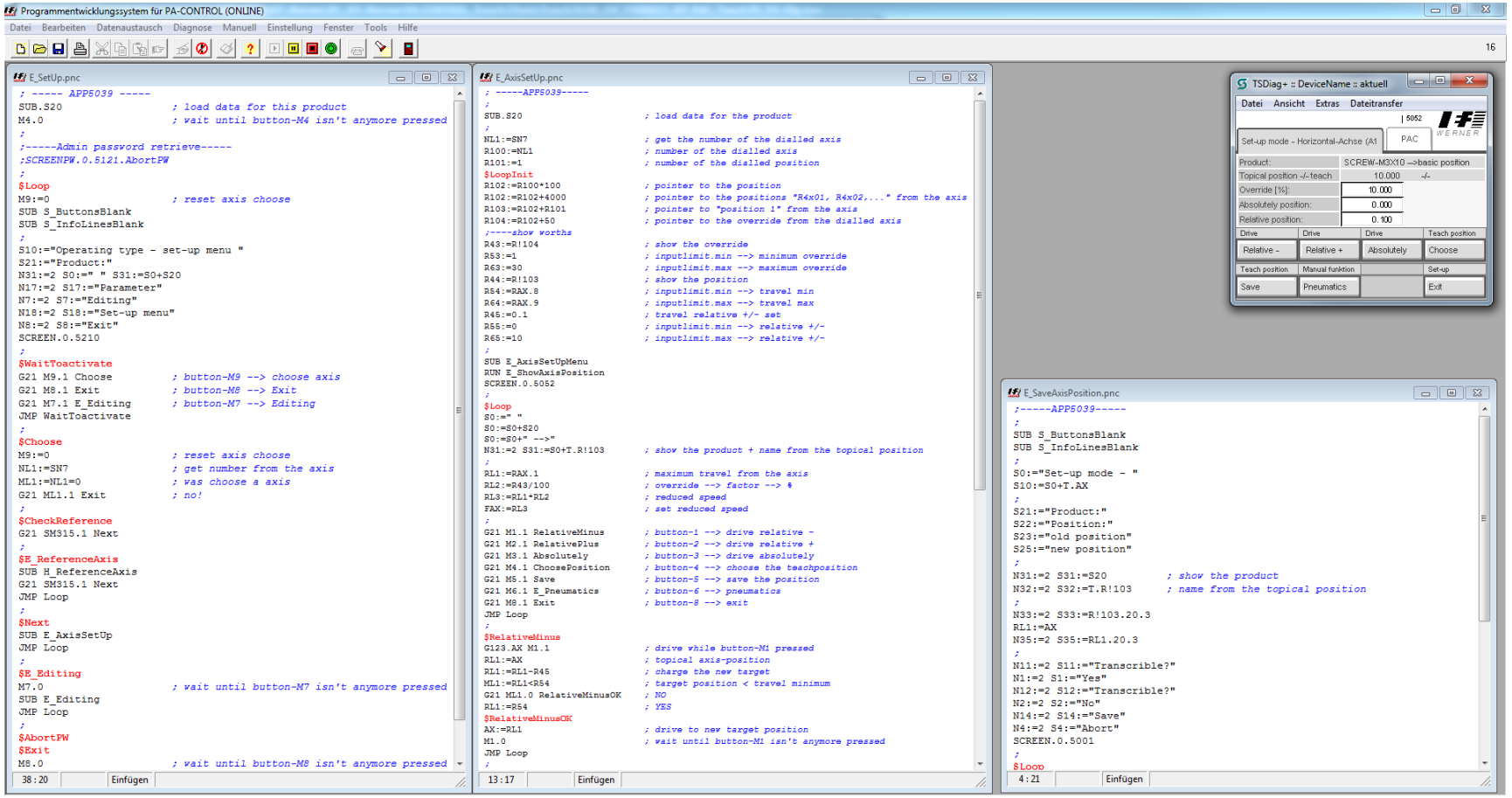
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6.2.2 Automatic



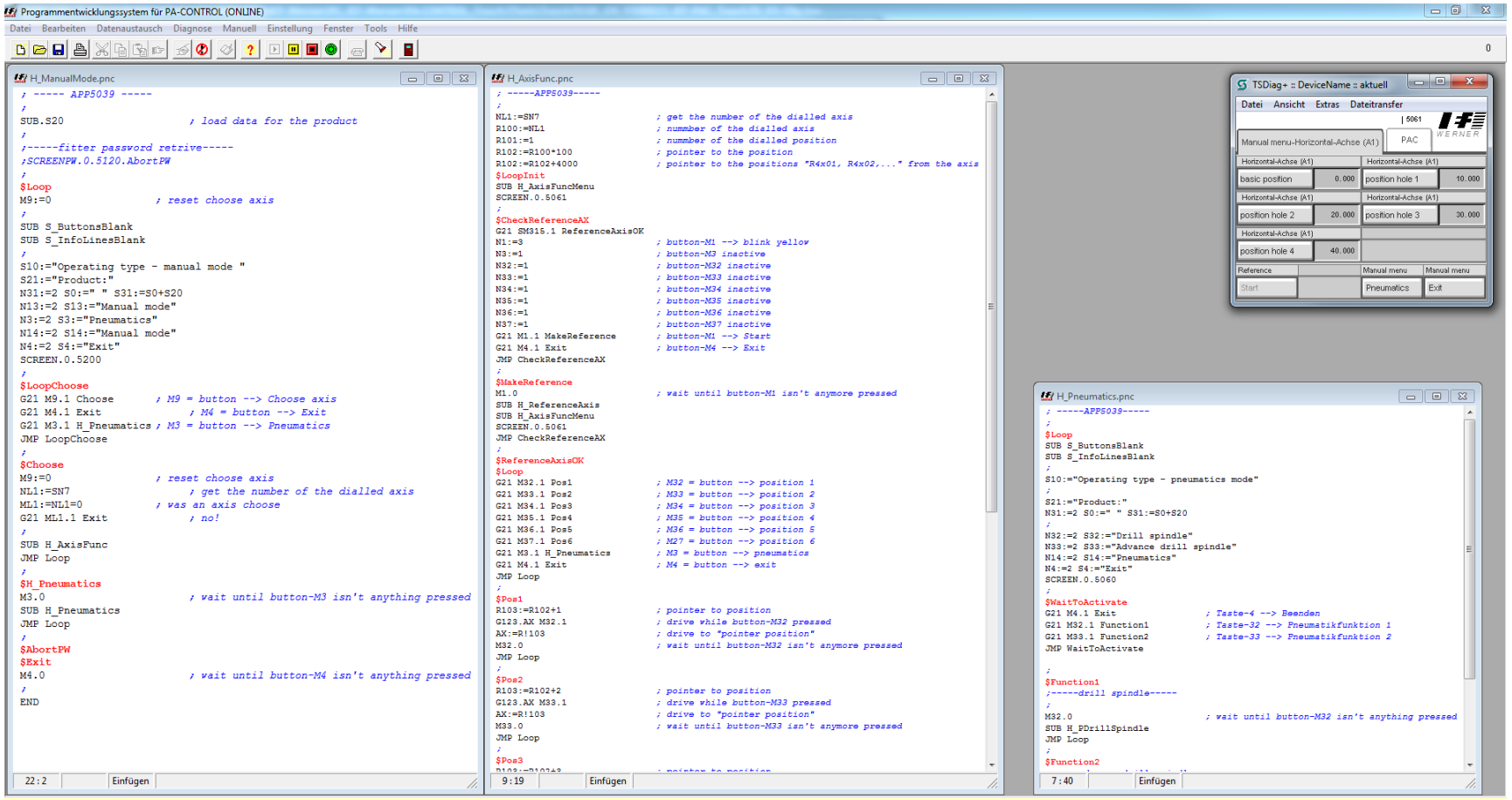
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6.2.3 Setting



Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

6.2.4 Manual-mode

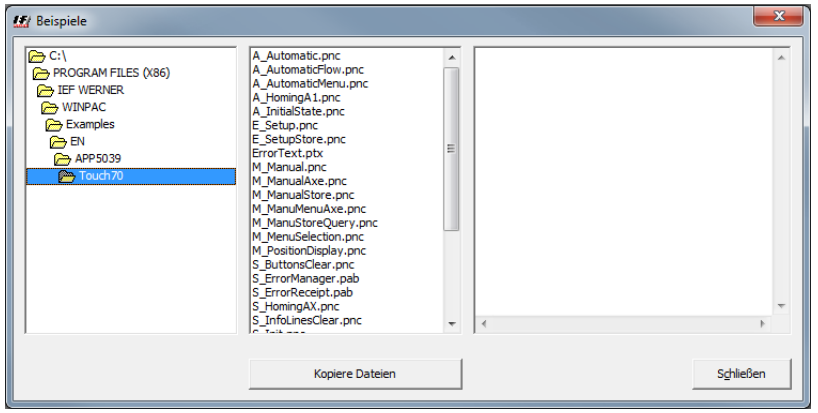


Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

7 Examples PA-CONTROL Touch70 and Touch105

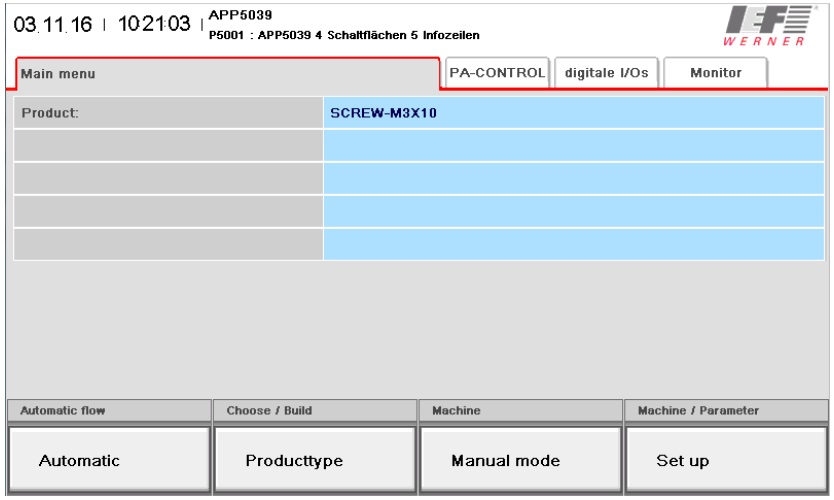
To demonstrate how these images can be used at a machine, example programs were created.

These programs are copied to the PC when WINPAC is installed and can be copied and used from there.



Features of the machine:

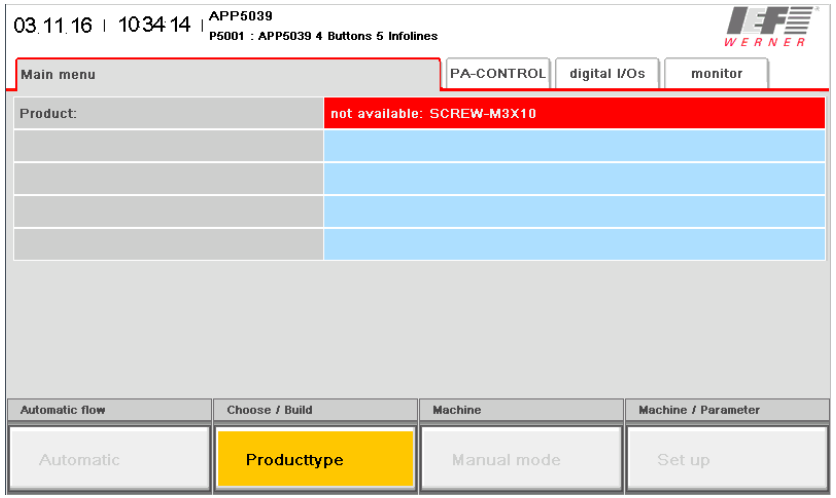
- Machine, for variable products
- create further product variants directly on PA-CONTROL
- To teach positions (password necessary), edit other product data (password necessary)
- Stop at the end of cycle
- Automatic operation with step-mode
- Automatic operation to stop and to terminate
- Output of error messages (error management,...)

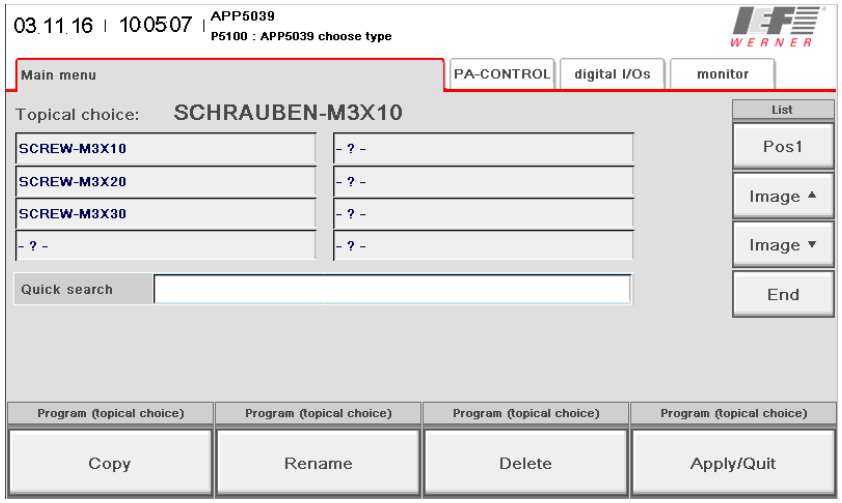


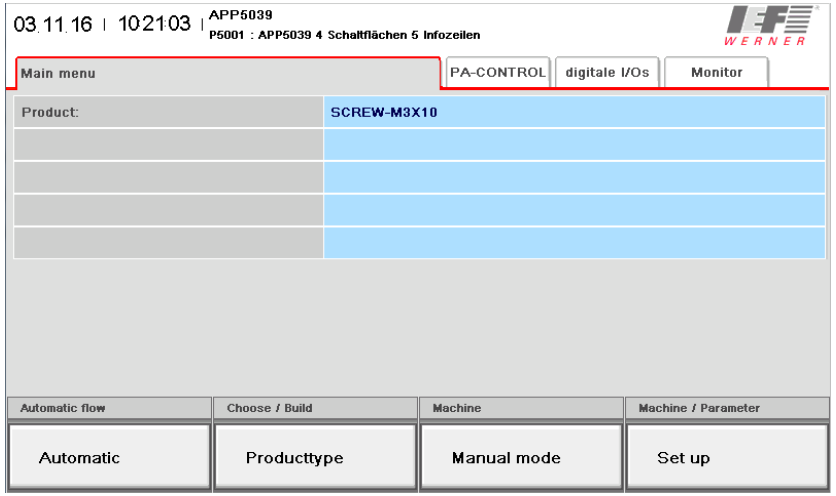
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

7.1 Images

7.1.1 Basic position – Product selection

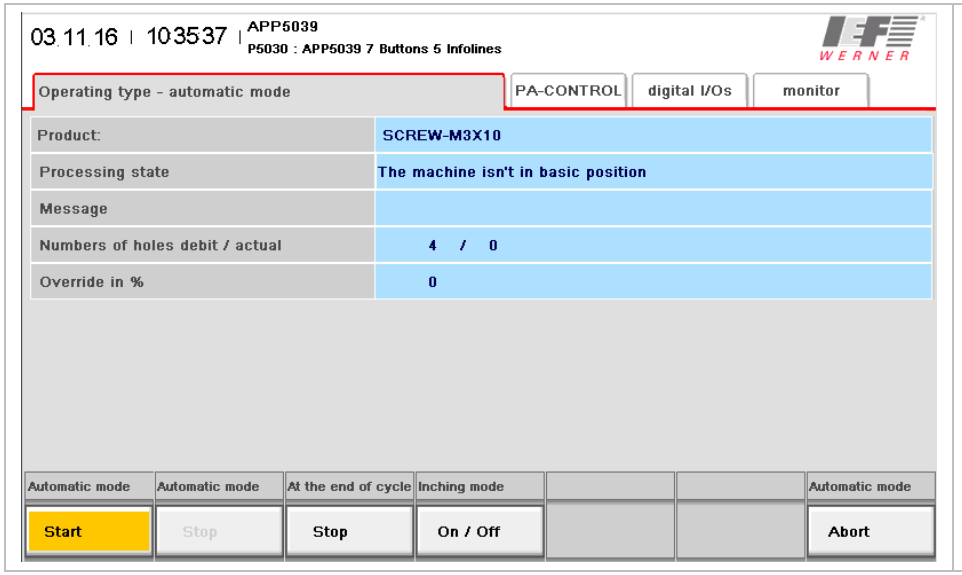


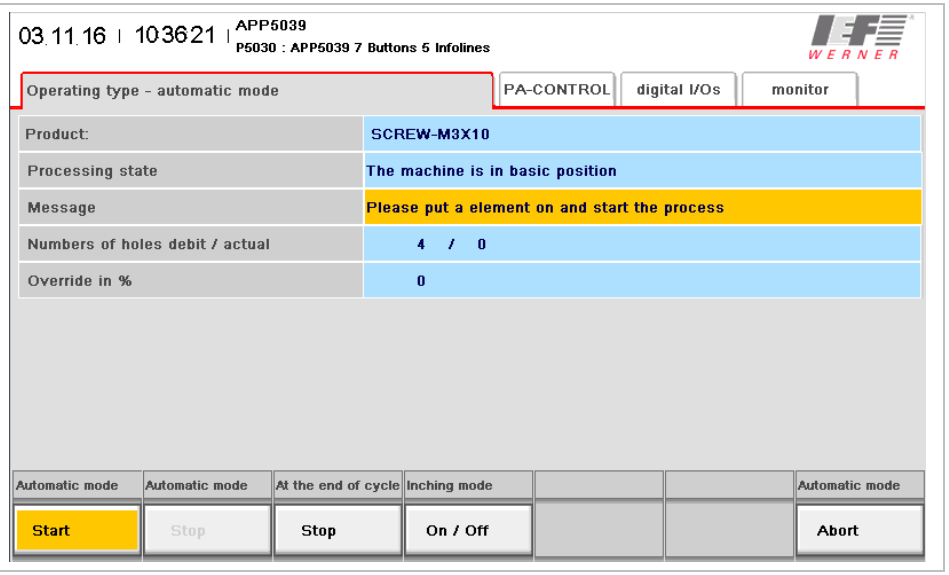


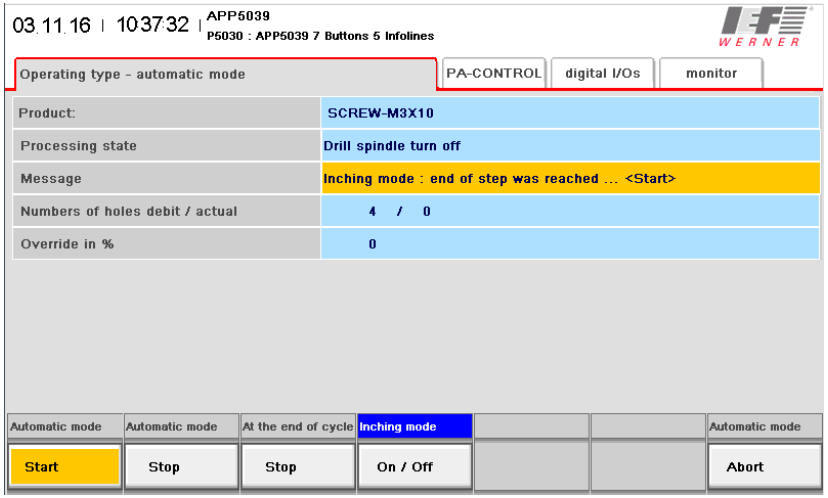


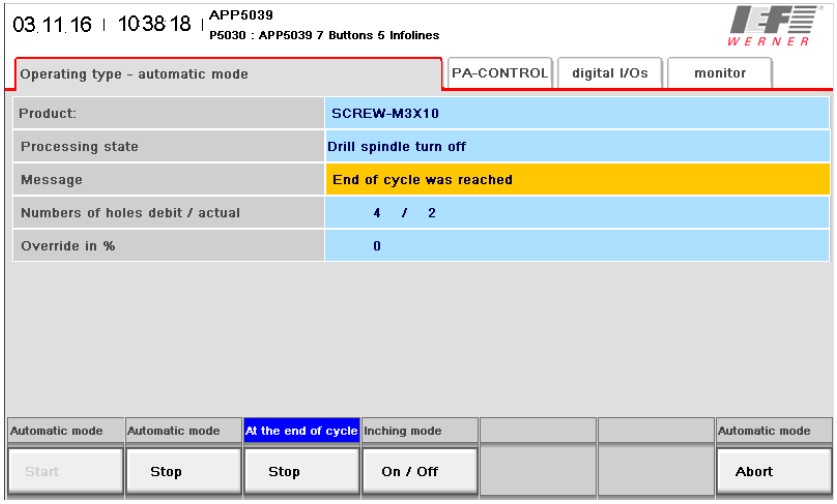
Erstellt von: Grieshaber Edmund | January 2017 | APP5039_EN_1139203_PA-CONTROL_MachineWithStandardScreens_R1b.doc

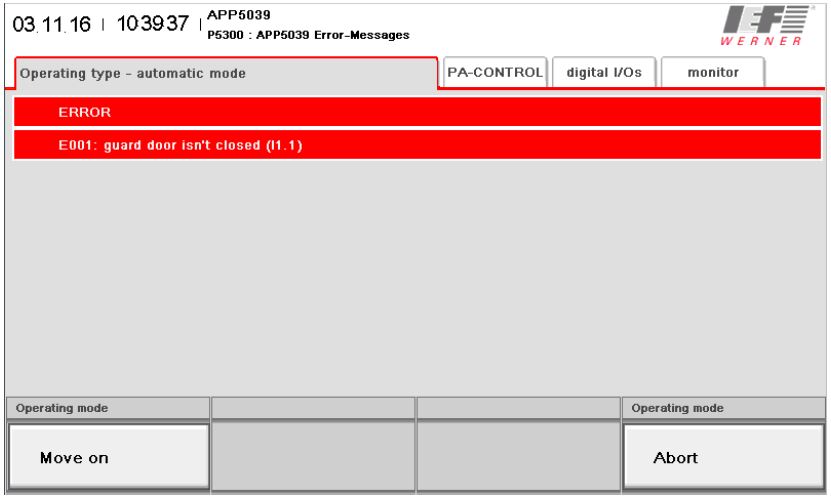
7.1.2 Automatic











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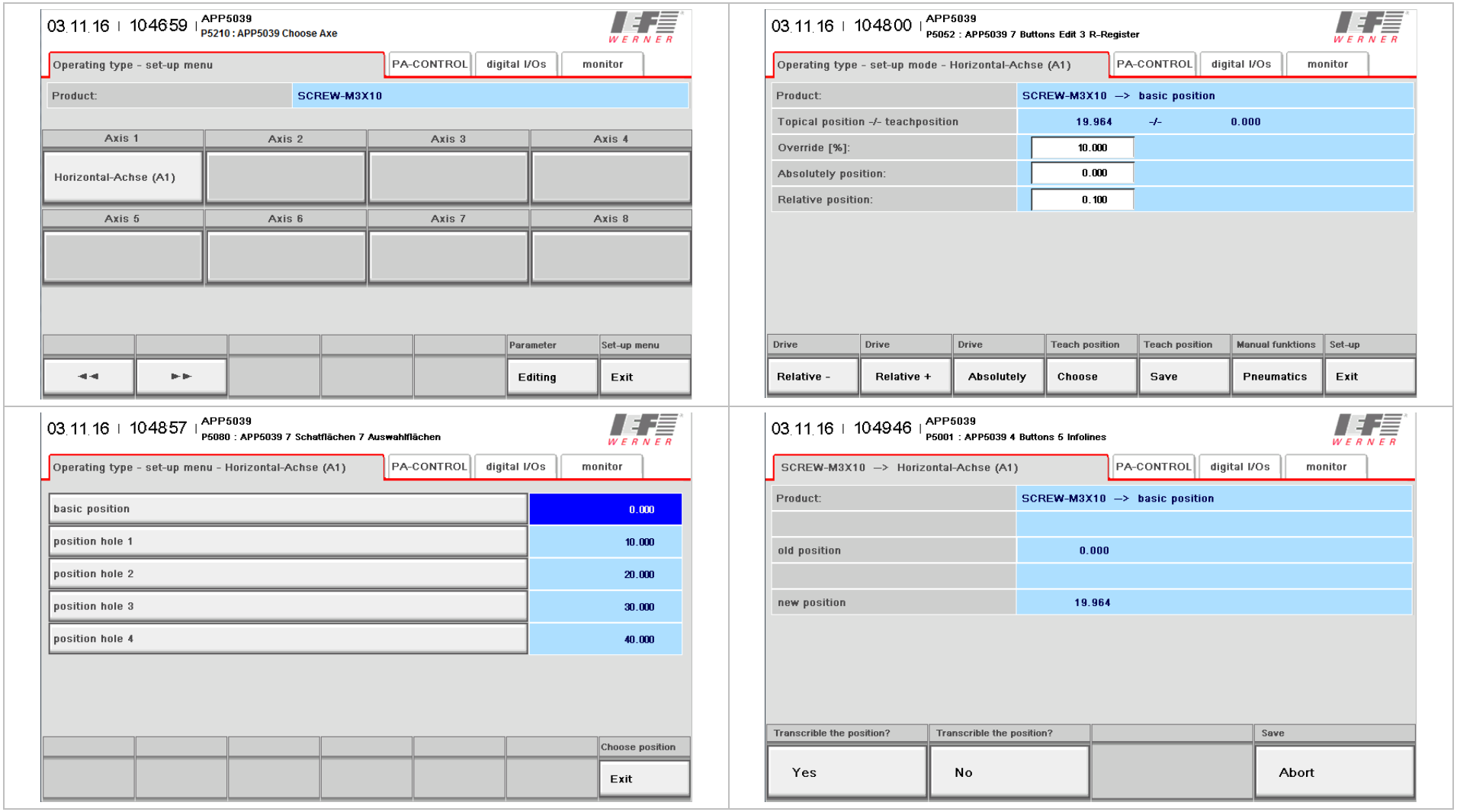
7.1.3 Setting



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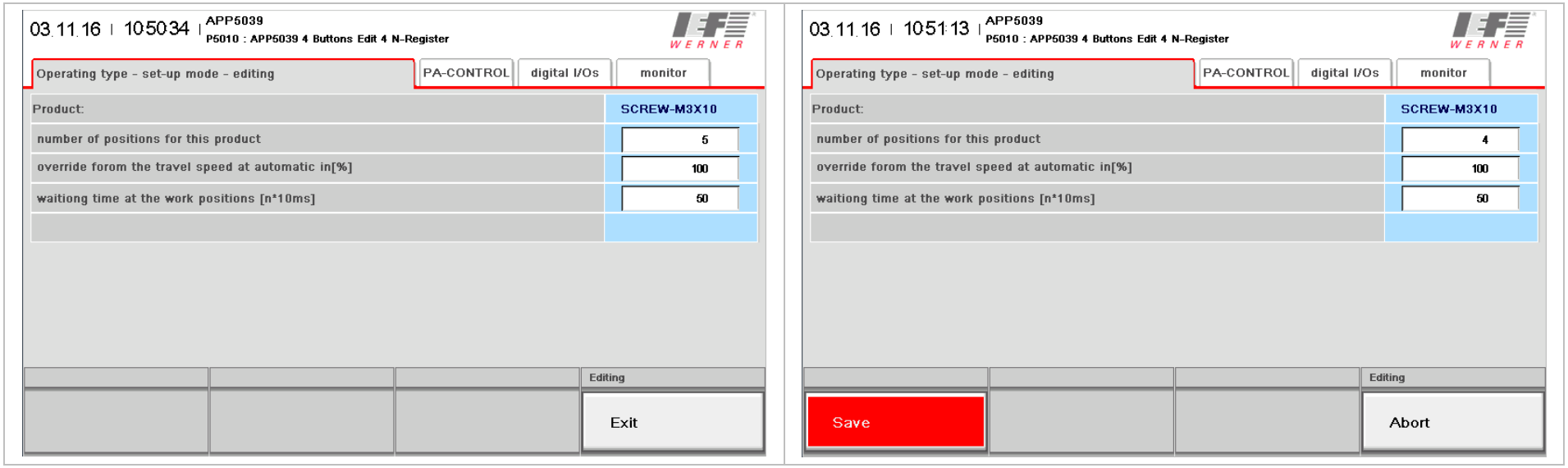
7.1.4 Editing



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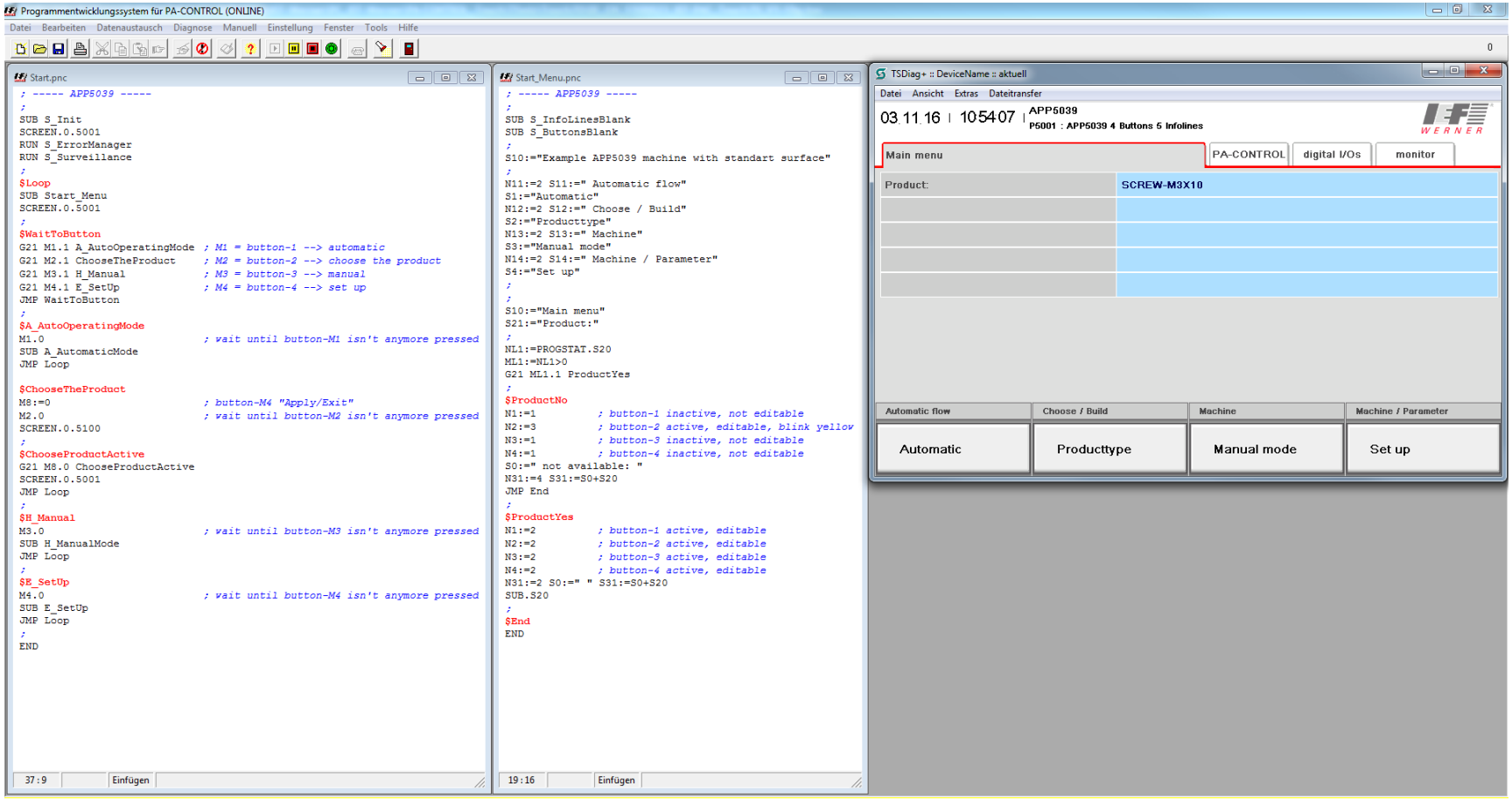
7.2 PA-CONTROL Programs

7.2.1 Basic position



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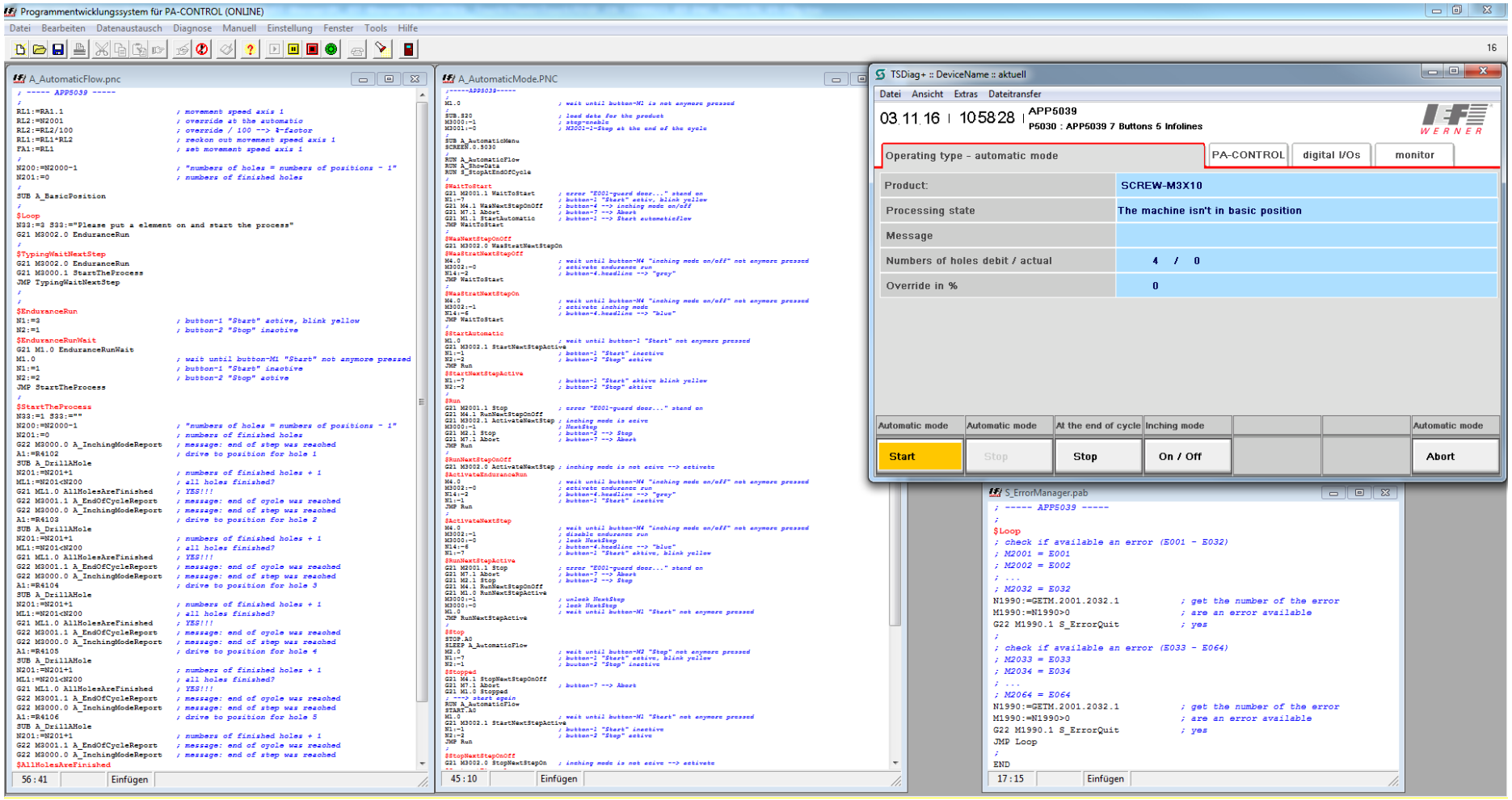
7.2.2 Automatic



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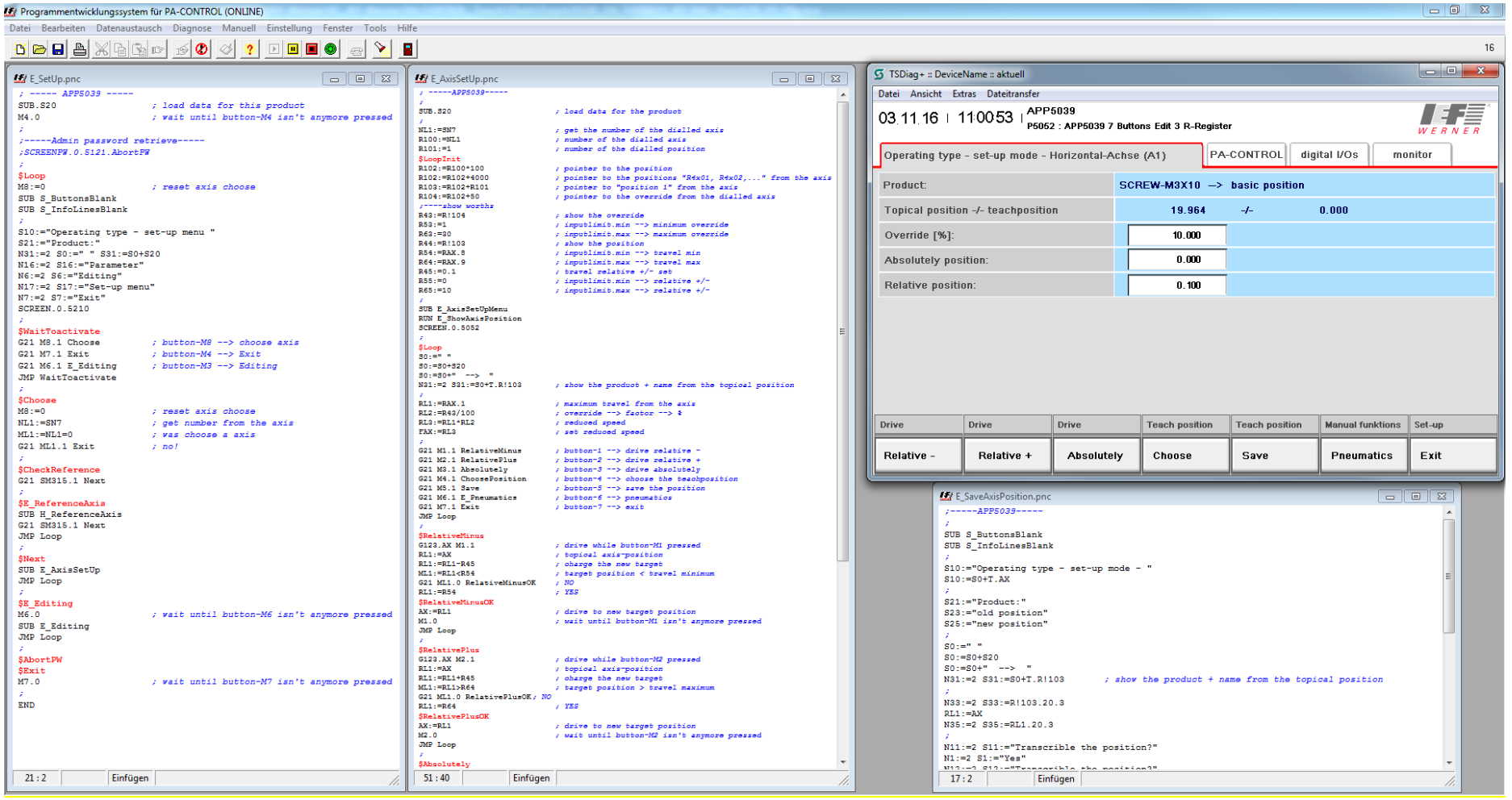
7.2.3 Setting



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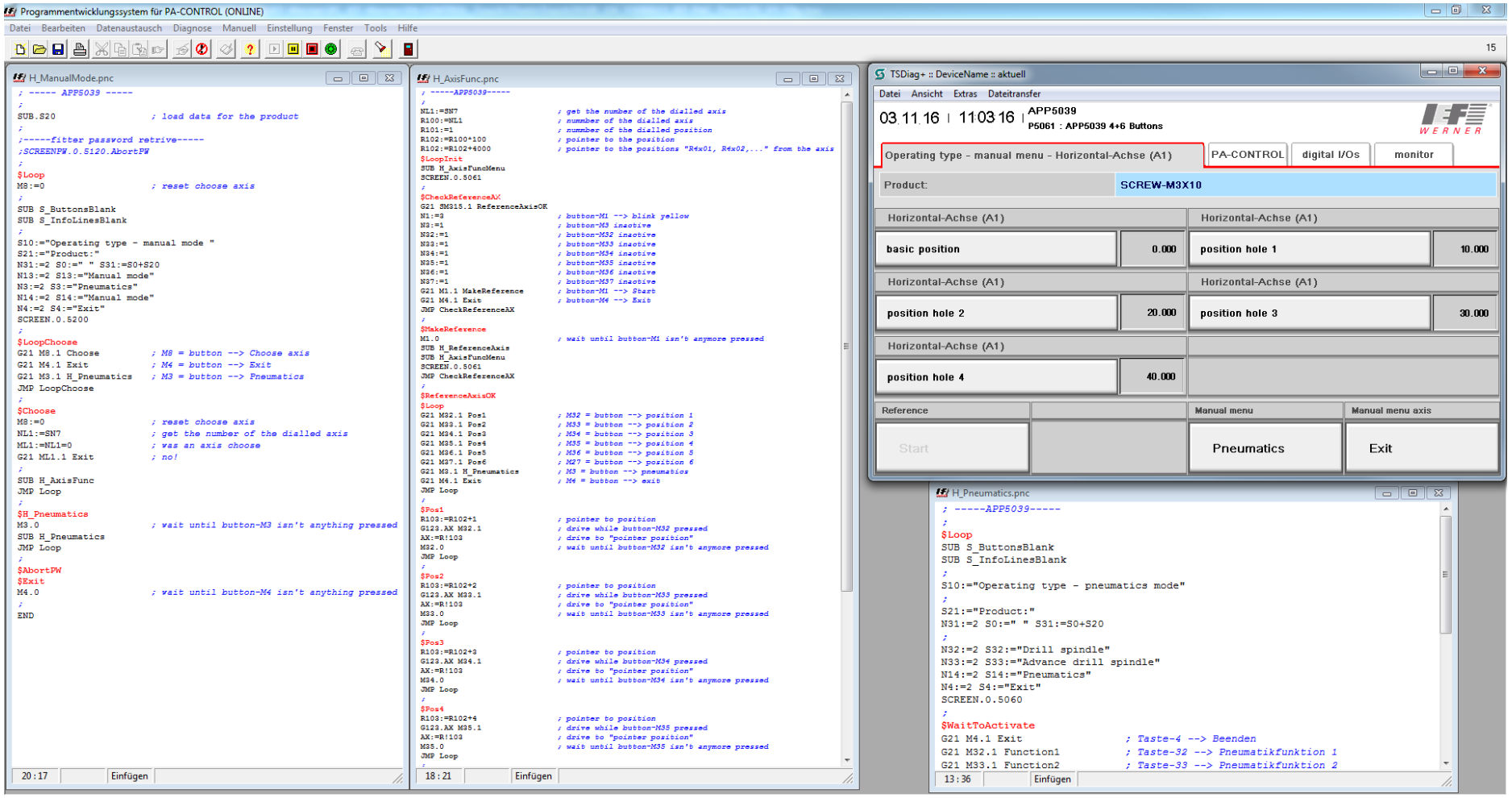
7.2.4 Manual-mode