

# Learn-/Training Document

Siemens Automation Cooperates with Education (SCE) | From Version V14 SP1

**TIA Portal Module 041-101** WinCC Basic with KTP700 and SIMATIC S7-1200

siemens.com/sce



# Matching SCE Trainer Packages for these Learn-/Training Document

#### **SIMATIC HMI Panels**

- 1 SIMATIC HMI KTP700 BASIC COLOR PANEL for S7-1200 Order no.: 6AV2123-2GB03-0AA1
- 6x SIMATIC HMI KTP700 BASIC COLOR PANEL for S7-1200 Order no.: 6AV2123-2GB03-0AA0

#### SIMATIC controllers

- SIMATIC S7-1200 AC/DC/RELAY (set of 6) "TIA Portal" Order no.: 6ES7214-1BE30-4AB3
- SIMATIC S7-1200 DC/DC/DC (set of 6) "TIA Portal" Order no.: 6ES7214-1AE30-4AB3

#### SIMATIC STEP 7 Software for Training

• Upgrade SIMATIC STEP 7 BASIC V15.1 SP1 (for S7-1200) (set of 6) "TIA Portal" Order no.: 6ES7822-0AA04-4YE5

Note that these trainer packages are replaced with successor packages when necessary. An overview of the currently available SCE packages is available at: <u>siemens.com/sce/tp</u>

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We wish to thank the TU Dresden, the Michael Dziallas Engineering Corporation and all other involved persons for their support during the preparation of this Learn-/Training Document.

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# Process Visualization with the SIMATIC HMI Panel KTP700 Basic and WinCC Basic

# 1 Objective

In this section, you will become familiar with the basics of process visualization and the use of a SIMATIC HMI Panel KTP700 Basic together with SIMATIC S7-1200 and the TIA Portal programming tool.

The module explains the configuring of a SIMATIC HMI Panel KTP700 Basic, the creation of a connection to the SIMATIC S7-1200 and the read and write access to CPU data of the SIMATIC HMI Panel KTP700 Basic.

The SIMATIC S7 controllers listed in section 3 SIMATIC S7 controllers can be used.

# 2 Requirements

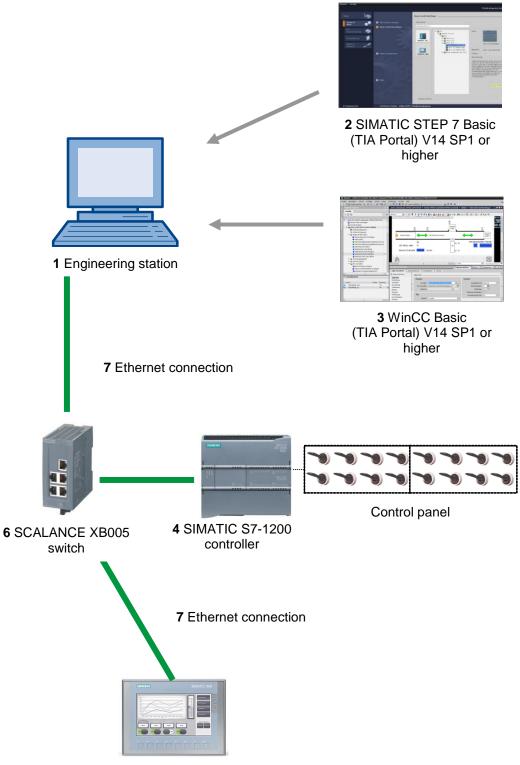
This module builds on the Global Data Blocks for SIMATIC S7-1200 module. To implement this module, you can use the following project, for example: "SCE\_EN\_031-600 Globale\_Data\_Blocks\_S7-1200....zap14".

# 3 Hardware and software required

- 1 Engineering Station: Requirements for hardware and operating system (for additional information, see Readme on the TIA Portal Installation DVD)
- 2 SIMATIC STEP 7 Basic software in the TIA Portal V14 SP1 or higher
- 3 WinCC Basic software in the TIA Portal V14 SP1 or higher
- 4 SIMATIC S7-1200 controller, e.g. CPU 1214C DC/DC/DC with signal board ANALOG OUTPUT SB1232, 1 AO, firmware V4.2.1 or higher

**Note:** The digital inputs and the analog inputs and outputs should be fed out to a control panel.

- 5 SIMATIC HMI Panel KTP700 Basic
- 6 SCALANCE XB005 INDUSTRIAL ETHERNET Switch
- 7 Ethernet connection between the engineering station and switch, controller and switch and HMI Panel KTP700 Basic and switch



5 SIMATIC HMI Panel KTP700 Basic

# 4 Theory

# 4.1 **Process visualization**

Due to production processes are becoming more and more complex and requirements for machine and plant functionality are increasing, operators need a powerful tool for controlling and monitoring production plants. An HMI system (human-machine interface) represents the interface between man (operator) and process (machine/plant). It is the controller that actually controls the process. Hence, there is an interface between the operator and WinCC (at the HMI device) and an interface between WinCC and the controller.

#### The SIMATIC HMI Basic Panels and WinCC perform the following tasks:

#### • Display processes with a straightforward screen structure

The process is mapped on the HMI device. The display on the HMI device is updated when a process state changes, for example. A process can be displayed in a clearly structured manner in multiple screens.

#### Communicate with processes

The operator can communicate with the process via the graphical user interface For example, the operator can define a setpoint for the controller or start a motor.

#### Output alarms

When critical process states occur, such as when a specified limit is exceeded, an alarm is automatically triggered.

#### Archive process values and alarms

The HMI system can log alarms and process values. In this way, you can document the process history. As a result, you can later access older production data.

#### • Document process values and alarms

The HMI system can print out alarms and process values as reports. This allows you to output production data at the end of a shift, for example.

#### Manage process and machine parameters in recipes

The HMI system can store parameters for processes and machines in recipes. For example, you can transfer these parameters from the HMI device to the controller in one step in order to switch the production to a different product version.

#### User management

Certain rights can be assigned to the devices, thereby limiting the possible operator inputs for particular users.

# 4.2 SIMATIC HMI Panel KTP700 Basic

# 4.2.1 Device description

The SIMATIC HMI Basic Panels product line features key and touch panels (operator input via keyboard and touch screen)

SIMATIC HMI Basic Panels cover all requirements described in the previous section.

These HMI devices are explained in this document using the KTP700 Basic as an example.



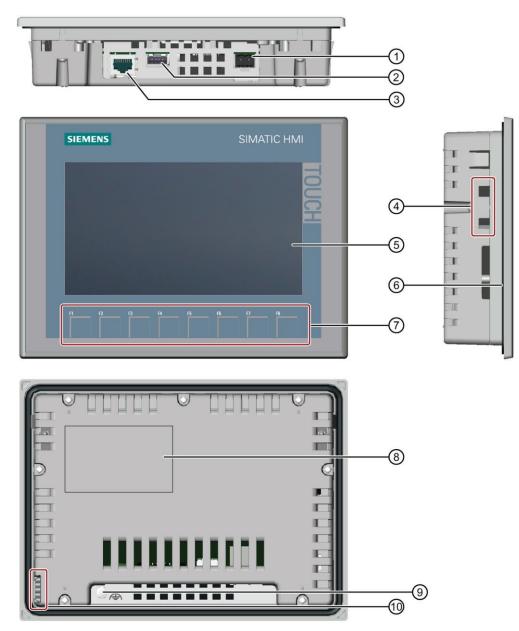
Figure 1: KTP700 Basic

The WinCC Basic (TIA Portal) software is needed for configuration and programming. This software is included in the SCE Trainer Package "SIMATIC HMI KTP700 BASIC COLOR PANEL for S7-1200"!

#### Notes:

- Because all the devices in this product series have similar functionality, it would also be possible to implement this section with another product device in this series.
- The Touch Panel KTP700 Basic can also be displayed on the PC as Runtime simulation with WinCC Basic.





- (1) Connection for power supply
- (2) USB interface for USB mass storage device or USB mouse
- ③ PROFINET interface
- (4) Recesses for a mounting clip
- (5) Display/touch screen
- 6 Mounting gasket
- 7 Function keys
- (8) Rating plate
- (9) Connection for functional ground
- 10 Guide for labeling strip

## 4.2.3 Memory concept

The HMI devices can use the following memory:

- Internal memory
- USB mass storage on USB interface

#### Internal memory

The following data is stored here:

- Operating system
- Project file
- License keys
- User management
- Recipes

#### USB mass storage on USB interface

The following data can be stored here:

- Operating system for update
- Project file as backup
- User management as backup
- Recipes as backup
- Recovery software for resetting to factory settings via USB
- License keys for transfer to the panel
- Certificates for web-based communication

## 4.2.4 Settings on Touch Panel KTP700 Basic/Start Center

Several important settings must be made directly on the Touch Panel KTP700 Basic.

The Touch Panel KTP700 Basic runs with the Windows CE operating system. Similar to all touch panels, operator inputs can be made directly on the screen. For better performance, you should use a special touch pen or connect a mouse to the panel's USB port.

After startup of the panel, the 'Start Center' window appears.

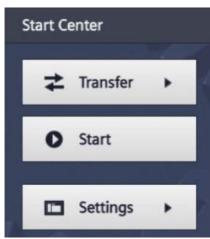
#### **Buttons in the Start Center:**

**Transfer:** Data transfer is activated, and the panel waits for the configuration data to be downloaded from WinCC to the PC. "Transfer" mode can only be activated when at least one data channel is enabled for the transfer.

**Start:** Runtime is started, and the process visualization appears on the panel. Often the panel is set in such a way that the start occurs automatically after a few seconds.

**Settings:** The Windows CE settings dialog is opened. Settings for the panel can be made here: You make various settings on this page, such as settings for the transfer.

→ Select → the "Settings" button in the "Start Center" immediately after switching on the power supply and starting the panel.



#### Note:

- You must select "Settings" in the "Start Center" quickly before Runtime automatically starts.

# 4.2.5 Setting the date and time



 $\rightarrow$  Under "System", select the <sup>Date & Time</sup> icon to make the date and time settings.

Start Center					-
<b>≵</b> Transfer	Settings System				
O Start	and the second		<b>((()</b> )		
Settings	Service & Commissioning Transfer, Netv	Date & Time	Sounds	System Control/Info	_
		t.			
	Network Interface	Transfer Settings	Internet Settings		
	Display & Ope	eration			_
	Thy		and a		

 $\rightarrow$  Under "Date & Time", set the time zone ("Time shift") and the date and time.

Start Center							
<b>↓</b> Transfer	Date & T	ime					
	30	April	2015	20	24		
Start	1	May	2016	21	25		
Juit	2	June	2017	22	26		
	3	July	2018	23	27		
Settings	4	August	2019	00	28		
	Time shift:		nift:	-01.00			
Date & Time				±00:00			
				+01:00			
Network Time Protocol				+02:00			
Date & Time							
	Localtime:			2017-06	5-02T23	:26	
							1

# 4.2.6 Setting the transfer properties and assigning the IP address



→ Under "Transfer, Network & Internet", select the <sup>Transfer</sup> icon to navigate to the transfer properties.

Start Center	_
<b>≵</b> Transfer	Settings System
Start	🌮 📑 📢)) 🔲
Settings	Service & Date & Time Sounds System Commissioning Control/Info
A POST AND A POST A	Transfer, Network & Internet
	Network Transfer Internet Interface Settings Settings
- 0	Display & Operation

 $\rightarrow~$  Select the following settings for the "Transfer Settings".

Start Center	
<b>≵</b> Transfer	Transfer Settings
Start	Enable transfer: ON
Settings	Automatic: ON
	Digital Signatures
	Validate Signatures: ON



→ Under "Transfer, Network & Internet", select the Interface icon to navigate to the network settings.

Start Center				
Transfer	Settings			
Start	System			
Settings	Service & Date & Time Sounds System Commissioning Control/Info			
	Transfer, Network & Internet			
	Network Transfer Internet Interface Settings Settings			
- 2-1-7	Display & Operation			

→ In menu item "Interface PN X1", set the IP address under "IP address" and the subnet mask under "Subnet mask".

Start Center					
Transfer	Interface PN X1				
	IP address				
Start	DHCP:	III OFF			
Settings	IP address:	192.168.0.10			
	Subnet mask:	255.255.255.0			
	Default gateway:	0.0.0.0			
	Note: Applying IP se	ttings will take a few seconds!			

# 4.2.7 Switching off the sound on the touch panel

- (((
- → Under "System", select the <sup>Sounds</sup> icon to navigate to the sounds settings of the touch panel.

Start Center				
<b>≵</b> Transfer	Settings System	1		
O Start	🌮 📑 📢 II)			
Settings	Service & Date & Time Sounds System Commissioning Control/Info			
	Network Transfer Internet Interface Settings Settings			
	Display & Operation			

 $\rightarrow~$  Under "Volume", switch  $\rightarrow$  "Sound" to "OFF".

Start Center					
<b>≵</b> Transfer	Volume Sound: OFF				
O Start	Sound: OFF				
E Settings					
1025					

# 4.2.8 Calibrating the touch panel



→ Under "Display & Operation", select the touch panel.

icon to navigate to the calibration of the

Start Center					_
<b>≵</b> Transfer	Settings Commissioning			Control/Info	
Start	Transfer, Netw	ork & Interne	et		
		<b>₽</b>			
Settings	Network Interface	Transfer Settings	Internet Settings		
	Display & Ope	ration			_
	[Phy]				
	Touch	Display	Screensaver		
					_

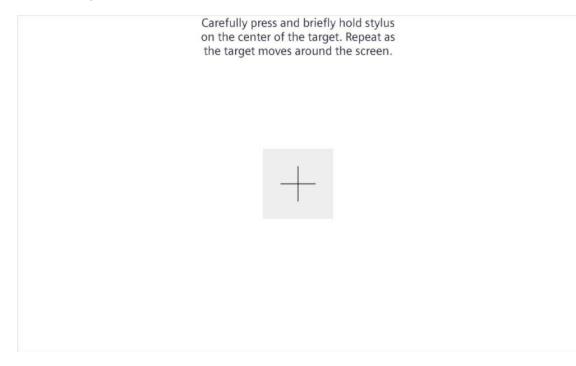
 $\rightarrow$  Select the "Touch" menu item. Start the calibration with  $\rightarrow$  "Recalibrate".

Start Center					
<b>≵</b> Transfer	Touch				
Start	need to recalibrate your screen. To start tap Recalibrate.				
Settings	Recalibrate				

 $\rightarrow$  Touch anywhere on the screen within 15 seconds to start the calibration.

Tap the screen anywhere to start calibration or wait for 15 seconds to cancel and keep current settings.
Time limit: 7 sec

→ Follow the instructions on the touch panel and press as close to the center of the displayed cross as possible.



# 4.3 WinCC Basic programming software

The WinCC Basic software is included in the TIA Portal as an integral component of STEP 7 Basic or STEP 7 Professional and is the programming tool for the following visualization system:

- SIMATIC Basic Panels

With WinCC Basic you have the following functions for creating HMI systems:

- Hardware configuration and parameter assignment
- Specification of communication and creation of a connection to a PLC
- Creation and layout of screens with hierarchical structure
- Creation of internal and external tags
- Creation of alarms and alarm displays
- Creation and display of logs as trends and in tables
- Creation of recipes and recipe displays
- Creation and printing of reports
- Testing, commissioning and service with operational/diagnostic functions
- Documentation

All functions are supported by an extensive online help.

# 4.3.1 Project

For the solution to an automation and visualization task, you create a project in the TIA Portal. A project in the TIA Portal contains data on the configuration and networking of devices as well as the programs and the configuration of the visualization.

### 4.3.2 Hardware configuration

The *hardware configuration* contains the configuration devices, consisting of the automation system hardware, the field devices on the PROFINET bus system and the hardware for visualization. The configuration of the networks specifies the communication between the various hardware components. Individual hardware components are inserted from catalogs into the *hardware configuration*.

The hardware of SIMATIC S7-1200 automation systems consists of the controller (CPU), the signal modules for input and output signals (SM), the communication modules (CM) and other special modules.

The signal modules and field devices connect the input and output data of the process to be automated and visualized to the automation system.

The hardware configuration enables automation and visualization solutions to be downloaded to the automation system and the controller to have access to the connected signal modules.

## 4.3.3 Planning the hardware

Before you can configure the hardware, you must plan it. In general, you start by selecting the required controllers and the number needed. Next you select the communication modules and signal modules. The signal modules are selected based on the number and type of inputs and outputs needed. Finally, a power supply must be selected for each controller or each field device to ensure the required power is supplied.

The functionality needed and the environmental conditions are of critical importance for planning the hardware configuration. For example, the temperature range in the application area is one of the limiting factors for selecting possible devices. Fail-safe capability could be another requirement.

The <u>TIA Selection Tool</u> (select Automation System  $\rightarrow$  TIA Selection Tool and follow the instructions) offers you support.

#### Notes:

- TIA Selection Tool requires Java
- Online research: To obtain the device specifications, look for the manual described as "Product Manual" or "Manual" among the various manuals listed.

There are centralized and distributed applications available for the visualization. For local, distributed operator input, panels are often used. These can communicate with the controller via Ethernet, WLAN or fieldbus. For central operator control and monitoring, PC can also be used. These are usually connected to the controller via Ethernet.

The <u>TIA Selection Tool</u> also supports you when selecting panels (select Automation System  $\rightarrow$  TIA Selection Tool and follow the instructions).

# 4.3.4 Planning the screen structure

After selecting a device for the visualization, the screen structure must be planned. To do this, you should assemble, group and structure the information to be displayed. From this it should be possible to derive a screen structure like the one shown in Figure 2. The entry point to the screen structure is always ensured by a "root screen".

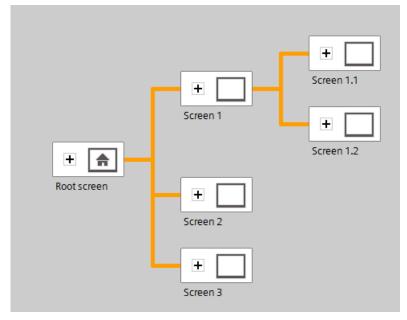


Figure 2: Example of screen structure

The determining factor for the screen structure should be its support of the operator when navigating through the information distributed among the screens for operator control and monitoring of the process.

The following questions may be helpful:

What conceptual model of the process must be followed for the information display?

What data belong together?

What data belong in a specific sequence?

What data belong to specific operations/processes?

Are there data and the like that apply across operations?

What data represent key information and what data are additional information?

# 4.3.5 Planning of screen design

Every individual screen must also be planned. Considerations regarding use by the operator are also necessary for the information display. It is helpful here to follow design principles such as the principles of proximity, similarity and symmetry. The following rules of thumb derived from design principles can also support the design of screens:

- $\rightarrow$  Form groups of data blocks
- → Uniform subdivision of the entire screen into work information, status or system information and controller information
- $\rightarrow$  Observe average distribution of attention on the screen as a function of reading direction
- → Use compactness as design principle (numbers, column headings same as column content)
- → Make appropriate use of 30-40 % of available space: Accommodate as little information as possible and as much as necessary
- → Economical coding (for example, color, bold text, lightness, shape, border, appearance, flashing)
- → Organize numbers: organize numbers with more than 4 digits in groups of 2, 3 or 4 (for example, 66 234)
- $\rightarrow$  Preferably choose numerals in listing of objects, properties, etc.
- $\rightarrow$  Use and position designations uniformly
- $\rightarrow$  Use short words if possible

# 4.3.6 Basic settings for WinCC Basic in the TIA Portal

The user can make customized presets for certain settings in the TIA Portal. The method for making the settings for the visualization is shown here.

- Via Siemens . 🗆 🗙 Totally Integrated Automation PORTAL Edit View Insert Online Tools Windo Project Options 📑 🎦 🔚 Save project 🔳 🐰 🔟 🗊 🏌 Sett 🖉 Go offline 🛔 🌆 🖪 🖉 🖌 Support packages Manage general station description files (GSD) Start Automation License Manager Devices Tasks M Show reference text Global libraries Gonline access
   Gard Reader/USB memory Linfo Diagnostics > Details view Q Prop ertie tt Overview Portal view
- → In the Project view, select menu command → "Options" and then → "Settings".

→ In the → "Visualization" item of Settings, select the desired presets for the design of the user interface.

Settings	_ # # = >
General	Visualization
Hardware configuration     PLC programming     STEP 7 Safety	Screens
Simulation	General
Online & diagnostics	
PLC alarms	Show templates in screens
<ul> <li>Visualization</li> <li>Screens</li> </ul>	Use same font for all languages
Resize screen	Colors
HMI tags	Cools
Runtime scripting	Screen background: Light gray
Keyboard shortcuts	
Password providers	Settings editor
Multiuser	
CAx	Snap to lines
	Snap to grid
	O None
	Grid Grid size X: 8 Grid size Y: 8 €
	Resize screen
	Note The settings for the screen layout have an effect when a screen is copied to another device or when the device type and the resolution are changed. The configuration is also valid for slide-in screens and pop-up screens.

Note:

- Keep the default settings as the settings for the visualization here.

# 4.3.7 Resetting the SIMATIC HMI Panel KTP700 and setting the IP address

The HMI Panel KTP700 Basic can be reset directly in the TIA Portal. A new IP address can also be assigned to the panel there.

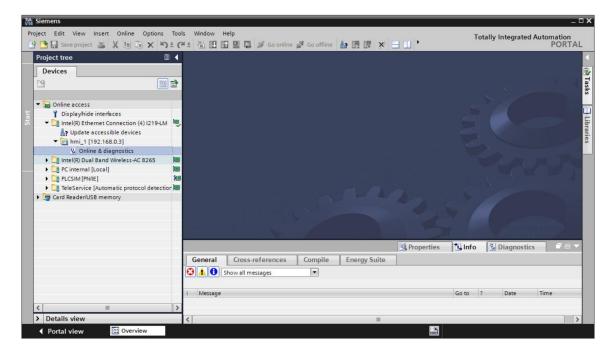
To do this, select the Totally Integrated Automation Portal, which is opened by a double-click. ( $\rightarrow$  TIA Portal V14)



 $\rightarrow$  Click the  $\rightarrow$  "Online & Diagnostics" item and open the  $\rightarrow$  "Project view".



→ In the project tree, select the network adapter of your computer under → "Online access". When you click → "Update accessible devices", you see the IP address (if already set) or the MAC address (if the IP address has not yet been assigned) of the connected SIMATIC HMI Panel → Click → "Online & diagnostics".



→ To assign the IP address, select the → "Assign IP address" function. For example, enter the following IP address and subnet mask here: → IP address: 192.168.0.10 → Subnet mask: 255.255.255.0. Next, click → "Assign IP address". The new address is assigned to your SIMATIC HMI Panel KTP700 Basic.

	□ X り± C+± 目目目			4		PORTA
Project tree	Online acces				_1 [192.168.0.3]	_ • • ×
Devices						
	Diagnostics General	As	sign IP address			
Displayhide interfaces     Displayhide interfaces     Displayhide interfaces     Intel(R) Ethernet Connecti     Pupdate accessible dev     Imin (192:168.0.3)     Online & diagnostic     Online & Miagnostic	Reset to fa	address OFINET device na actory settings	protected against unau	an enterprise network or directly thorized access, e.g. by use of bout industrial security, please v	firewalls and network segment	
Cinternal [Local]     Cinternal [Local]     Cinternal [Puile]     Cinternal Control [Puile]     Cinternal Control [Puile]     Card Reader/USB memory	Na Stocol detection		IP address:	E0 -DC -A0 -00 -50 -1E	Accessible devices	
	<		Router address:	192 . 168 . 0 . 3 Assign IP address	address to the module	>
				Properties		
<li>m</li>	General	Cross-references	Compile Energy Suite			
Details view		how all messages				

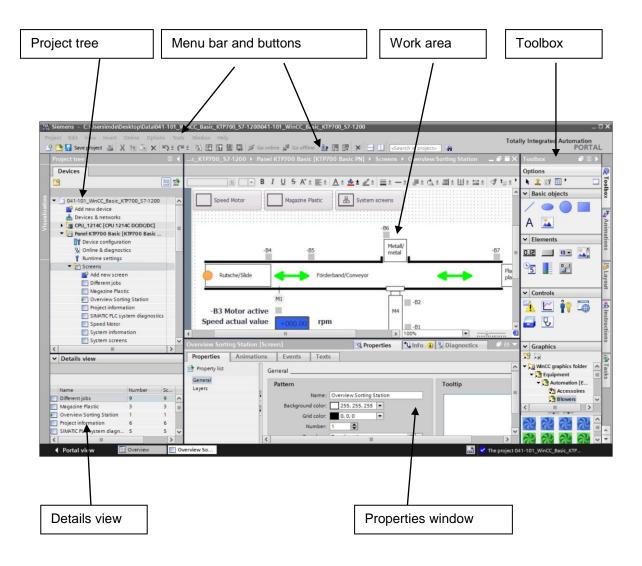
→ The successful (or unsuccessful) assignment of the IP address is shown as a message in the → "Info" window, → "General" tab.

				🔍 Prop	erties	i, Info	<b>Diagnostics</b>	
General	Cross-references	Compile	Energy Suite					
	Show all messages	•						
! Message				Go to	?	Date	Time	
📀 🛛 The pi	arameters were transferred	successfully.				6/28/2017	12:30:54 PM	
General	Cross-references C	Compile		3	Properti	es 🗓 Inf	o 🗓 Diagnostics	∎∎▼
🔁 🚹 🕄 si	how all messages	•						
! Message					Go t		Date Time	
	address could not be assigned						5/28/2016 1:41:32 AM	^
😣 The	function could not be execute	ed.					5/28/2016 1:41:32 AM	~
٢								>

Note:

 If there are problems assigning the IP address, the IP address of the SIMATIC HMI Panel KTP700 Basic can also be set via Windows CE of the panel.

# 4.3.8 WinCC user interface

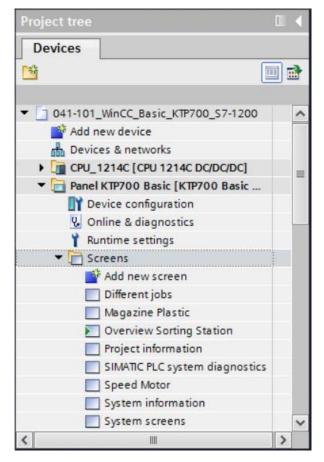


## 4.3.9 Project tree

The project tree is the central control point for the project handling. All component parts and all the available editors of a project are displayed in a tree structure in the project window and can be opened from there.

Each editor is assigned a symbol which you can use to identify the corresponding objects. Only elements that are supported by the selected HMI device are displayed in the project window.

In the project window, you have access to the device settings of the HMI device.



### 4.3.10 Details view

The Details view shows the contents or other information on the objects selected in the project tree.

~	Details view			
	Name	Number	Sc	-
	Different jobs	9	9	^
	Magazine Plastic	3	З	=
	Overview Sorting Station	1	1	-
	Project information	6	6	
	SIMATIC PLC system diagn	5	5	~
<	111		>	1

### 4.3.11 Menu bar and buttons

The menus and toolbars provide access to all functions you need to configure your HMI device. When a corresponding editor is active, editor-specific menu commands and toolbars are visible.

When the mouse pointer is moved over a command, you receive a corresponding tooltip for each function.

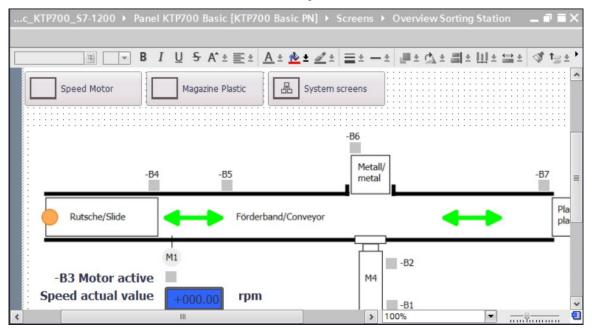
VIA Siem	nens -	C:\Use	rs\mde\	Desktop\[	)ata\041-1	01_Win	CC_Basic	_KTP700_S7	-1200\041-101	I_WinCC_Basi	c_KTP700_S7	-1200	
Project	Edit	View	Insert	Online	Options	Tools	Window	Help					
📑 🖪	Sav	/e projec	t 🔳	XDO	XS	± (24 ±	1		🔊 Go online	🖉 Go offline	<b>å</b> ? I∎ I₽	🗴 📃 🛄 < earch in project	> 4

### 4.3.12 Work area

You edit the objects of the project in the work area. All other elements of WinCC are arranged on the borders of the work area.

Project data can also be edited here either in tabular form (e.g. tags) or graphically (e.g. process screens).

A toolbar is located at the top of the work area. For example, you can select formatting such as font and font color and functions such as rotate, align, etc. here.



# 4.3.13 Toolbox

In the toolbox window, you will find a selection of objects that you can insert in your screens, e.g. graphic objects and operator controls. In addition, the toolbox window also contains libraries with ready-made graphic objects and collections of faceplates.

The objects are moved to the work area using drag & drop.



## 4.3.14 Properties window

In the properties window, you edit the properties of the objects selected in the work area, e.g. the color of screen objects. The window is only available in specific editors.

The properties window also shows the properties of the selected object, organized by category. The changed values take effect as soon as the input field is exited. If you enter an invalid value, it is highlighted in color. The tooltip gives you information about the valid value range, for example.

Animations (e.g. color change at a change of signal state in the PLC) and events (e.g. screen change when a button is released) are also configured for a selected object in the properties window. Multilingual texts can also be managed here.

g Station [Scree	en]	<b>Properties</b>	🗓 Info 🔒	C Diagnostics	
Animations	Events Texts				
Ge	neral				^
		erview Sorting Station		Tooltip	=
	Number: 1	•			~
	Animations	Animations Events Texts General Pattern Name: Ov Background color: Grid color:	Animations Events Texts General Pattern Name: Overview Sorting Station Background color: 255, 255, 255  Grid color: 0,0,0	Animations Events Texts General Pattern Name: Overview Sorting Station Background color: 255, 255, 255 Grid color: 0, 0, 0 Number: 1	Animations Events Texts General Pattern Name: Overview Sorting Station Background color: 255, 255, 255 Grid color: 0, 0, 0 Number: 1

# 4.3.15 Additional tabs

The settings of the work area, such as the layer selection and the grid functions, can be made in the "Layout" window.

Animations, instructions, tasks and libraries of the selected object can be selected via other tabs.

Layout 🗖 🛽							
Options		A					
		Too					
✓ Layers		Foolbox					
Overview Sorting	~	×					
► Soluring							
Jayer_1 ●	=	10					
≝ Layer_2 ●		Inii					
≝ Layer_3 ●		mat					
🗾 Layer_4 🔹 👁		tion					
🗾 Layer_5 🛛 👁		ŝ					
🗾 Layer_6 🖉 👁		dalah					
💋 Layer_7 🖉 👁		**					
🗾 Layer_8 🖉 👁		ayou					
<ul> <li>I mor Q</li> <li>I mor Q</li> <li>I mor Q</li> </ul>	•	L.					
✓ Grid	-						
	~	*					
Layout mode		Ins					
Snap to lines		tru					
Snap to grid		đi					
O None		SUC					
Onone	111						
Grid							
Show grid		Ta					
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Lord Cont							
Y: 8	~						
< III >							
✓ Objects out of range							
Name Positi							
		-					
<	>	*					

# 5 Task

In this section, a process visualization is to be added to the program from section "SCE\_EN\_031-600 Global Data Blocks for S7-1200". This enables you to better monitor and process flow and control it more effectively.

# 6 Process visualization planning

A Touch Panel KTP700 Basic is to be used for the process visualization.

The programming device, a SIMATIC S7-1200 controller and the Touch Panel KTP700 Basic are connected to one another via the **Ethernet interface** using a SCALANCE XB005 UNMANAGED INDUSTRIAL ETHERNET SWITCH.

The wizard in the TIA Portal is to be used for the basic configuring. In doing this, all **system** screens are also to be created.

The process will be represented with the conveyor and sensors in an "Overview Sorting Station" overview screen. Conveyor speed and the plastic parts count will also be displayed here.

This operator is to be able to select the operating mode, start and stop in automatic mode and reset the counter in this screen.

In an additional **"Speed Motor"** screen, the actual speed of the motor will be graphically displayed. The speed setpoint can also be specified here.

The "Magazine Plastic" screen will be initially only created.

The screen name, date/time and system states "Emergency stop ok/released", "Main switch ON/OFF" and "Automatic started/stopped" are displayed in the **header**.

The **footer** has a button for returning to the root screen, a button for displaying the alarm window and a button for ending Runtime mode.

The **alarm system** is also to be configured.

System events of the panel are to be displayed as alarms and motor speed limit violations of the main switch are to be monitored.

In doing so, the alarms are automatically displayed in alarm windows when errors/warnings occur.

# 6.1 Program description for the sorting station with motor speed control and monitoring

The "MOTOR\_AUTO" [FB1] function block controls a conveyor in automatic mode.

The Memory\_Automatic\_Start\_Stop is switched on in a latching manner with Start, but only if the reset conditions are not present.

The Memory\_Automatic\_Start\_Stop is to be reset if Stop is pending, the safety shutoff is active or automatic mode is not activated from the visualization.

The Automatic\_Motor output is controlled when Memory\_Automatic\_Start\_Stop is set, the enabling conditions are met and Memory\_Conveyor\_Start\_Stop is set.

For energy saving reasons, the conveyor is to run only when a transport part is present. Therefore, Memory\_Conveyor\_Start\_Stop is set if Sensor\_slide signals a part and is reset if Sensor\_end\_of\_conveyor generates a negative edge, or the safety shutoff is active or automatic mode is not activated (manual mode).

Because Sensor\_end\_of\_conveyor is not mounted directly at the end of the conveyor, a signal delay of the Sensor\_end\_of\_conveyor signal is programmed.

The magazine for plastics holds only five parts. Therefore, the parts are counted at the end of the conveyor. If the magazine contains five parts, automatic mode is to be stopped. After the magazine is emptied, automatic mode is restarted with another Start, once the counter has been reset from the visualization.

The **speed is specified** with an input in the "MOTOR\_SPEEDCONTROL" [FC10] function in revolutions per minute (range: +/- 50 rpm).

The speed setpoint is first checked in the function for correct input in the range +/- 50 rpm.

If the speed setpoint is outside the range +/- 50 rpm, the value 0 is output at the speed setpoint output. The value TRUE (1) is assigned to the return value of the function (Ret\_Val).

If the specified speed is in the range +/-50 rpm, this value is first scaled to the range 0...1 and then scaled for the output as manipulated speed value at the analog output to +/-27648 with data type 16-bit integer (Int).

In the "MOTOR\_SPEED\_MONITORING" [FC11] function, the actual value is made available at -B8 as an analog value and is queried at an input of the "MOTOR\_SPEEDMONITORING" [FC11] function.

The actual speed value is scaled to revolutions per minute (range: +/- 50 rpm) and made available at an output.

The following four limits can be specified at the block inputs in order to monitor them in the function:

Speed > Speed limit error max

Speed > Speed limit warning max

Speed < Speed limit warning min

Speed < Speed limit warning min

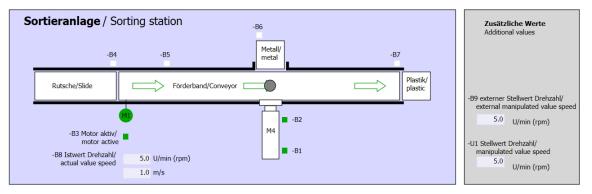
If a limit is exceeded or undershot, the value TRUE (1) is assigned to the corresponding output bit.

If a fault is present, the safety shutoff of the "MOTOR\_AUTO" [FB1] function block is to be triggered.

Speed setpoint and actual speed value as well as the positive and negative error and warning limits are created in the "SPEED\_MOTOR" [DB2] data block, as are the error and warning bits.

The setpoint and actual value of the counter for plastic parts will be specified and displayed in the global "MAGAZINE\_PLASTIC" [DB3] data block. These values are connected with the "MOTOR\_AUTO" [FB1] function block via an input for specification of the setpoint and via an output for display of the actual value.

# 6.2 Technology schematic diagram



Here you see the technology schematic diagram of the system for the task.

Figure 3: Technology schematic diagram

Schalter der Sortieranlage	Automatikbetrieb	Handbetrieb / Manual mode
Switches of sorting station	Automatic mode -P5 gestartet/started	-S3 Tippbetrieb -M1 vorwärts/ Manual -M1 forwards
-Q0 Hauptschalter/Main switch	-S1 Start/start	-S4 Tippbetrieb -M1 rückwärts/ Manual -M1 backwards
-P4 aktivienzenve	-S2 Stopp/stop	-P7 ausgefahren/extended
-S0 Betriebsart/operating mode		-S5 Zylinder -M4 einfahren/ cylinder -M4 retract

Figure 4: Operator panel

# 6.3 Reference table

DI	Туре	ID	Function	NC/NO
I 0.0	BOOL	-A1	Return signal emergency stop ok	NC
I 0.1	BOOL	-K0	Main switch "ON"	NO
10.2	BOOL	-S0	Mode selector manual (0) / automatic (1)	Manual = 0 Auto=1
10.3	BOOL	-S1	"Automatic start" pushbutton	NO
10.4	BOOL	-S2	"Automatic stop" pushbutton	NC
I 0.5	BOOL	-B1	Sensor cylinder -M4 retracted	NO
I 1.0	BOOL	-B4	Sensor part at slide	NO
l 1.3	BOOL	-B7	Sensor part at end of conveyor	NO
IW64	BOOL	-B8	Sensor actual motor speed +/-10V corresponds to +/- 50 rpm	

The following signals are required as global operands for this task.

DO	Туре	ID	Function	
Q 0.2	BOOL	-Q3	Conveyor motor -M1 variable speed	
QW 64	BOOL	-U1	Motor speed manipulated variable in both directions +/-10V corresponds to +/- 50 rpm	

#### Legend for reference list

- DI Digital input
- AI Analog input
- I Input
- NC Normally Closed
- NO Normally Open

- DO Digital output
- AO Analog output
- O Output

# 7 Structured step-by-step instructions

Here you will find an example of instructions for the planning task. If you already have a good understanding of everything, it is sufficient to focus on the numbered steps. Otherwise, follow the step-by-step instructions below.

### 7.1 Retrieving an existing project

→ Before you can expand the "SCE\_EN\_031-600 Global\_Data\_Blocks\_S7-1200.....zap14" project from section "SCE\_DE\_031-600 Global Data Blocks for S7-1200", you must retrieve it. To retrieve an existing project, you must select the respective archive from the Project view below → Project → Retrieve. Confirm your selection with Open.

$(\rightarrow \text{Project} \rightarrow \text{Retrieve} \rightarrow$	Selection of a	a .zap archive	$\rightarrow$ Open)
---	----------------	----------------	---------------------

Project	Edit	View	Insert	Online	1
😚 New					
Y Oper	n			Ctrl+O	l
Migr	ate proj	ect			
Clos	e			Ctrl+W	1
Save				Ctrl+S	
Save	as		Ctrl+Shift+S		
Dele	te proje	ct		Ctrl+E	
Arch	ive				
Retri	eve				
Man	age mu	ltiuser s	erver pro	jects	
T Card	Reader	USB m	emory	1	•
T Memory card file				1	•
Star	basic i	ntegrity	check		
Upgr	ade				
Exit				Alt+F4	

→ Next, the target directory in which the retrieved project is to be stored can be selected. Confirm your selection with "OK". (→ Target directory  $... \rightarrow OK$ ) → You save the opened project under the name 041-101\_WinCC\_Basic\_KTP700\_S7-1200. ( $\rightarrow$  Save  $\rightarrow$  project as ...  $\rightarrow$  041-101\_WinCC\_Basic\_KTP700\_S7-1200  $\rightarrow$  Save)

MA Siemens - D:\031-600_ Globa	al_Data_Block	s_\$7-120	00_V14\031	1-600_	Global_Data_	Blocks	_\$7-1200_V	4					-	_ 🗆 X
Project Edit View Insert O			Window		🕞 🖉 Go	online	🖉 Go offline	Å? US US	×	=		Fotally Integrated A	Automation PORT	AL
Open Migrate project Close	Ctrl+O Ctrl+W													
Save as	Ctrl+S Ctrl+S	12												📦 Tasks
Delete project Archive Retrieve	Ctrl+E	/14												E Libraries
Manage multiuser server projec	ts													rarie
Tard Reader/USB memory Tard Remory Card file	;													2g
Start basic integrity check Upgrade														
D:\\031-600_Global_Data_Blo	cks _57-12													
Exit	Alt+F4													
										Q Properti	es 🚺 Info	Diagnostics		-
			General	Ci	ross-referen	ces	Compile	Energy	Suite					
			8 🔺 🕄	Show	all messages		•							
		1	Messag	e							Go to	? Date	Time	
		•	Proj	ect 031-	-600_ Global_C	Data_Blo	ocks _57-1200_	V14 opened.				6/28/2017	9:20:43	÷
> Details view		<	٤]						88				>	10000
<ul> <li>Portal view</li> </ul>	Overview										🔄 🗹 Project (	31-600_Global_Data_f	locks	

# 7.2 Adding SIMATIC HMI Panel KTP700 Basic

→ To create a new panel in the project, switch to the Portal view. Select menu item → "Devices & Networks" and → "Add new device" in the Portal.

IA Siemens - C:\Users\mde\Desktop\D	ata\041-101_WinCC_Basic_KTP700_\$7-1200\041	I-101_WinCC_Basic_KTP700_\$7-1200 _ 🗆 🗙
		Totally Integrated Automation PORTAL
Start 🦓		Show all devices
Devices & anetworks	🥚 Show all devices	Details List Thumbnails
PLC programming	Add new device	PLC devices
Motion & 🗱		GPU_1214C
Drive parameterization	Configure networks	
Visualization		
Online & Joint Contract Online	Melp	
Project view	Opened project: C:\Users\mde\Des	ktop\Data\041-101_WinCC_Basic_KT\041-101_WinCC_Basic_KTP700_\$7-1200

→ Next, select → "HMI" → "SIMATIC Basic Panel" → "7" Display" → "KTP700 Basic" as the device variant and the correct order number of your panel; here, e.g. → 6AV2 123-2GB03-0AX0.

	🕶 🛅 HMI	Device:	MAX MINING
	🕶 🛅 SIMATIC Basic Panel		i i i i i i i i i i i i i i i i i i i
	🕨 🛅 3'' Display		
Controllers	🕨 🛅 4'' Display		
	🕨 🛅 6'' Display		
	🕶 🛅 7'' Display		KTP700 Basic PN
	✓ → KTP700 Basic		Kii 700 basic I W
	6AV2 123-2GA03-0AX0		
	6AV2 123-2GB03-0AX0	Article no.:	6AV2 123-2GB03-0AX0
HMI	🕨 🛅 KTP700 Basic Portrait	Version:	14.0.1.0
	🕨 🧰 9" Display		
	🕨 🛅 10'' Display	Description:	
	🕨 🛅 12'' Display		, 800 x 480 pixel, 64K colors; Key
	🕨 🛅 15'' Display	and Touch op PROFINET, 1 x	eration, 8 function keys; 1 x
	SIMATIC Panel	TROTINE I, TX	050
PC systems	SIMATIC Comfort Panel		
	🕨 🛅 SIMATIC Multi Panel		
	SIMATIC Mobile Panel		
	SIMATIC WinAC for Multi Panel		
-			

→ Enter the device name Panel KTP700 Basic and → select the I "Start device wizard" check box. Click the Add button.

Na Siemens - C:\Users\mde\Desktop\Da	ita\041-101_WinCC_Basic_KTP700_\$7-1200\041-	101_WinCC_Basic_KTP	700_57-1200			_ 🗆 X
					Totally Integrated Auto	mation PORTAL
Start 🦓		Add new device				
Devices & and the second secon	Show all devices	Panel KTP700 Basic				<u> </u>
PLC     Programming       programming     Image: Addition of the second	Add new device     Configure networks	Controllers Controllers Hoa PC systems			y, 800 x 480 pixel, 64K colors; Key peration, 8 function keys; 1 x	
	C Help	Drives	SIMATIC Nobile Panel     SIMATIC WinAC for Aulti Panel     Genetic WinAC for Aulti Panel			×
Project view	Opened project: C:\Users\mde\Desk	top\Data\041-101_Wi	nCC_Basic_KTP700_S7-1200\041-101_W	VinCC_Basic_K1	TP700_S7-1200	

### 7.3 HMI device wizard for Panel KTP700 Basic

The TIA Portal creates the desired panel and automatically starts the HMI device wizard for Panel KTP700 Basic. This supports you in specifying some basic settings and functions for the panel.

 $\rightarrow$  You are first prompted for the PLC connections. Select your previously configured

CPU 1214C as the communication partner.

Browse 🔻	
Name	CPU type
None	
CPU_1214C	CPU 1214C
	CF0 1214C

 $\rightarrow$  In order to connect your panel to the CPU, select the "PROFINET(X1)" interface.

...

HMI Device Wizard: KTP700	PLC connections	the PLC connection(s).	×
PLC connections Screen layout Alarms Screens System screens Buttons	Panel KTP700 Basic KTP700 Basic+ PN	Communication driver: SIMATIC S7 1200 Interface: PROFINET (X1)	CPU_1214C CPU 1214C DC/DC/DC Browse
Save settings	_	≪ <u>B</u> ack <u>N</u> ext ≫	<u>E</u> inish <u>C</u> ancel

 $\rightarrow$  Confirm your selection by clicking on "

 $\rightarrow$  You can change the default background color of your panel under "Screen layout".

$ ightarrow$ Select the 🗹 "Header", 🗹 "Date/time" and 🗹 "Logo" check boxes. $ ightarrow$ Confirm $\gamma$	your
selection by clicking on " $\underbrace{\mathbb{N}^{ext} > }$ ".	
HMI Device Wizard: KTP700 Basic PN X	

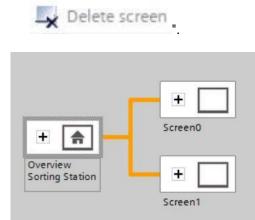
	Screen layout Select the screen objects to	o be displayed.
PLC connections 🥥		
Screen layout 🥚	Screen	Preview
Alarms 🥥	Resolution 800 x 480 pixe 💌 Background color	Statics Form
Screens 🥥		No. Time Date
System screens 🥥	Header	
Buttons 🥥	Logo Browse	
Save settings	≪ <u>₿</u> ack	<u>N</u> ext >> <u>Finish</u> <u>Cancel</u>

→ In the "Alarms" section, you can specify which of the alarms are to be displayed in a window. Select all three alarm types  $\boxed{} \boxed{} \boxed{} \rightarrow$  Confirm your selection by clicking on

HMI Device Wizard: KTP700	) Basic PN	×
	Alarms Configure the alarm settings.	
PLC connections Screen layout Alarms Screens System screens Buttons	Alarms  Unacknowledged alarms  Pending alarms  Active system events	Preview
Save settings	< <u>B</u> ack	xt >>> <u>E</u> inish <u>C</u> ancel

→ In the "Screen navigation" section, the screen structure is displayed with the screen name of the last created project, starting with the root screen on the far left.

 $\rightarrow$  A new name can be assigned simply by clicking on a screen name.  $\rightarrow$  If you click on  $\checkmark$  you can insert new screens in the hierarchy  $\rightarrow$  and delete selected screens by clicking on "



→ Use this approach to create the screen structure shown below with the corresponding screen names. → Confirm your selection by clicking on " $\boxed{Next}$ ".

HMI Device Wizard: KTP700	) Basic PN X
	Screen navigation Add new screens by clicking this button: +
	📑 Add screen 💂 Delete screen 📝 Rename 🛛 🛃 Delete all screens
PLC connections	
Screen layout	
Alarms	
Screens 🤇	
System screens	
Buttons	E Speed Motor
	Overview Sorting Station
	Magazine
	Plastic
Save settings	≪ <u>B</u> ack <u>Next</u> ≫ <u>E</u> inish <u>C</u> ancel

→ In the System screens section, you can select previously preset views for system functions and have them automatically added. → Select all system screens by clicking I "Select all".
 → Confirm your selection by clicking on "Next>>>".

HMI Device Wizard: KTP7	00 Basic PN			×
	System screens	elect the system screens.		
PLC connections Screen layout		Г	V 12	SIMATIC PLC System diagnostics view
Alarms	0	-	⊻ ⊫i	Project information
System screens Buttons	Overview Sorting Station	System screens	✓ <sup>1</sup> / <sub>1</sub> <sup>2</sup>	User administration
		-		System information
		L	<ul> <li>Contraction</li> </ul>	<ul> <li>Operating modes</li> <li>Language switching</li> <li>Stop Runtime</li> </ul>
	Select all			
Save settings		≪ <u>B</u> ack N	ext >>	<u>F</u> inish <u>C</u> ancel

→ In the System buttons section, you will find four user-selectable buttons for Exit (Runtime), Log on (Runtime), Language (Runtime)

System buttons	Preview
Exit Log on Language	Start screen
	Button area

→ Select only the "Button area" I Bottom". → Insert the button for the "Root screen" on the left and the button for "Exit" Runtime on the right. → Confirm your selection by clicking on "<u>Einish</u>".

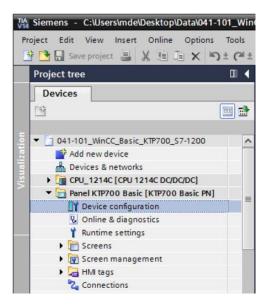
HMI Device Wizard: KTP700 Ba	Buttons	-drop or by clicking on available system buttons.
PLC connections		
Screen layout 🥥	System buttons	Preview
Alarms 🥥	Ŷ Qu	SMICH Provide State
Screens 🥝	Log on Language	No. Time Date
System screens 🥝		
Buttons 🥚		
		Button area
		🗌 Left 🛛 🛃 Bottom 📄 Right
		Reset all
Save settings	<< <u>B</u> ack	<u>Hext</u> <u>Finish</u> <u>C</u> ancel

## 7.4 Device configuration of Panel KTP700 Basic

→ The TIA Portal now automatically changes to the Project view and displays the root screen of the visualization.

ect Edit View Insert Online Option			Go offline	Totall	y Integrated Autom	nation PORTAL
Project tree	<b>↓</b> J0 → Pa			w Sorting Station 🛛 💻 🖬 🖬	X Toolbox	
Devices					Options	
¥ (		BIU	<del>S</del> A <sup>*</sup> ± <u>≣</u> ± <u>A</u> ± <u>A</u> ± <u>A</u> ±	*****	N 2 II II	cts
-						_
041-101_WinCC_Basic_KTP700_S7-1200	^	SIEME			^    Basic object	ts
Add new device		SIEIVIEI				
Devices & networks						
CPU_1214C [CPU 1214C DC/DC/DC]					A	<u> </u>
▼ 🔁 Panel KTP700 Basic [KTP700 Basic						
Device configuration		SIEMENS				
😨 Online & diagnostics		SIMATICHM	verview Sorting Station		✓ Elements	
Y Runtime settings					SI.0	0 -
Screens						
Screen management					A 5	E
🕨 🛃 HMI tags		Spee	ed Motor			E
2 Connections						
🖂 HMI alarms						
🛃 Recipes		Maga	azine Plastic		✓ Controls	
🔛 Historical data						0
5 Scheduled tasks					· M. E.	19
🔛 Text and graphic lists		品 Syste	em screens			
🙀 User administration	~		elcome to Pane	el KTP700 Basic (KTP70	•	6
	> <	III	> 100%	·	•	
Details view			Properties 1 Info	😨 Diagnostics 🛛 🗖 –	-	
	Genera	Cross-references	Compile Energy Suite	o biagnostics		
					_	
Name		Show all messages	•		> Graphics	

→ To configure the panel, select "Panel KTP700 Basic" in the project tree and open its "Device configuration" with a double-click.



#### 7.4.1 Setting the IP address

- $\rightarrow$  Select the Ethernet interface of the panel in the Device view with a double-click.
- → Under "General" in → "Properties", open menu item → "PROFINET interface [X1]" and select in the → "Ethernet addresses" entry.
- $\rightarrow$  Set the IP address "192.168.0.10" under IP protocol.

041-101_WinCC_Basic_K	TP700_S7-1200 → Panel KTP700 Basic [KTP700 Basic PN] 🛛 🗕 🖬 🚍	×
	🛃 Topology view 🛛 🔒 Network view 🛛 🕅 Device view	
Panel KTP700 Basic [KTF	700 E 📲 📅 🌆 💷 🛄 🔍 ± 🔤 Device overview	
KTP700 Basic PN	Module	
	HMLRT_1	^
	Panel KTP70      PROFINE      PROFINE	
	PROFINE	~
< 11	> 100%	
Panel KTP700 Basic.IE_C	2_1 [PROFINET Interface] 📴 Properties 🚺 Info 🗓 Diagnostics 🖬 🗏	-
General IO tags	System constants Texts	
General  PROFINET Interface [X1]	Ethernet addresses	< III
General	Interface networked with	
Ethernet addresses		
Advanced options	Subnet: PN/IE_1	
	Add new subnet	
	IP protocol	
	Set IP address in the project	
-	IP address: 192.168.0.10	
	Subnet mask: 255 . 255 . 255 . 0	
	Use router	
	Router address: 0 . 0 . 0	
	O IP address is set directly at the device	*

Note:

- The subnet mask was already set in the settings of the CPU 1214C and is automatically applied by the panel.
- → To obtain an overview of the assigned addresses within a project, you can click the → """ button in the → "Network view". If you click on → "Connections" here, the "HMI connection" between the CPU and panel that was created previously in the wizard is displayed.

041-101_0	mee_basic_RT	P700_S7-1200 > De		_ ■ ■ × Device view
Network	Connections	HMI connection	▼ ₩ ₩ <b>₩ ₩ Q</b> ±	
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### 7.5 Compiling the CPU and panel and saving the project

→ To compile the CPU, click on the "CPU\_1214C" folder, and select the button for compiling in the menu. To compile the panel, click on the "Panel KTP700 Basic" folder, and select the button for compiling in the menu. You can save your project by clicking on the save project button in the menu.

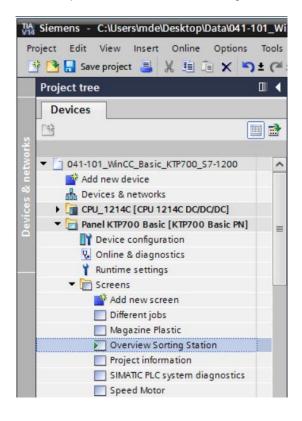
$(\rightarrow CPU_1214C \rightarrow \Box$	$\rightarrow$ Panel KTP700 Basic $\rightarrow$ $\longrightarrow$ $\xrightarrow{\blacksquare}$ Save project	).	
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▼ 🔄 041-101_WinCC_Basic_KTP700_S7 🔦			
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Devices & networks  CPU 1214C [CPU 1214C DC/DC/	CPU 1214C KTP700 Basic PN	z	Filter All
CPU_1214C [CPU 1214C DC/DC/     Panel KTP700 Basic [KTP700 B		• two	HMI
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✓ Details view	Template_Button	-	
	Button 'Template_Button_4' has no 'Off' text defined for the la Software compilation completed (device version: 14.0.1.0).	5	
	Software compilation completed (device version: 14.0.1.0).     Compiling finished (errors: 0; warnings: 5)	*	
Name	Company anshed (chois, o, warnings; 5)	>	> Information
	🗋 Overview So 🛔 Devices & ne	Project 041-101_Wind	

→ In the "Info" area under "Compile", it is then shown whether the compilation was successful or whether warnings or errors occurred.

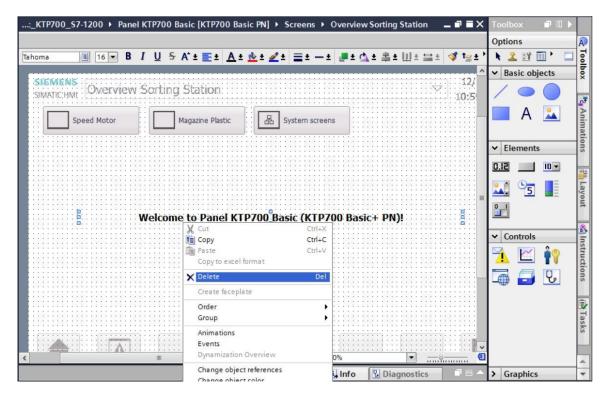
			<b>Properties</b>	1 Info	🖁 Diagnos	tics	78	-
General	Cross-references	Compile	Energy Suite					
0 🛓 🕄	Show all messages							
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4	Template_Button					~		
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0		Software comp	vilation completed (d	evice version	: 14.0.1.0).	~		
<u>I</u>		Compiling finis	hed (errors: 0; warnin	ngs: 5)				~
<			m				>	

### 7.6 Configuring the Graphic view

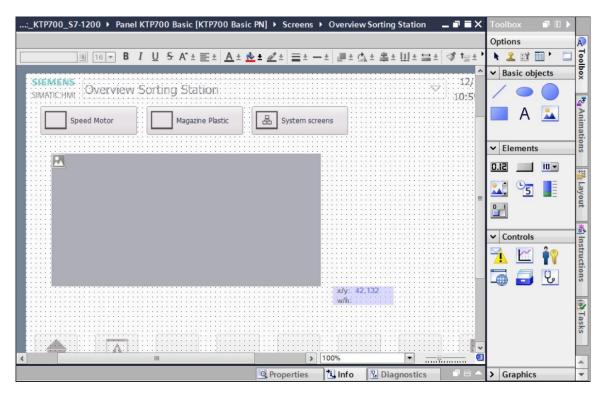
 $\rightarrow$  After successful compilation, you want to design the first screen for the visualization. To do this, open the  $\rightarrow$  "Overview Sorting Station" screen with a double-click:



→ Several objects, such as the screen change buttons, have already been created by the wizard. The text box in the center of the screen is to be removed by right-clicking on it and selecting → "Delete" in the displayed dialog.



→ Select → "Graphic view"  $\checkmark$  from → "Basic objects" in Toolbox. The mouse pointer changes in such a way that it can now be used to draw an area for the display of a graphic in the work window.



→ You can double-click on the area of the Graphic view to have its properties displayed. In subitem → "General", select → the symbol for  $\rightarrow$  "Create new graphic from file".

101_WinCC_Basic_KT	[P700_\$7-	1200 › Panel KTP700 B	asic [KTP	700 Basic I	N] • Screens	• Overvie	w Sorting Station	_ # = ×
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	or	Magazine Plastic	æ	System scre	ens		10:59:39 AM	
					>	100%	×	
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Layout Miscellaneous		Name <none> AlarmDisplay_KTP700_B Down_Arrow ExitRuntime_KTP700_Ba</none>	.png	Size 71 x 50 96 x 96 71 x 50	< III >		a graphic from the list. lick it or click the "Apply" button.	in the second
		Create new graphic from fil	e		Ľ		Ap	oply

#### Note:

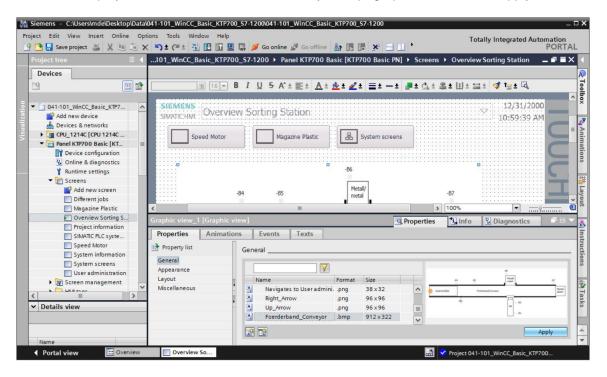
- There are four sub-items for the properties of objects:
  - Properties for static settings of the object
  - Animation for dynamic settings of the object
  - Events when actions are to be triggered from an object
  - Texts for multilingual display within an object

 $\rightarrow$  In the displayed dialog, select the "Foerderband\_Conveyor.bmp" file from the "SCE\_EN\_041-101\_Screens" folder and click  $\rightarrow$  "Open".



#### Note:

- You can draw the graphics used in this document yourself and save them in \*.bmp format or download them from the Internet at <u>siemens.com/sce/S7-1200</u> in module "SCE\_EN\_041-101 WinCC Basic with KTP700 and S7-1200" under "SCE\_EN\_041-101\_Screens".
- $\rightarrow$  For the display, select the "Foerderband\_Conveyor.bmp" graphic and click  $\rightarrow$  "Apply".



#### Note:

 The created graphic is stored in the project in the "Languages & resources" path under "Graphic collection". → Use the mouse to position the graphic in such a way that the positions and sizes indicated below are entered → under "Layout" in → Properties. The → "Fit graphic to object size" option can be used for adjusting the size.

041-101_WinCC_Basic_KTF	7700_\$7-1200 → Panel KTP700 Basic [KT	P700 Basic PN]	Screens      Overview Sorting Station	_∎∎×∢
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•	-B4 -B5	-B6 Metall/ metal	-87	UCH
Rutsche/Slide	Förderband/Conveyor	₄ь	Plastik/ plastic	
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General Appearance Layout Miscellaneous	Position & size           X:         16         ➡         ₹         765         ➡           Y:         130         ➡         ₹         268         ➡	13	Fit to size No auto-sizing Fit graphic to object size Fit object size to largest graphic	

### 7.7 Displaying a process value in an IO field

→ First, insert a display of the actual value of the current speed below the conveyor motor. For this, select → "Program blocks" and the → "SPEED\_MOTOR[DB2]" data block of → "CPU\_1214C". Next, move the → "Speed\_Actual\_Value" tag from the → Details view to the "Overview Sorting Station" screen using drag & drop.

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	CPU_1214C [CPU 1214C DC/DC/DC]							Ani
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→ The connection to the tag in the PLC is already created in "Properties" of the IO field under "General" and "Process". The "Display format" is correctly set to "Decimal". Only the "Format pattern" and the "Type" of the field are changed here to → "s999.99" and → "Output", respectively.

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Layout	PI	C tag:	SPEED_MOTOR.Spe		>	Decimal places	0	
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Miscellaneous	Туре					Format pattern	_	
Security	•		Output		┏	romacpattern		
			Input Input/output Output					

#### Note:

- The format pattern s999.99 means that the IO field is displayed with three places before decimal, two places after the decimal and a sign.
- $\rightarrow$  The "Color" of "Background" is changed to  $\rightarrow$  "Blue" under "Appearance" in "Properties".

I/O field_1 [I/O fi	eld]		<b>1</b>	roperties 1 Info	😮 Diagnostics 👘 🗉 📼
Properties	Animations	Events Texts			
Property list	Appearar	ice			
General Appearance	Backg	round		Border	
Characteristics		Color:	49, 101, 255 💌	Width:	4
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Miscellaneous	Text			boenground color.	
Security	<u>+</u>	Color:			
		Unit:	More colors		

 $\rightarrow$  Under "Text format" in "Properties", change "Alignment" "Horizontal" to  $\rightarrow$  "Right".

I/O field_1 [I/O fi	eld]			<b>Properties</b>	1 Info	<b>B</b> Diagnostics	
Properties	Animations	Events Text	s				
Property list	Text for	mat					
General	Form						
Appearance	Form	at:					
Characteristics		Fon	t: Tahoma, 17px				
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Text format		onentation					
Limits	A 11						
Styles/Designs	Align	ment					
Miscellaneous		Horizonta	l: Right				-
Security	•		I: Top				

 $\rightarrow$  Under "Layout" in "Properties", you change  $\rightarrow$  "Position & size" as illustrated here so that the IO field is displayed below the conveyor motor.

I/O field_1 [I/O fi	ield]			9	Properties	1 Info	Diagnostics		
Properties	Animations	Events	Texts						
Property list	Layout	3) 							
General	Desiti	ion & size				Margins			
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Characteristics		X: 194	<b>\$</b> н-н	80		1		2	
Layout		Y: 347	• I	33	1		2	2	
Text format						1			
Limits	Fit to	size							
Styles/Designs				-					
Miscellaneous		t object to cont	tents						
Security									

→ For the description, you insert a → "Text field" A from → "Basic objects" of Toolbox after the IO field using drag & drop. Type in the texts → "Speed actual value" and → "rpm".

			Options
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-	B4 -B5	Metall/ metal	-e / • •
	-		- A 🔜
Rutsche/Slide	Förderband/Conve	yor	Text field
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Speed actual value		M4	S 95
	+000.00 rpm	-B1	

→ Select the three objects → IO field → text field "Speed actual value" → text field "rpm" in this order and click on the → "Align selected objects on top" function in the toolbar of the work area. Save your project by clicking on Save project.

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				추 변 수 약	<b>⊨</b> ^ ~	Basic ob	jects
	-B4	-B5	Metall/ metal	Align sele	cted objects	on top.	
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					= ~	Element	s
	M1		-B2		0.	12	
Speed actu		000.00 <sup>1</sup> rpm	M4			5	

### 7.8 Visualizing binary signals with animated rectangles/lines

→ For visualization of the sensors, start with sensor "-B4" at the slide. To enable you to better draw and position the rectangle, change the zoom factor to  $\rightarrow$  "300%".



→ Then, use drag & drop to move a "Rectangle" from  $\rightarrow$  "Basic objects" of Toolbox to the position of sensor "-B4".

700_S7-1200 > Panel KTP700 Basic [KTP700 Basic PN] > Screens > Overview Sc	rting Station 💶 🖬 🖬 🗙 Too	lbox 🗗 🛛 🕨
	Opt	ions 🔊
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→ Next, use the mouse to change the rectangle to the appropriate position and size or set the → "Position & size" under "Layout" in "Properties" as shown here. As a result, the sensor is displayed below the "-B4" label.

700_\$7-1200 > I	Panel KTP70	0 Basic [KT	P700 Basic	PN] > Scr	eens 🕨 C	verview S	orting S	tation	<u>п                                    </u>	
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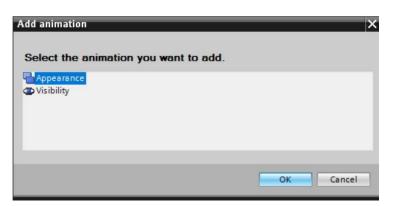
→ Under "Appearance" in "Properties", change the "Color" of "Background" to  $\rightarrow$  "Gray" and the "Width" of "Border" to  $\rightarrow$  "0".

Rectangle_1 [Re	ctangle]			<b>Properties</b>	Linfo 🗓 🖸 Diagnostics		
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	•				4.	Color: 2	4, 28, 49
	-					Color: 2	4, 2

 $\rightarrow$  Now switch to the "Animations" tab, select "Display" and click  $\rightarrow \stackrel{\text{\tiny left}}{=}$  "Add new animation".

Properties	Animations	Events	Texts				
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Overview		Display					
Add new	animation	Appearance	e	<b>1</b>	~	Dynamize colors and flashing	
Movements		Visibility			7	Make visibility dynamic	

 $\rightarrow~$  In the displayed dialog, select  $\rightarrow$  "Appearance" and click  $\rightarrow$  "OK".



→ To establish the connection to the global tag in the CPU, select → "PLC tags" and → "Tag table\_sorting station" below → "CPU\_1214C". Next, move the → "-B4" tag from the Details view to the "Name" field for the tag using drag & drop.

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✓ Details view     Overview <sup>©</sup> Display <sup>©</sup> Display <sup>©</sup> Add new animation <sup>©</sup> Add new anim			🔔 🛄 🚺 🛓
✓ Details view     Overview <sup>©</sup> Display <sup>©</sup> Display <sup>©</sup> Add new animation <sup>©</sup> Add new anim		Appearance	
Name:     -E4       Add new animation     -Adpearance       Add new animation     -Adpearance       Address:     -Multiple bits       Single bit     -       Bool     -       Bool     -       Bool     -       Bool     -	Overview	Tag	
Name         Data type          Advertients         Single bit         0 ÷           -01         01         001          62         Bool          Fange ▲         Background color         Fashing            -03         -03         Bool           Add new>	The Display		<b>嵐</b>
Name         Data type          Advertients         Single bit         0 ÷           -01         01         001          62         Bool          Fange ▲         Background color         Fashing            -03         -03         Bool           Add new>		on Name: -B4 🗵 💿 Range	T
Name         Data type          Advertients         Single bit         0 ÷           -01         01         001          62         Bool          Fange ▲         Background color         Fashing            -03         -03         Bool           Add new>		Address: O Multiple bits	Iska
4□         82         Bool          E         Range ▲         Background color         Border color         Flashing           4□         +83         Bool	Name Data type	Single bit 0 🗢	
42 62 000		Panea , Background color Border color Elsthing	
V V V V V V V V V V V V V V V V V V V	Contract Con		Craphics
🖣 Portal view 🔚 Overview So			

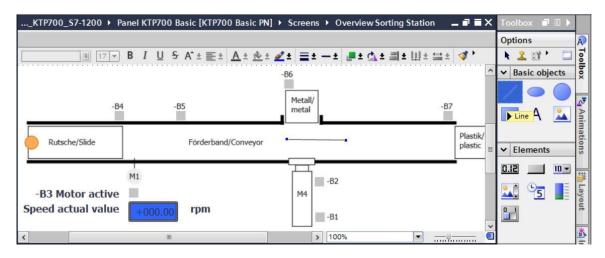
→ Under "Appearance" in "Display", add a range with value  $\rightarrow$  "1" (signal state "High") and change the "Background color" to  $\rightarrow$  "Green".

Rectangle_1 [R	lectangle]			9	Properties	L. Int	fo 追 🖁 Di	agnostics	
Properties	Animations	Events	Texts						
	A	ppearance							
Overview		Tag					Туре		
🕶 🖀 Display							Type		
Add new	animation	Name:	-B4		10		💽 Range		
🛁 Appeara	nce	Address:					O Multiple	bits	
Movements							Single b		
							O single b		
	4	Range 🔺	Ba	ckground color	Border color		Flashing		
		1	-	0, 255, 0	24, 28, 4	19 💌	No	-	
	•	<add new=""></add>							
			-						
	Į.			More colors	< 1				

- → Next, use the steps shown previously to create a display for sensors → "-B1", → "-B2", → "-B5", → "-B6" and → "-B7".
- → Insert an additional binary display below motor M1 and connect it to the global tag → "-B3". For the description, insert a text field  $\rightarrow$  "-B3 Motor active" in front.

KTP700_\$7-1200 > Pa	anel KTP700 Basic [KTP700 Basic PN] → Screens → Overview Sorting Station 🛛 🗕 🖬 🗮 🗙
	B I U S A*± E± A± ★± ✓± ≡± −± ■± A± ≡± Ш± ≡± ∢, -B6
-84	-B5 Metall/ metal -B7
Rutsche/Slide	Förderband/Conveyor
-B3 Motor active Speed actual value	M1 +000.00 rpm -82 -81
Rectangle_8 [Rectangle]	IIII > 100% The second
Properties Animati	ons Events Texts Appearance
Overview Display Add new animation Appearance Movements	Tag     Type       Name:     -B3       Address:
	Range     Background color     Border color     Flashing       1     0, 255, 0     24, 28, 49     No <add new=""></add>

 $\rightarrow$  In order to display that the conveyor is being controlled, drag the "Line" object from  $\rightarrow$  "Basic objects" of Toolbox onto the conveyor.



→ Under "Appearance" in "Properties", change "Style" of the line to  $\rightarrow$  "Solid" and "Color" of "Foreground" to  $\rightarrow$  "Green". Change the "Line ends" at "Start" and "End" to "Arrow".

asic_KTP700_S	7-1200 🕨 Panel KTP70	0 Basic [KTP700 Ba	sic PN] → Screer	ns 🕨 Overview Sort	ting Station	_∎≅×
	<u>17</u> ■ B I <u>U</u> <del>S</del>	A* ± <u>■</u> ± <u>*</u>	± 🗶 ± 🚍 ± —	± 📑 ± 🖾 ± 🗐 ±	Ш± ☱± 📢	\$ 1 <u>⇒</u> ± ⊑a
			-B6			· · · ·
			Metall/			
	-B4 -B	5	metal		-B7	::
	_					
Rutsche/Slid	e	Förderband/Conveyor		-		lastik/ lastic
<		I		> 100%		· · · · · · · · · · · · · · · · · · ·
Line_1 [Line]			<b>Properties</b>	🗓 Info 🚺 🗓		
Properties	Animations Event	s Texts				
Property list	Appearance					
Appearance	Line		Lir	ne ends		
Layout Styles/Designs						
Miscellaneous		dth: 6		Start:		•
		yle: Solid		End:		•
	4	lor: 0, 255, 0	•	Line end shape:	Flush	
	Background co					
	Fill st	yle: Transparent				

 $\rightarrow$  Now switch to the "Animations" tab, select "Display" and click  $\rightarrow$   $\stackrel{\text{\tiny eff}}{=}$  "Add new animation".

Line_1 [Line]					<b>Properties</b>	🔄 Info (	Diagnostics	
Properties Ar	nimations	Events	Texts					
	An	imation types	5					
Overview		Display						
<ul> <li>B Display</li> <li>Add new animation</li> </ul>		Appearar	ice	<b>*</b> 7	Dynamize (	olors and flas	hina	
Movements		Visibility				lity dynamic		

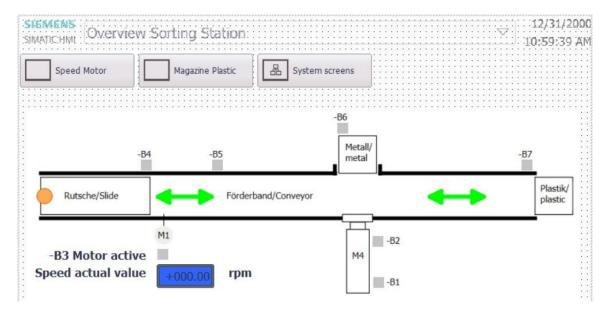
 $\rightarrow~$  In the displayed dialog, select  $\rightarrow$  "Visibility" and click  $\rightarrow$  "OK".

Add animation	×
Select the animation you want to add.	
Appearance Visibility	
	OK Cancel

→ To establish the connection to the global tag in the CPU, select → "PLC tags" and → "Tag table\_sorting station" below → "CPU\_1214C". Next, drag the → "-Q3" tag from the Details view to the "Tag" field. In addition for the type of evaluation, select → "Range", enter "From" → 1 "To" → 1 and select → "Visible" for "Visibility".

Siemens - C:\Users\mde\Desktop\Data\041-101	_WinCC_Basic_KTP700_S7-1200	0041-101_WinCC_Basic_KTP700_\$7-1	200		1	x
Project Edit View Insert Online Options To	ols Window Help			Totally Integra	ated Automation	
📑 📴 🔚 Save project 🔳 🐰 🗐 🛅 🗙 🏷 🛨	(* ± 🖥 🖪 🖬 🖉 🖉 🖉	Go online 🖉 Go offline  🏦 🖪	🗶 📑 🛄 < earch in project> 📲		PORTAL	
Project tree 🔲 🕻	<u>.</u> KTP700_\$7-1200 → Pane	el KTP700 Basic [KTP700 Basic PN]	Screens > Overview Sorting S	itation 🔄 🖬 🖬 🗙	Toolbox 🗊 🗉 🕨	
Devices					Options	A
🖻 🔲 📑	<b>1</b> 7 ▼ <b>B</b>	I <u>U</u> <del>S</del> A <sup>*</sup> ±≣± <u>A</u> ± <u>&amp;</u> ±	🖉 ± 🚍 ± - ± 📕 ± 🖾 ± 🗐 ±	Ш±≌± 🗳 '	N 🙎 🖽 🐂 🗔	Toolbox
			-86	^	✓ Basic objects	lboy
					100	
Add new device     Add new device     Add new device	-B4	-B5	Metall/ metal	-B7		₫.
▼ [] CPU_1214C [CPU 1214C DC/DC/DC]			Inietai	=	🔲 A 🔛	Animations
Device configuration	Rutsche/Slide	Förderband/Conveyor	-	Plastik		nati
Program blocks	Rutsche/Silde	Forderband/Conveyor		plastic	✓ Elements	suo
Technology objects				~	v or	
External source files     PLC tags	<		> 100%	<u> </u>		1 te
Show all tags	Line_1 [Line]	<u>S</u> P	roperties 🚺 Info 🚺 🗓 Diagi	nostics	🚨 ° <u>5</u> 📕	Layout
Add new tag table	Properties Animation	ns Events Texts				ħ
Default tag table [29]		Visibility			_	*
PLC data types	Overview	Process	Visibility		✓ Controls	Ins
Watch and force tables	<ul> <li>Display</li> <li>Add new animation</li> </ul>	Tag:	Visible			truc
Gonline backups      Traces	Visibility	-Q3	Invisible		7 🖾 🚺	Instructions
	Movements	Range From: 1			🔄 🔁 🕓	S
V Details view	•	To: 1	0			
		○ Single bit 0 🗘				Tasks 🔿
Name Data type	-					ks
-Q2 Bool A						
-Q3 Bool 🔳						
-50 Bool E						
40 -51 Bool ✓					> Graphics	-
Portal view     Dverview	Overview So		🔜 😒	The project 041-101_Win	CC_Basic_KTP	

→ Copy the arrow from the symbol library with all its properties using  $\rightarrow$  <sup>[1]</sup> "Copy" and <sup>[1]</sup> "Paste".



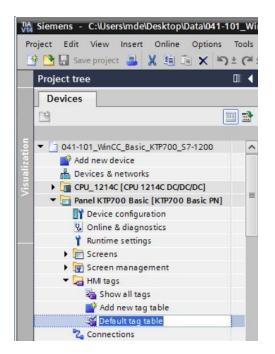
### 7.9 Connections and HMI tags

→ Before you download the configuration to the Panel KTP700 Basic, you should check the connection to the CPU 1214C. To do this, double-click → "Connections" in → "Panel KTP700 Basic". In the displayed view, you can check the IP addresses and connection settings again. It is also important that the I Online check box is selected for the connection.

TA Siemens - C:\Users\mde\Desktop\Data\041	-101_V	/inCC_Basic_KTP700_S7-1	200\041-101_WinCC_Ba	sic_KTP700_S7-1200					-	п×
Project Edit View Insert Online Option:			🍠 Go online 📓 Go offlin		Search in project> 🛛 🗿	•	Totally Int	tegrated Au	tomation PORTA	L
Project tree		041-101_WinCC_Basic_	_KTP700_\$7-1200 > 1	Panel KTP700 Basic [KTP700 B	asic PN] → Connect	ions			_ # # ×	3 🕄
Devices										1
	•	Connections to S7 PLCs	in Devices & Networks						3	Tasks
=		Connections								is i
• 041-101_WinCC_Basic_KTP700_\$7-1200	^	Name	Communication driver	HMI time synchronization mode	Station	Partner	Node	Online	Comment	100
Add new device Add new device Devices & networks CPU_1214C [CPU 1214C DC/DC/DC]	=	Add new>	SIMATIC S7 1200	None	S7-1200 station_1	CPU_1214C	CPU 1214C DC/DC/			Librarie
Panel KTP700 Basic [KTP700 Basic     Device configuration										S
Conline & diagnostics		<							>	> -
Runtime settings		Parameter Area	pointer	10						
		KTP700 Basic PN	.e.					St	ation	
HM alarms Recipes	~	PROFIN	IET (X1) *					_		
✓ Details view	1.51									
		HMI device				PLC				
		Address:					Address:		0 . 1	
Name		Access point:	TONLINE				Access password:			
HMI_Connection_1										
						Q Properties	🚺 Info 👔 🖏 Di	agnostics		1
Portal view     Overview	2.0	onnections					The project 041-101		VTP.	
							the project 041-101	_mmcc_basic	_NII	

Note:

- If access protection has been enabled for the CPU 1214C, the access password can also be entered for the panel here.
- → To go to the HMI tags, you must double-click the → "Default tag table" in the → "HMI tags" folder below → "Panel KTP700 Basic". All tags that were created with drag & drop have been entered here.



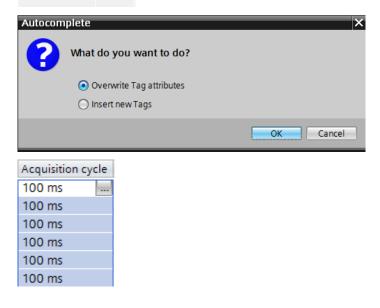
 $\rightarrow$  In the default tag table, you can check which tags are being accessed in the CPU 1214C. You can also make other settings.

The "Acquisition cycle" of the tags is to be accelerated from 1 second to 100 milliseconds. For this, click on the  $\rightarrow$  selection field and double-click a new acquisition cycle  $\rightarrow$  "100 ms" to select it.

9	• 🗄 🐁										<b>3</b>
Def	ault tag table										
1	Name 🔺	Data type	Connection	PLC name	PLC tag	Address	Access mode	Ac	quisition cycle	Source comment	
•	-B1	Bool	HMI_Connecti	CPU_1214C	"-B1"	1000	symbolic acce	• 1	s 🔳	sensor cylinder -M4 re	tracted (no)
	-B2	Bool	HMI_Connection_1	CPU_1214C	"-B2"			-			
	-83	Bool	HMI_Connection_1	CPU_1214C	*-B3*	▼ 📄 Panel KTP7	00 Basic [KT			$\mathbf{\nabla}$	
	-B4	Bool	HMI_Connection_1	CPU_1214C	"-84"	Cycles 🗠		1	lame	Cycle tim	e Cycle unit
	-B5	Bool	HMI_Connection_1	CPU_1214C	"-B5"				None		
	-B6	Bool	HMI_Connection_1	CPU_1214C	"-B6"			Ċ	100 ms	100	Millisecor
5	-87	Bool	HMI_Connection_1	CPU_1214C	*-B7*			Ċ	500 ms	500	Millisecor
1	-Q3	Bool	HMI_Connection_1	CPU_1214C	"-Q3"			è	1 s	1	Second
	SPEED_MOTOR_Speed_Actual	Real	HMI_Connection_1	CPU_1214C	SPEED_N			d.	2 s	2	Second
1	Tag_ScreenNumber	UInt	<nternal tag=""></nternal>		<undefin< td=""><td></td><td></td><td>Ċ</td><td>5 s</td><td>5</td><td>Second</td></undefin<>			Ċ	5 s	5	Second
	<add new=""></add>							e de la	10 s	10	Second
								Ċ	1 min	1	Minute
								Ċ	5 min	5	Minute
								Ċ	10 min	10	Minute
								Ċ	1 h	1	Hour

→ You can make the settings of other tags using the "Auto complete" function by selecting the bottom right corner of the first entry with the mouse and dragging over the other entries.

Acquisitio	n cycle	Logged
100 ms	і∎	
1 s		
1 s		
1 s		
1 s		
1 s		
1 s		
1 s		
1 s		



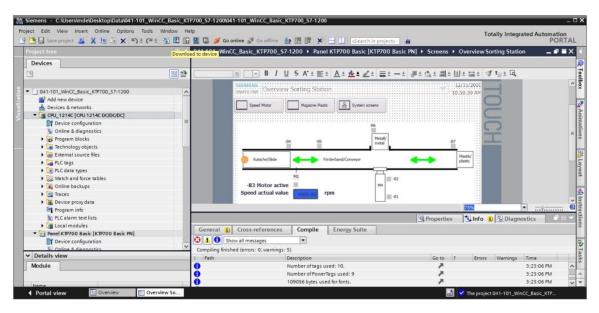
### 7.10 Downloading the CPU and panel

→ Before the project is downloaded to the CPU and the panel, compile the CPU and panel again and save the project.



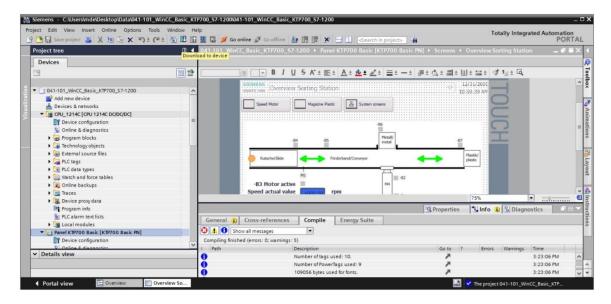
→ After successful compilation, the entire controller with the created program including the hardware configuration, as previously described in earlier modules, can be downloaded.

(→ 🛄)



 $\rightarrow$  To download the visualization to the panel, follow the same procedure. Select the

 $\rightarrow$  "Panel KTP700 Basic [KTP700 Basic PN]" folder and click the  $\rightarrow$  "Download to device" button.



- → The manager for configuration of connection properties (Extended download) opens. First, the interface must be correctly selected. This is done in three steps:
  - $\rightarrow~$  Type of the PG/PC interface  $\rightarrow$  PN/IE
  - $\rightarrow$  PG/PC interface  $\rightarrow$  here, e.g. Intel(R) Ethernet Connection I219-LM
  - $\rightarrow$  Connection to interface/subnet  $\rightarrow$  "PN/IE\_1"

The field  $\rightarrow$  "Show all compatible devices" must be selected and the search for devices in the network must be started by clicking the  $\rightarrow$  [Start search] button.

	Device	Device type	Slot	Туре	Address	Subnet	
	Panel KTP700 Basic.IE			PN/IE	192.168.0.10	PN/IE_1	
		ype of the PG/PC inter	face:	PN/IE		<b>.</b>	
		PG/PC inter		1000	Ethernet Connection (4) I2		
	Conne	ection to interface/su		Direct at s			۲
		1st gate			ATR D = 1992 3.6 1		
	Device	Device type		ace type	Address Access address	Target device	e
	-	-	PN/IE		Access address	-	
Flash LED							
	:				Display only error	<u>S</u> tart so r messages	earc
ine status information							
line status information							

→ If your panel is displayed in the "Compatible devices in target subnet" list, it must be selected, and the download must be started.

	Configured access nod	es of *Panel KTP700 B	asic"				
	Device	Device type	Slot	Туре	Address	Subnet	
	Panel KTP700 Basic.IE	PROFINET Interface	5 X1	PN/IE	192.168.0.10	PN/II	E_1
		ype of the PG/PC inter	face	PN/IE			<b>.</b>
		PG/PC inter		-	hernet Connection (4) 12	19-I M	-
	Conne	ection to interface/sul	onet	Direct at slo			•
		1st gate					
	Device hmi 1	Device type SIMATIC-HMI		ace type	Address 192 168 0 10	Target d	evice
Tana Salita I	hmi_1	SIMATIC-HMI	PN/IE PN/IE	sce type	192.168.0.10 Access address		evice
in the second se							
						<b>.</b>	
Flash LED e status informatic	on: shed to the device with add				Display only erro		art sear

ightarrow You first receive a preview. Confirm the prompt ightarrow "Overwrite all" and continue with ightarrowLoad .

status	1	Target	Message	Action	
<b>+</b> []	0	▼ Panel KTP700 Basic	Ready for loading.		
	0	Overwrite	Overwrite if object exists online?	Overwrite all	
	0	Fit	Components with a different version are installed on the target de	Fit	
	0	HMI Runtime	Informations		
(			10		
				Pe	efresh

Note:

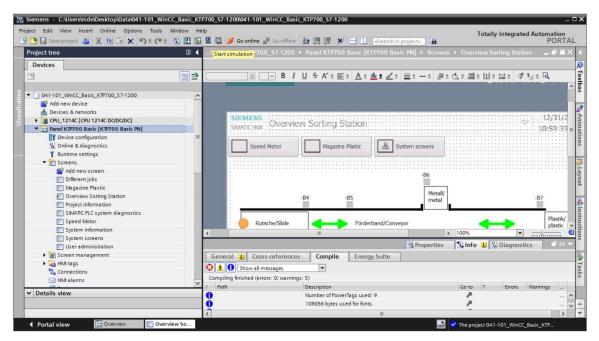
In the "Load preview", you should see the 2 symbol in each line, in which actions will be \_ performed. You will see additional information in the "Message" column.

# 7.11 Testing the process visualization in the simulation

So that a connection can be established between the Runtime Simulation on the PG/PC and the S7-1200 CPU, the PG/PC interface must first be set to TCP/IP.

No.	Procedure:
1	<ul> <li>Open the Control Panel</li> <li>Using "Start &gt; Control Panel"</li> <li>Or using "Start &gt; Settings &gt; Control Panel" (in the classical start menu as in earlier Windows versions)</li> </ul>
2	Double-click the "Set PG/PC interface" icon in the Control Panel.
3	On the "Access Path" tab, set the following parameters: <ol> <li>For "Access Point of the Application", select S7ONLINE (STEP 7).</li> <li>From the "Interface Parameter Assignment Used" list, select the interface "TCP/IP(Auto) -&gt; with your network adapter that is connected directly to the panel and controller, e.g. Intel® Ethernet Connection.</li> <li>Click OK and confirm the subsequent prompt with OK.</li> </ol> Set PG/PC Interface Access Path LLDP/DCP PNIO Adapter Info Access Point of the Application: STONLINE (STEP 7) -> Intel® Ethernet Connection (4) I219-LM.TCPIP. Interface Parameter Assignment Used: Interface Parameter Assignment Used: Interface Parameter Assignment Used: Interface Parameter Assignment Used: Interface Parameter Connection (4) I219-LM.TCPIP. Interface Parameter Connection (4) I219-LM. Corpy. Diagnostics Diagnostics (Parameter assignment Or the IE-PG access to your NDIS CPs with TCP/IP Protocol (RFC-1006)) On the Second Corp. On the Second Corp. On the Second Corp. Delete On the Second Corp. On the Se
	OK Cancel Help

 $\rightarrow$  Select "Panel KTP700 Basic" and click the  $\rightarrow$   $\blacksquare$  "Start simulation" button.



→ The process visualization is performed on the PC in its entirety with connection to the process data in the CPU 1214C. To close the simulation, you can select the  $\rightarrow$   $\bigcirc$  button for "End Runtime" or close the window by clicking on  $\rightarrow$  " $\bigcirc$ ".

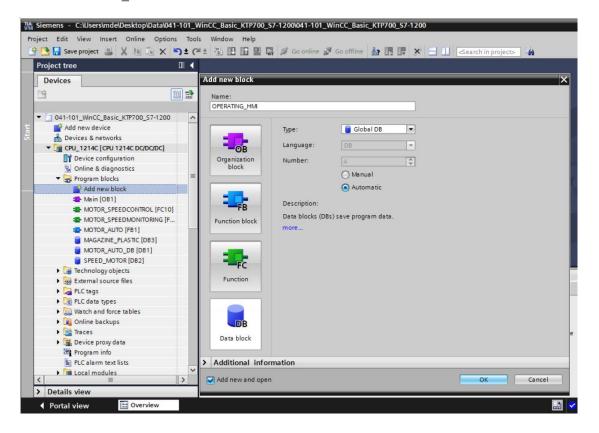
RT Simulator		-	×
	SIEMENS SIMATIC HN	/11	
	SIEMENS       Overview Sorting Station       6/28/20         SIMATIC HMI       Overview Sorting Station       3:16:15 H         Speed Motor       Magazine Plastic       Es System screens		
	-B6 Metall/ metal -B7 Plastik/ plastic Plastik/ plastic	G	
	-B3 Motor active Speed actual value +0.00 rpm		
	F1 F2 F3 F4 F5 F6 F7 F8		

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### 7.12 Switches and buttons for process operation

 $\rightarrow$  To have an interface for process operation available in the PLC, select  $\rightarrow$  "Add new block" in

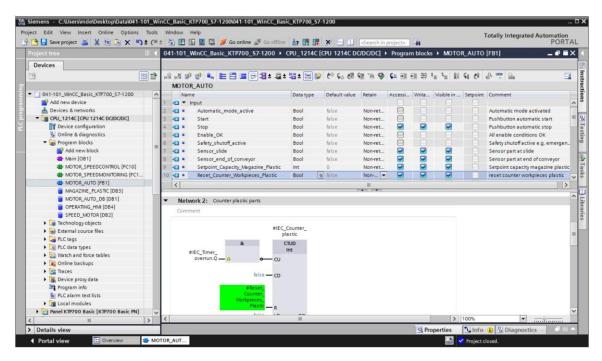
the "Program blocks" folder below "CPU\_1214C" and create a global data block "OPERATING\_HMI".



→ In the "OPERATING\_HMI" data block, create four tags of data type Bool: → "mode\_selector",
 → "automatic\_start", → "automatic\_stop" and → "reset\_counter\_plastic". The start value of the "automatic\_stop" is also preassigned with → "true".

101	*	*	🖌 🛃 🚞 🥸 Keep ad	tual values	Snaps	shot 🖄	Copy s	napshots	to start value	s 🖳 🖳	Load start values as actual values 📩 📑
	OF	ERA	ATING_HMI								
		Nar	me	Data type	Start value	Retain	Accessibl	Writabl	Visible in	Setpoint	Comment
1	-01	-	Static								
1	-		mode_selector	Bool	false						HMI mode selector manual(0) / automatic(1
3	-		automatic_start	Bool	false						HMI pushbutton automatic start
ļ.	-		automatic_stop	Bool 🔳	true						HMI pushbutton automatic stop
	-00		reset counter plastic	Bool	false					Ā	HMI reset counter workpieces plastic

→ The "MOTOR\_AUTO[FB1]" function block is now expanded to include an input tag → "Reset\_Counter\_Workpieces\_Plastic" of type → "Bool". This tag is move onto the → "R" input of the "CTUD" counter in Network 2 using drag & drop.



→ Next, the call of the "MOTOR\_AUTO[FB1]" function block must be updated in the "Main[OB1]" block. This is done by clicking the → "Update inconsistent block calls" button <sup>3</sup>.

roject tree 🛛 🗍	1-101_WinCC_Basic_KTP70	0_\$7-1200 > CPU_	1214C [CPU 1214C	DC/DC/DC] • Progra	m blocks + Main [OB1]	_ # = ×	Instru	uctions 🗗 🗓
Devices							Optio	ms
9	ka ka ⊉ 🕾 🖿 🗖 🗖	- #± #± !#:	1 = 12 C 6 d	# G# 🕸 🚛 I_ I_	G M &	-		
	Main						H En	vorites
041-101_WinCC_Basic_KTP700_S7-1200	∧ Name	Data type	Default value	Comme Update incons	istent block calls		• ra	vontes
Add new device	1 🕣 🕶 Input	ooto type	Dereon rende	comme			6	>=1 [??] .
Devices & networks	2 CI = Initial Call	Bool		Initial call of this OB		Ê		
CPU_1214C [CPU 1214C DC/DC/DC]	3 - Remanence	Bool		=True, if remanent dat	a are available		-01	→ -[-]
Device configuration		in the second	hand hand	in a state of the		~		
Q Online & diagnostics	a >=1 📅 → −ol 🛏	-[-]					-	
Program blocks		1 2 · · ·					✓ Ba	sic instruction
Add new block						^	Name	
🖀 Main [OB1]	▼ 🕄 Network 3: Control conve	yor motor forwards in a	utomatic mode					General
MOTOR_SPEEDCONTROL [FC10]	Comment					_		Bit logic operatio
MOTOR_SPEEDMONITORING [FC1	Comment					_		Timer operations
MOTOR_AUTO [FB1]			24.0	OTOR_AUTO_				Counter operatio
MAGAZINE_PLASTIC [DB3]			N/K	DB"				Comparator oper
MOTOR_AUTO_DB [DB1]				SEB1				Math functions
OPERATING_HMI [DB4]			240	OTOR_AUTO*				Move operations
SPEED_MOTOR [DB2]			EN					Conversion opera
Technology objects								Program control o
External source files			"-50" Automatic_ mode_active					Word logic operat
PLC tags	8		%0.3				· =:	Shift and rotate
C data types	50.1		"-S1" - Start			-		
Watch and force tables	*-ко* —		540.4					
Online backups	90.5		"-52" -0 Stop				1	
🕨 🚰 Traces	*-81* — +		Enable_OK					
Device proxy data								
Program info		>=1					<	10
PLC alarm text lists		\$20.0					> Fv	tended instruc
Local modules		*-A1* 0					-	and the second second second second
Panel KTP700 Basic [KTP700 Basic PN]	×					~	_	chnology
III )	<	10		> 100	% -		> Co	mmunication

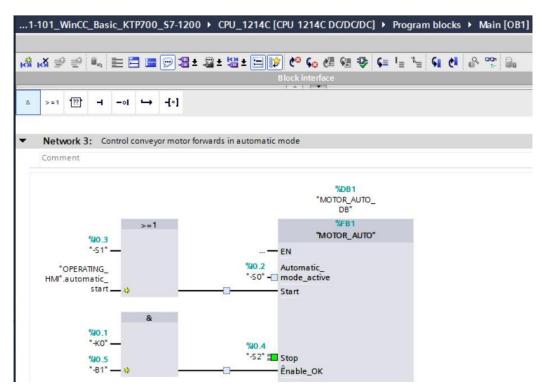
 $\rightarrow$  In Network 3 of the "Main[OB1]" block, drag an  $\rightarrow$  "OR" in front of input tag  $\rightarrow$  "Start".

			2"	a <sup>1</sup>			2	-a -	-24 ×	-a -			<b>90</b> €≞	1 100 1	4	<b>\$</b> = '	'≣ '≅	91	C	0,	
-	Main																				
		lame						Data	type		De	fault va	ue	Comm	nent						
	• •	-		al Cal	r.			Bool						Initial	call	.f.thi	OR				
	•			an_can				Bool									ent dat			hla	
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a	>=		11	-	-01	-	1-1														
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	Cor	nme	nt											%DB1 TOR_AL DB" %FB1 TOR_A	-						
	Cor	mme	nt									EN Autom	"MO	TOR_AU DB*	-						

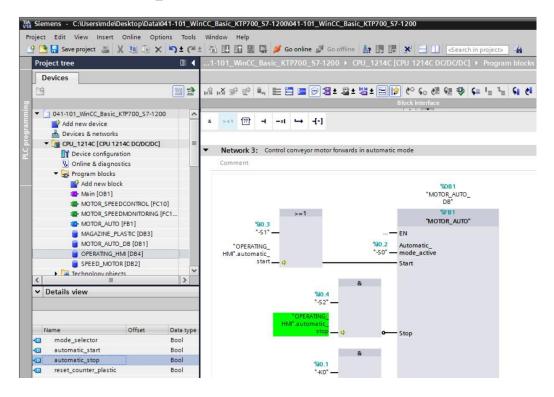
→ The second free input of the → "OR" is connected to the → "automatic\_start" tag from data block "OPERATING\_HMI".

Save project 📑 🐰 🛄	🗈 X 🎝 ± (ª ±	🔋 🔃 🛐 🖳 🏹 💋 Go online 💋	Go offline 🛔 🖪 🕼 🛠 🖃 🛄 <earch in="" project=""></earch>
Project tree	□ ◀ .	1-101_WinCC_Basic_KTP700_\$7-1	200  ► CPU_1214C [CPU 1214C DC/DC/DC]  ► Program blo
Devices			
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			Block interface
041-101_WinCC_Basic_KTP700_	\$7-1200		
Add new device		& >=1 [??] → -ol → -[=]	
Devices & networks		Speed_Setpoint - Setpoint_speed	THO
- CPU_1214C [CPU 1214C DC/	DC/DC]	Setpoint_speed	ENO —
Device configuration			
V. Online & diagnostics		<ul> <li>Network 3: Control conveyor motor</li> </ul>	or forwards in automatic mode
<ul> <li>Program blocks</li> </ul>		Comment	
Add new block			
Hain [OB1]			%DR1
			"MOTOR_AUTO_
MOTOR_SPEEDMONIT	ORING [FC1		DB*
MOTOR_AUTO [FB1]		>=1	%FB1
MAGAZINE_PLASTIC [		%10.3	"MOTOR_AUTO"
MOTOR_AUTO_DB [DE OPERATING_HMI [DB4		"-S1" —	<b>—</b> EN
SPEED_MOTOR [DB2]		OPERATING_	%40_2 Automatic_
Technology objects	~	HMI".automatic_	"-S0" - mode_active
< III	>	start — 💠 —	Start
✓ Details view			
		&	
		%40.1 "-K0" —	%0.4
	i posterente	\$40.5	"-S2" —• Stop
Name Offs		*-B1*	Enable_OK
mode_selector	Bool		LINE JA
automatic_start automatic_stop	Bool		>=1

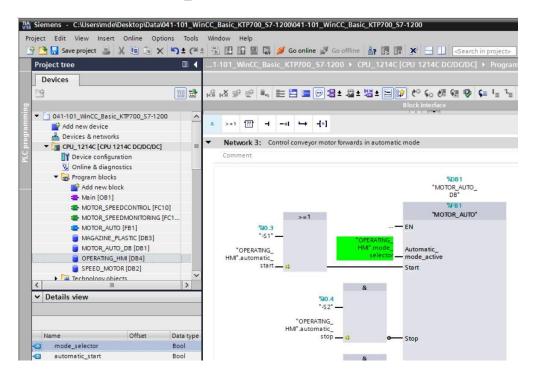
 $\rightarrow$  In Network 3 of the "Main[OB1]" block, drag an  $\rightarrow$  "AND" in front of input tag  $\rightarrow$  "Stop".



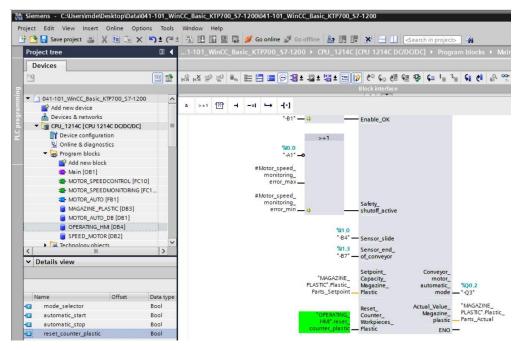
→ The second free input of the → "AND" is connected to the → "automatic\_stop" tag from data block "OPERATING\_HMI".



→ The input tag → "Automatic\_mode\_active" is connected to the → "mode\_selector" tag from data block "OPERATING HMI".

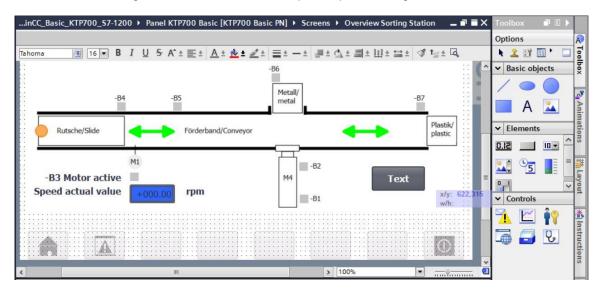


→ The input tag → "Reset\_Counter\_Workpieces\_Plastic" is connected to the → "reset\_counter\_plastic" tag from data block "OPERATING\_HMI".



- $\rightarrow$  Compile the CPU again and save the project.
  - $(\rightarrow CPU_1214C \rightarrow \square \rightarrow \square Save project)$
  - → Download the changed program including the hardware configuration to the CPU 1214C.  $(\rightarrow \square)$

→ To implement a pushbutton that resets the workpiece counter for the plastic parts, use drag & drop to move the → "Button" object from → "Elements" in Toolbox to the "Overview Sorting Station" screen below the plastic parts storage.



 $\rightarrow$  Under "General" in "Properties", enter  $\rightarrow$  "Reset" for "Label".

Button_1 [Butto	n]			<b>Properties</b>	Info 🔒 Diagnostics			
Properties	Animations	Events	Texts					
Property list	General					^		
General	Mode			Label				
Appearance	Mode			Label				
Fill pattern	Text			( Te:	xt			
Design				Ŭ		=		
Layout	Graph	nic		() Te:	xtlist			
Text format	Graph	nics or text		Text v	when button is "not pressed"			
Styles/Designs	f or i			Reset				
Miscellaneous	Grapt	nics and text						
Security		ble		Tex	xt when button is "pressed"			

→ Under "Appearance" in "Properties", change the fill pattern to "Solid" and "Color" of "Background" to → "Blue".

Button_1 [Butto	n] 🧐 Proj	perties 🚺 Info 🚺 🗓 Diagnostics 📄 🖃 🥆
Properties	Animations Events Texts	
Property list	Appearance	
General	Background	Border
Appearance	background	border
Fill pattern	Color: 49, 101, 255 🔻	Width: 2
Design	Fill pattern:	Style: Solid
Layout		
Text format	Corner radius: 3	Color: 66, 73, 82 🔻
Styles/Designs		Background color: 107, 105, 107
Miscellaneous	Text	
Security	Color: 255, 255, 255 💌	

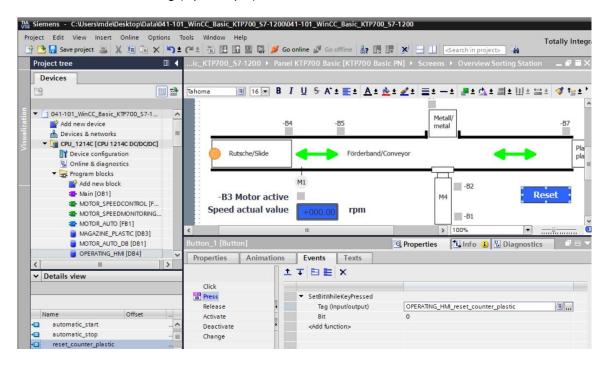
→ The functionality must also be configured as a pushbutton. To do this, go to the "Events" menu, select the  $\rightarrow$  "Press" event and  $\rightarrow$  "<Add function>".

Button_1 [Butt	on]		<b>Properties</b>	🗓 Info 🔋 🗓 Diagnostics	18-
Properties	Animations	Events Texts			
Click	1	TBEX			
Press		<add function=""></add>			
Release					
Deactivate	•				
Change		<			>
					/

 $\rightarrow$  Under "System functions", select "Edit bits" and  $\rightarrow$  "SetBitWhileKeyPressed" as the function.

Button_1 [Button]	📴 Properties 🛛 🚺 Info 🔒 🗓 Diagnostic	cs 🗌 🗆 🖿
Properties Animati	ons Events Texts	
Click		
Press		
Release	✓ System functions	^
Activate	<ul> <li>All system functions</li> </ul>	
Deactivate	► Alarms	
Change	Calculation script	=
	InvertBit	
	InvertBitInTag	
	ResetBit	
	ResetBitInTag	
	SetBit	
	SetBitInTag	
	SetBitWhileKeyPressed	~

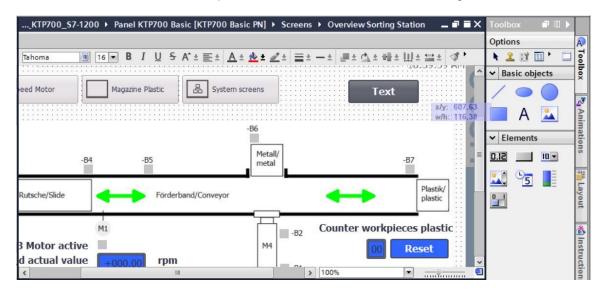
→ For the process connection, select → "Program blocks" and the → "OPERATING\_HMI[DB4]" data block of → "CPU\_1214C". Next, drag the → "reset\_counter\_plastic" tag from the → Details view to the "Tag (input/output)" field.



 → As previously shown in the document, insert a text → "Counter workpieces plastic" above the button and a display of the → "actual\_plastic\_parts" tag from the "MAGAZINE\_PLASTIC[DB3]" block to the left of the button.

oject Edit View Insert Online 🔁 📑 Saveproject 🔳 🐰 💷	and the second second	and the second second second second	S Go	online 🔊 Go of	ffline		Sea	rch in project>	То	tally In
Project tree		ic_KTP700_S7-1200 >	-		1.000		1.		23	
Devices										
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				2 - A -	<u> </u>		-	67 - XA - 101		
▼ 3 041-101_WinCC_Basic_KTP700_	-74						_			
Add new device	57-1		-B4		35		Metall/			-B7
Devices & networks	=		-04				metal			-07
▼ CPU 1214C [CPU 1214C DC/E	1000		-							[
Device configuration		Rutsche/Slide	3	-	Förderband/	Conveyor		-	-	
Q Online & diagnostics			· .		rorderburky	conveyor				
<ul> <li>Program blocks</li> </ul>				+						_
Add new block				M1			<u> </u>	-82		
Main [OB1]		-B3 Motor a					M4	-02	Rese	ot
MOTOR_SPEEDCONTRO	DL [F						Inlet.			•
MOTOR_SPEEDMONITO	RING	Speed actual v	alue	+000.00	rpm			-B1		
MOTOR_AUTO [FB1]						_				
MAGAZINE_PLASTIC [D	B3]	<		III			> 10	0%	<u> </u>	Ÿ
MOTOR_AUTO_DB [DB	1]	Button_1 [Button]				<b>Propertie</b>	s 🔃	Info 追 🎖 D	agnostics	
CPERATING_HMI [DB4]	~	Properties Animat	tions	Events	Texts					
<	>	Troperdes Anima								
✓ Details view			1	TBE	×					
		Click								
		101 Press		▼ SetBitWhile	KeyPressed					
		Release	4	Tag (Inp	out/output)	OPERATING	5_HMI_res	set_counter_plas	stic	
Name Offse	54 L 1015	Activate		Bit		0				
automatic_start	^	Deactivate	•	<add funct<="" td=""><td>ion&gt;</td><td></td><td></td><td></td><td></td><td></td></add>	ion>					
automatic_stop	🗐	Change								

 $\rightarrow$  To implement the button, use drag & drop to move the  $\rightarrow$  "Button" object  $\square$  from  $\rightarrow$  "Elements" in Toolbox to the top next to the buttons for the screen change.



→ Under "General" in "Properties", change "Mode" to  $\rightarrow$  "Graphics and text". Click the symbol to open the selection dialog for the  $\rightarrow$  "Graphic when button is not pressed".

Button_2 [Butto				<b>Properties</b>	🗓 Info 🤢 📱 Diagnostics					
Properties	Animations	Events	Texts							
Property list	General									
General Appearance	Mode			Label						
Fill pattern	() Text			Text when	button is "not pressed"					
Design	⊖ Graphi			Start						
Layout	Graphi									
Text format	🔵 Graphi	ics or text								
Styles/Designs	Graphi	ics and text		Text whi	en button is "pressed"					
Miscellaneous				Start						
Security	Invisib	le			Graphic Graphic when button is "not pressed"					
	Hotkey			Graphic						
	None			Graphic wh						
				Graphic	when button is "pressed"					

→ Next, click the symbol for "Create graphic from file" and double-click the "Pushbutton-Round-G\_Off\_256c.bmp" file in the "SCE\_EN\_041-101\_Screens" folder in the displayed dialog.

Name	Format	Size	
NavigateHome_KTP700_	png	71 x 50	~
Navigates to Different jo	png	38 x 32	
NavigateHome_KTP700_ Navigates to Different jo Navigates to Magazine F Navigates to Project info Navigates to SIMATIC PL. Navigates to System info Navigates to System info Navigates to System scr Navigates to User admir Pushbutton-Round-G_Of. Right_Arrow	۹png	38 x 32	
Navigates to Project info	png	38 x 32	
Navigates to SIMATIC PL.	png	38 x 32	
Navigates to Speed Mot	opng	38 x 32	
Navigates to System info	opng	38 x 32	=
Navigates to System scr	epng	38 x 32	
Navigates to User admir	nipng	38 x 32	
Pushbutton-Round-G_Of.	bmp	504 x 504	
Right_Arrow	.png	96 x 96	
Up_Arrow	.png	96 x 96	
			~

→ Similarly, select the "Pushbutton-Round-G\_On\_256c.bmp" file in the "SCE\_EN\_041-101\_Screens" folder for the "Graphic when button is pressed".

Button_2 [Butte	on]			<b>Properties</b>	Linfo 🚺 🛛 Diagnostics				
Properties	Animations	Events	Texts						
Property list	General								
General Appearance Fill pattern Design Layout Text format Styles/Designs Miscellaneous Security	Graph	ics or text ics and text		Start	Text when button is "not pressed"          Start         Image: Text when button is "pressed"				
Security	Hotkey None			Pushbutton-	en button is "not pressed" Round-G_Off_256c when button is "pressed" Round-G_On_256c				

#### Note:

- The created graphics are stored in the project in the "Languages & resources" path under "Graphic collection".
- $\rightarrow$  Under "Layout" in "Properties", change the size of the button under  $\rightarrow$  "Position & size".

Button_2 [Butto	on]			💁 Prope	rties	🗓 Info 追 🗓	Diagnosti	cs 🗖 🗖 🗖
Properties	Animations	Events	Texts	]				
Property list	Layout							
Appearance	Position & s	ize			Fit to	size		
Fill pattern	X: 61	2	₩ 50	•	🗌 Fit	object to contents		
Design	Y: 51	•	I 50	•				
Layout					Text r	nargins		
Text format	Fit graphic t	to size					*** 0	•
Styles/Designs			•20		3			Patronica in the second second
Miscellaneous		ing of graph	IC			0	0	\$
Security	Stretch gr	aphic			Pictur	e margins		
	Alignment	graphic			1	0	<b>***</b> 0	٥
	Ho	rizontal: C	entered	-	[	0		٢
<		Vertical: M	iddle	•				

→ The functionality as a pushbutton is implemented again as a → "Press" event with "System function" → "SetBitWhileKeyPressed".

The  $\rightarrow$  "automatic\_start" tag from the  $\rightarrow$  "OPERATING\_HMI[DB4]" data block is used for the process connection.

Kiemens - C:\Users\mde\Desktop\Data\041-101_Wir	CC_Basic_KTP700_S7-1200\0	41-101_WinCC_Basic_KTP700_\$7-12	00	
Project Edit View Insert Online Options Tools	Window Help	online 🖉 Go offline 🛔 🖪 🖪 🕺	🗧 🛄 < earch in project> 🕻 🙀	Totally Inte
Project tree 🔲 🖣	)0_\$7-1200   Panel K1			_∎≡×
Devices				
<b>•</b>	Tahoma 16 -		± <b>∠</b> ±   ≡ ± − ±   <b>#</b> ± △ ± ₩ ± U	
5 Bovices & networks	1941	Trees		10:59:39
CPU_1214C [CPU 1214C DC/DC/DC]     Device configuration     □	eed Motor Ma	gazine Plastic 品 System scree	ns Start	
S Online & diagnostics				
Program blocks      Add new block		-B(	5	
Main [OB1]			<u> </u>	
MOTOR_SPEEDCONTROL [FC10]		05	Metall/	
MOTOR_SPEEDMONITORING [FC11]	-B4	-85	metal -B	2
Totor_Auto [FB1]				
MAGAZINE_PLASTIC [DB3]	Rutsche/Slide	Förderband/Conveyor		Plastik/
MOTOR_AUTO_DB [DB1]			> 100%	piastic   ♥
OPERATING_HMI [DB4]     SPEED_MOTOR [DB2]	Button_2 [Button]			
		🔍 Prop	perties Info 🗓 🗓 Diagnostics	
✓ Details view	Properties Animati	ons Events Texts		
		±∓⊟≣×		
	Click			-
Name Offset Data type	ress	<ul> <li>SetBitWhileKeyPressed</li> </ul>		
a mode_selector Bool	Release	Tag (Input/output)     Bit	OPERATING_HMI_automatic_start	
automatic_start Bool	Activate Deactivate	Bit <add function=""></add>	0	
automatic_stop Bool	Change			
reset_counter_plastic Bool	chunge			

→ Next, a "button" for the Stop pushbutton is inserted, as shown in the last steps. The "Pushbutton-Stop\_Off\_256c.bmp" and "Pushbutton-Stop\_On\_256c" files in the "SCE\_EN\_041-101\_Screens" folder are used as graphics.

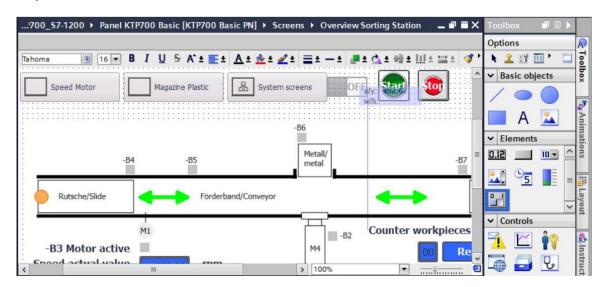
Basic_KTP7	00_\$7-1200   Panel KTP700 B	asic [KTP700 Basi	c PN] > Screens	Overview Sorting Station	_ @ = ×
Tahoma	II 16 ▼ B I U S A*±	🗄 ± <u>Å</u> ± 🔬	1 = t - t d	💵 🖞 후 배 후 🎚 후 🚍 후 📢 🗗	👷 🗄 🖓
Speed M	otor Magazine Plastic	System	screens	<b>1</b>	
			-B6		
<	ш		>	100%	
Button_3 [Butt	on]		<b>Properties</b>	🗓 Info 追 🗓 Diagnostics	
Properties	Animations Events 1	Texts			
Property list	General				
General Appearance Fill pattern	Mode		Label Text when buttor	is "not pressed"	
Design Layout	) Graphic		Stop		
Text format Styles/Designs Miscellaneous	Graphics or text		Text when but	ton is "pressed"	
Security	) Invisible				
	None	•	Graphic Graphic when bu	tton is "not pressed"	
			Pushbutton-Stop	_Off_256c	
			Graphic when	button is "pressed"	
			Pushbutton-Stop	_On_256c	

→ The functionality as a "normally closed" pushbutton is implemented here with two events. The first event is the → "Press" event with "System function" → "ResetBit" and the second event is the → "Release" event with "System function" → "SetBit". In both cases, the → "automatic\_stop" tag from the → "OPERATING\_HMI[DB4]" data block is used for the process connection.

m]		<b>Properties</b>	🗓 Info 🤢 🗓 Diagnostics	18
Animations	Events	Texts		
1	TBE	×		
	▼ ResetBit			
	Tag (Ir	nput/output)	OPERATING_HMI_automatic_stop	
	<add fund<="" td=""><td>tion&gt;</td><td></td><td></td></add>	tion>		
-				
		Animations Events	Animations Events Texts	Animations Events Texts  Animations Events Texts  Animations Events Texts  Animations Events Texts  Animations OPERATING_HML_automatic_stop

Button_3 [Butte	on]			<b>Properties</b>	🗓 Info 🚺 🗓 Diagnostics	
Properties	Animations	ons Events				
	1	TBE	×			
Click						
Press		▼ SetBit				
Release		Tag (In	nput/output	)	OPERATING_HMI_automatic_stop	
Activate		<add fund<="" td=""><td>ction&gt;</td><td></td><td></td><td></td></add>	ction>			
Deactivate						
Change						
	-					

→ To implement the mode selector, use drag & drop to move the → "Switch" object  $\square$  from → "Elements" in Toolbox to the top between the buttons for the screen change and the Start pushbutton.



→ Under "General" in "Properties", enter the texts → "Auto" for the "ON" state and → "Man" for the "OFF" state. The → "mode\_selector" tag from the → "OPERATING\_HMI[DB4]" data block is used for the process connection.

Via Siemens - C:\Users\mde\Desktop\Data\04	101_WinCC_Basic_KTP700_\$7-1200\041-101_WinCC_Bas	sic_KTP700_S7-1200
Project Edit View Insert Online Option	Tools Window Help ) 🛨 (🍽 🗄 🕕 🌆 🔛 🙀 💋 Go online 🖉 Go offline	Totally Inte
Project tree 🔲 🖣	sic_KTP700_S7-1200  ▶ Panel KTP700 Basic [KTP7	700 Basic PN] + Screens + Overview Sorting Station 🛛 🗕 🖬 🗮 🗙
Devices		
Devices & networks     CPU_1214C [CPU 1214C DC/     Device configuration	Speed Motor Magazine Plastic	System screens Mari 🖭
Online & diagnostics     Second		-86
Add new block  Main [OB1]  Motor SPEEDCONTRO	-B4 -B5	Metall/ metal
MOTOR_SPEEDMONITO	Switch 1 [Switch]	Properties
MAGAZINE_PLASTIC [D MOTOR_AUTO_DB [DB1]	Properties Animations Events Texts	
OPERATING_HMI [DB4]     SPEED_MOTOR [DB2]	Property list General	
<	General         Process           Appearance         Fill pattern           Fill pattern         Tag:         OPERATING_HM_m           Design         Design         Design	
Name Offset	Layout Address:	Bool
mode_selector automatic_start automatic_stop	Limits Value for "ON": 1	ON: Auto OFF: Man
<pre>reset_counter_plastic</pre>	Security	

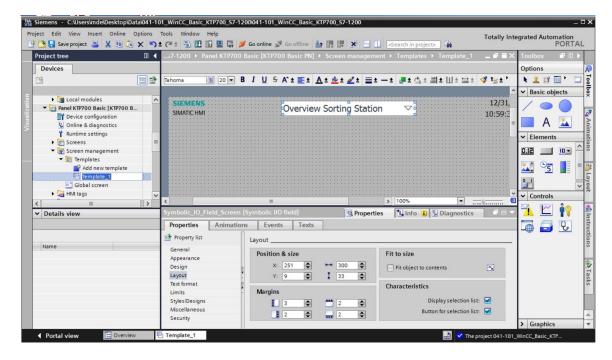
 $\rightarrow$  Under "Layout" in "Properties", change the size of the mode selector under  $\rightarrow$  "Position & size".

KTP700_S7-12( Tahoma		<ul> <li>Screens → Overview Sorting Station _ ■ ■</li> <li>              ± = ± - ± ■ ± @ ± ■ ± Ш ± = ± ♥      </li> <li>             n screens      <li>             man: State         </li> </li></ul>
witch_1 [Switch Properties	Mations Events Texts	-B6 Metall/ > 100% operties
Property list General Appearance Fill pattern Design Layout Text format Limits Styles/Designs Miscellaneous	Layout Position & size X: 506 ♥ ₩₩ 100 ♥ Y: 51 ♥ I 50 ♥ Fit graphic to size No stretching of graphic ● Stretch graphic	Settings Change direction: Left to right  Fit object to contents Margins text  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Security	Alignment graphic Horizontal: Centered Vertical: Middle	Margins graphic

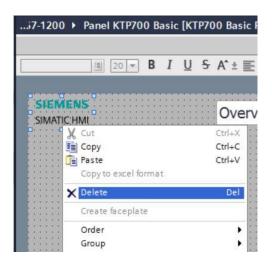
- → Compile the panel and save the project. (→ Panel KTP700 Basic →  $\boxed{1}$  →  $\boxed{1}$  Save project )
  - $\rightarrow$  Download the modified visualization to the panel. ( $\rightarrow$   $\blacksquare$ )

### 7.13 Changing the header and footer in the template

- → The plant states should be displayed universally in the header. "Template\_1" was created for the header and footer by the wizard when the panel was created. The footer contains the system buttons. The logo, date and time and the symbolic IO field for selection and display of screens have already been created in the header.
- $\rightarrow$  First, the "Symbolic\_IO\_Field\_Screen" is changed to the size specified here under "Layout" in "Properties" in  $\rightarrow$  "Position & size".



→ Delete the logo on the left side of the header by right-clicking the → Graphic view for the LOGO and clicking → "Delete".



 $\rightarrow~$  Open the  $\rightarrow$  "Text and graphic lists" folder below "Panel KTP700 Basic".

	-	(# ± 🖥 🛄 🖬 🛄 🛤					
Devices						E Text lists	👷 Graphic list
	1	<b>→ +</b>					
		Text lists					
Local modules	_	Name		Selection	Comment		
<ul> <li>Panel KTP700 Basic [KTP700 B</li> </ul>			TextList_OriginalScreenNames Value/Range		comment		
Device configuration	11	1 TextList_ScreenNames	indiric 3	Value/Range			
V. Online & diagnostics	<add new=""></add>						
Y Runtime settings		o do neme					
Screens	- 11						
Screen management	- 11						
HMI tags							
Connections		Text list entries					
MII alarms		Default Value	Text				
📑 Recipes			TEAL				
Historical data							
5 Scheduled tasks	=						
Text and graphic lists							
User administration							

 $\rightarrow$  Under "Graphic lists", create an additional  $\rightarrow$  "Graphic\_list\_warning" with  $\rightarrow$  Selection "Bit (0,1)".

						1	Text lists	Craphic lists
Gra	aphic lists							E
	Name 🔺			Selection		Comment		
2	Graphic_list_warning			Bit (0, 1)	-	1		
	<add new=""></add>	<add new=""></add>				1		
				Bit number (0 - Value/Range	31)			
				level leve	1			
Gra	aphic list ent	ries						
	Value 🔺 Graphic na Graphic		Graphic					
	<add new=""></add>							

→ Click the symbol next to "Value 0" to open the selection dialog for the graphics stored in the "Graphic collection" in the "Languages & resources" path. Next, click the symbol for "Create graphic from file" and double-click the "Warning.bmp" file in the "SCE\_EN\_041-101\_Screens" folder in the displayed dialog. This file is now stored in the "Languages & resources" path under "Graphic collection".

									E Text	lists	Graphic list
Gra	aphic lists										
	Name 🔺				Se	election		Comment			
-	Graphic_list_warning <add new=""></add>					it (0, 1)					
Gra	aphic list entri	ies	5				• 1				
	Value		Graphic n	name	Graphic						
	<add new=""></add>		Na	ime		Format	Size				
					o System info.		38 x 32	^	<b>.</b>		
					System scre		38 x 32				
				Navigates to	user admini	ipng	38 x 32				
				Pushbutton-	Round-G_Of	bmp	504 x 504	4			
					Round-G_O		497 x 497	7			
					Stop_Off_2		108 x 108		1		
					Stop_On_25	and the second s	108 x 107	7			
				Right_Arrow		.png	96 x 96				
				Up_Arrow Warning		png	96 x 96				
				Marning		.jpg	640 x 640	0			

→ The graphic that you want to assign to "Value 1" is already stored in the "Languages & resources" path under "Graphic collection". After you click the  $\rightarrow$   $\checkmark$  symbol, you can select the  $\rightarrow$  "Logo of Panel KTP700 Basic" file directly here.

								E Text lists	Craphic list
_								2. TOXC11313	
Gra	aphic lists								
	Name 🔺				Selection		Comment		
2	Graphic_list		ning		Bit (0, 1)	-			
	<add new=""></add>								
_					100	a hard			
	aphic list e	entrie							
	Value 🔺		Graphic	: name	Grap	hic			
						~			
<b>A</b>	0		Warnin	9					
						SIEM	ENS		
A	1	-	Logo of	f Panel KTP700 Basic		SIEMI	2 4 1 4 C 4 C		
A	1	•	Logo of	f Panel KTP700 Basic		SIEM	2 4 1 4 C 4 C		
<u> </u>	1	•	Logo of	f Panel KTP700 Basic		1	2 4 1 4 C 4 C		
A	1	•	Logo of			1	2 4 1 4 C 4 C		
<b>A</b>	1	•				SIMATIC	2 4 1 4 C 4 C		
<b>*</b>	1	•		(	Form	SIMATIC	2 4 1 4 C 4 C	CIER	AFNC
	1	-	N N	lame	Form	SIMATIC at Size 71 x 50	HMI	SIEN	MENS
*	1	•		lame ExitRuntime_KTP700_E	Form	SIMATIC at Size 71 x 50	: HMI	SIEN	MENS
	1	-		lame ExitRuntime_KTP700_E Foerderband_Conveyo	Form Bapng or .bmp	SIMATIC at Size 71 x 50 912 x 322	HMI		
	1	-		lame ExitRuntime_KTP700_E Foerderband_Conveyo Home	Form Bapng or .bmp .png .png	SIMATIC at Size 71 x 50 912 x 322 96 x 96			<b>MENS</b> FIC HMI
	1	-		lame ExitRuntime_KTP700_E Foerderband_Conveyo Home Left_Arrow	Form Bapng or .bmp .png .png Bapng	SIMATIC at Size 71 × 50 912 × 322 96 × 96 96 × 96			
<b>*</b>	1	•		lame ExitRuntime_KTP700_f Foerderband_Conveyo Home Left_Arrow Logo of Panel KTP700	Form Bapng or .bmp .png .png Bapng DOpng	SIMATIC at Size 71 x 50 912 x 322 96 x 96 96 x 96 663 x 371			

→ Change to the "Text lists" and create three text lists → "Text\_list\_emergency\_stop" → "Text\_list\_main\_switch" and → "Text\_list\_automatic", each with → Selection "Bit (0,1)".

			E Text lists	🚡 Graphic lists
•	+			E
Te	xt lists			
	Name 🔺	Selection	Comment	
1-2-	TextList_OriginalScreenNames	Value/Range		
1-2-	TextList_ScreenNames	Value/Range		
1-2-	Text_list_emergency_stop	Bit (0, 1)	Display status emergency stop	
1-2-	Text_list_main_switch	Bit (0, 1)	Display status main switch	
1-2-	Text_list_automatic	Bit (0, 1)	Display status start/stop	
	<add new=""></add>			

→ Specify the following assignments in "Text\_list\_emergency\_stop": "Value 0" → "emergency stop released" and → "Value 1" → "emergency stop OK".

				E Text lists	🚡 Graphic lists
	ŀ				E
Te	xt lists				
	Name 🔺		Selection	Comment	
1-2-	Text_list_emerg	gency_stop	Bit (0, 1)	Display status emergency stop	
1-2-	Text_list_main_	switch	Bit (0, 1)	Display status main switch	
1-2-	Text_list_autom	natic	Bit (0, 1)	Display status start/stop	
	<add new=""></add>				
	19 19		hard har		
Te	xt list entries				
	Value 🔺	Text			
1	0	emergency stop release	ed		
1		<ul> <li>emergency stop OK</li> </ul>			

→ Specify the desired assignments in "Text\_list\_main\_switch". "Value 0" → "main switch OFF" and → "Value 1" → "main switch ON".

. I_V	vince_basic_	_KTP/00_57-1200 V	Panel KTP700 Basic [KI	P700 B	asic PN]  ► Text and graphic	clists 🗕 🖬 🖬 🤅
					1: Text lists	Caraphic lists
•	<del>]</del>					
Te	xt lists					
	Name 🔺		Selection		Comment	
1-2-	Text_list_eme	ergency_stop	Bit (0, 1)		Display status emergency stop	
1-2-	Text_list_mai	n_switch	Bit (0, 1)	-	Display status main switch	
1-2-	Text_list_auto	omatic	Bit (0, 1)		Display status start/stop	
	<add new=""></add>					
-			Incode line	1		
Te	xt list entrie	S				
	Value 🔺	Text				
1		main switch OFF				
1	1	main switch ON				

→ Specify the following assignments in "Text\_list\_automatic". "Value 0" → "automatic stopped" and → "Value 1" → "automatic started"

					E Text lists	🚡 Graphic lists
•	ŀ					-
Te	xt lists					
	Name 🔺		Selection		Comment	
1-2-	Text_list_eme	ergency_stop	Bit (0, 1)		Display status emergency stop	
1-2-	Text_list_mai	n_switch	Bit (0, 1)		Display status main switch	
1-2-	Text_list_auto	omatic	Bit (0, 1)	-	Display status start/stop	
	<add new=""></add>					
-			have been	• mil		
Te	xt list entrie	S				
	Value 🔺	Text		-		
1	0	automatic stopped				
1		auitomatic started				

→ Back in "Template\_1" for the header, use drag & drop to move the → "Graphic IO field" object  $\square$  from → "Elements" in Toolbox to the upper left corner.

						C	Options
2	o <b>→ B</b> I	<u>U</u> <del>S</del> A <sup>*</sup> ± <u>≡</u>	± <u>A</u> ± 👱 ± ፈ ±	📃 ± - ± 🎩	∓ (7) ∓ 副∓ 田平,		N 🤽 🖽 🔟 🐂 🗖
						^ 、	Basic objects
· · · · <u>· · · · · · · · · · · · · · · </u>		Oven	view Sorting S	tation 5			
::::		Over	new Sorting S	Lation	<b>*</b>		
							A 🔝
	x/y: 101.57			· · · · · · · · · · · · · · · · · · ·			
Nar	ne: Template_G	Graphic I/O field_1	Mode: Input/output I	ayer: 0		·	Elements
					• • • • • • • • • • • • • • • • • •	<u>i</u>	

→ Under "General" in "Properties", change "Mode" to → "Output".
 Click the symbol ... to open the selection dialog for the → "Graphic list" and select the "Graphic\_list\_warning" you just created.

Template_Grap	hic I/O field_1 [Graphic I/	O field]	<b>Q</b> Properties	🗓 Info 追 🗓	Diagnostics	
Properties	Animations Events	a Texts				
Property list	General					
General Appearance	Process		Co	ontents		
Layout	Tag:			Graphics list:	Graphic_list_v	>
Limits	PLC tag:		7		Craphic_list_	
Miscellaneous						
Security	Address:					
	Bit number:	0				,
	Mode					
	Mode: C	utput	•			

→ To establish the connection to the global tag in the CPU, select → "PLC tags" and → "Tag table\_sorting station" below → "CPU\_1214C". Next, move the

 $\rightarrow$  "-A1" tag from the "Details view" to the "Tag" field. Also select  $\rightarrow$  "Bit number 0".

TA Siemens - C:\Users\mde\Desktop\Data\041-1	01_WinCC_Basic_KTP7	700_S7-1200\041-101_WinCC_Basic_KTP700_S7-1200
Project Edit View Insert Online Options		p Totally In 🌌 Go online 🖉 Go offline 🎄 🖪 🖪 🗶 🖃 💷 <
Project tree	\$7-1200 → P.	Panel KTP700 Basic [KTP700 Basic PN] 🔸 Screen management 🔸 Templates 🔸 Template_1 🛛 💶 🖬
Devices		
	10	團 20 ▼ B I U S A*± ≣± A± ± ± ± =± −± ■± 4± =± 4± ± 4± ± 4 ± ±
5 - 041-101_WinCC_Basic_KTP700_S7-1200		12/31
Add new device		Overview Sorting Station $\bigtriangledown$
Devices & networks     Time CPU 1214C [CPU 1214C DC/DC/DC]		10.05.
Device configuration		
Q. Online & diagnostics		
Program blocks	<	III > 100%
Technology objects	Template_Graph	ohic I/O field_1 [Graphic I/O field] 🛛 🔤 Properties 🚺 Info 🚯 🗓 Diagnostics 💷 🖡
External source files	Properties	Animations Events Texts
✓ → PLC tags Show all tags	Property list	
Add new tag table		General
😽 Default tag table [29]	General	Process Contents
🛃 Tag table_sorting station [30]	Appearance Layout	Tag: -A1 II Graphics list: Graphic_list.vII
Ce PLC data types	Limits	
✓ Details view	Miscellaneous	
	Security	Address: Bool
		Bit number: 0
Name Data type D		Mode
-A1 Bool II %		INDUC
-601 -81 Bool % -600 -82 Bool %		Mode: Output
	and a second sec	
400 -B3 Bool %		

→ Under "Layout" in "Properties", change the size of the "Graphic IO field" under → "Position & size".

\$7-1200 <b>•</b>	Panel KTP700 Ba	sic [KTP700	Basic PN]	Screen mana	agement 🕨	Templates	• Templat	te_1	>
	<u>■ 20 <del>-</del></u> <b>B</b> <i>I</i>	USA*	± <u>■</u> ± <u>A</u> ±	🗠 ± 🖉 ± 🚦	<u>t - t</u>	📕 ± 🐴 ± 🛔	‼± Ш± ≌	:± 💜	t <u>≓</u> ± ⊑a
		0		Sorting Sta		~	· · · · · · · · · · · · · · ·		12/31/2
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<						100%	••••••		
Template_Grap	hic I/O field_1 [G	raphic I/O fi	eld]	Q. Pro	operties	1 Info 🔒	2 Diagnos		
Properties	Animations	Events	Texts						
Property list	Layout								
									_
General Appearance	Position &	k size			Fit to siz	e			
General Appearance Layout	Position &		<b>₩</b> ₩ 50	٢					
Appearance Layout Limits		0	₩₩ 50 ‡ 50	•	O No aut	to-sizing	size		
Appearance Layout	X:	0	-	•	🔿 No aut				

→ To display the Emergency Stop status in the header as text, use drag & drop to move the → "Symbolic IO field" object III from → "Elements" in Toolbox to the right of the "Graphic IO field".

			0	ptions
homa 🔳 16 💌	B I U ⊱ A*± E± A± ± ∉	<u>' = = + +                              </u>	비* 🖴 * 🖪 🕻 🕨	1 🚨 🗊 🛄 🔭 🗖
			<u>^</u> ~	Basic objects
A		Station		
<u> </u>	x/y: 170.35			Λ .
				Elements

→ Under "General" in "Properties", change "Mode" to → "Output". Click the symbol .... to open the selection dialog for the → "Text list" and select the "Text\_list\_emergency\_stop" you just created.

Template_Symbo	lic I/O field_1 [Symbolic I/O field]	Properties	🗓 Info 🧯	Diagnostics	
Properties	Animations Events Texts				
Property list	General				
General Appearance Design Layout Text format Limits Styles/Designs	Process Tag: PLC tag: Address: Bit number: D	<b>Contents</b> Vis	Text list: ible entries:	Text_list_emergen	
Miscellaneous Security	Mode Mode: Output				

→ To establish the connection to the global tag in the CPU, select → "PLC tags" and → "Tag table\_sorting station" below → "CPU\_1214C". Next, move the → "-A1" tag from the "Details view" to the "Tag" field and also select → "Bit number 0".

		ls Window Help	Totall
Project tree	□ ◀	S7-1200   Pane	nel KTP700 Basic [KTP700 Basic PN] > Screen management > Templates > Template_1
Devices			
1		Tahoma 🔳	16 ▼ B I U S A*± E± A± 2 ± 2 ± =± -± ■± 4 ± =± 1 ± 1 ± ± 4 ±
Add new device	^		12
Devices & networks      OPU_1214C [CPU 1214C DC/DC/L	201		ergency stop Overview Sorting Station  Verview 10:
Device configuration			•••••••••••••••••••••••••••••••••••••••
Conline & diagnostics			
Program blocks			
Technology objects		<	Ⅲ > 100% ▼
External source files		Template Symboli	olic I/O field_1 [Symbolic I/O field]
▼ 2 PLC tags			
Show all tags			Animations Events Texts
Show all tags			Animations Events Texts
Show all tags Add new tag table Default tag table [29]	[20]	Properties A	Animations Events Texts General
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> </ul>	[30]	Properties A	Animations Events Texts
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> <li>Cd ata types</li> </ul>	[30]	Properties A Property list General	Animations Events Texts General Process Contents
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> </ul>	[30]	Properties A Property list General Appearance	Animations Events Texts General Process Tag: A1 Text_list_eme
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> <li>PLC data types</li> <li>Watch and force tables</li> </ul>	[30]	Properties A Property list General Appearance Design Layout Text format	Animations Events Texts General Process Tag: A1 Example A Text list: Text_list_eme Visible entries: 3
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> <li>PLC data types</li> <li>Watch and force tables</li> </ul>	[30]	Properties A Property list General Appearance Design Layout Text format Limits	Animations Events Texts General Process Tag: A1 Built PLC tag: "A1" Address: Bool
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> <li>PLC data types</li> <li>Watch and force tables</li> <li>Details view</li> </ul>	~	Properties A Property list General Appearance Design Layout Text format Limits Styles/Designs	Animations Events Texts General Process Tag: A1 Bin: PLC tag: *A1* Contents
Show all tags Add new tag table Default tag table [29] Tag table_sorting station Control of the sorting station Details view Name Data type	e De	Properties A Property list General Appearance Design Layout Text format Limits Styles/Designs > Miscellaneous	Animations Events Texts General Frocess Tag: A1 FLC tag: A1 Bit number: 0
Show all tags Add new tag table Default tag table [29] Tag table_sorting station Catalogue and force tables  Details view Name Data type Attable Bool	e De	Properties A Property list General Appearance Design Layout Text format Limits Styles/Designs > Miscellaneous	Animations Events Texts General Process Tag: A1 Built PLC tag: "A1" Address: Bool
Show all tags Add new tag table Default tag table [29] Tag table_sorting station Control of the sorting station Details view Name Data type	e De	Properties A Property list General Appearance Design Layout Text format Limits Styles/Designs > Miscellaneous	Animations Events Texts General Frocess Tag: A1 FLC tag: A1 Bit number: 0
<ul> <li>Show all tags</li> <li>Add new tag table</li> <li>Default tag table [29]</li> <li>Tag table_sorting station</li> <li>PLC data types</li> <li>Watch and force tables</li> <li>Details view</li> </ul>	e De	Properties A Property list General Appearance Design Layout Text format Limits Styles/Designs > Miscellaneous	Animations Events Texts General Frocess Tag: A1 FLC tag: A1 Bit number: 0

 $\rightarrow$  Under "Layout" in "Properties", change the size of the "Graphic IO field" under  $\rightarrow$  "Position & size".

1200 > Pane	I KTP700 Basic [KTP700 Basic PN] → Scree	en management 🕨 Templates 🕨 Tem	plate_1 💶 🖬 🖬 🗙
Tahoma	■ 16 • B I U S A*± E± A±	🏝 ± 🚄 ± 🚍 ± — ± 📑 ± 🖾 ± 🗐 ±	山 ± 🚔 ± 🗳 🍃 ± '
			^
			12/
eme	ergency stop release Overview Sc	orting Station 🛛 🖓 💠 🗠	10.5
			10.3
<	IUI	> 100%	▼
Template_Sym	bolic I/O field_1 [Symbolic I/O field]	🖳 Properties 🚺 Info 🚺 😨 Diag	anostics 🗖 🗏 🥆
Properties	Animations Events Texts		-
Property list	Layout		
General	Position & size	Fit to size	
Appearance			
Design	X: 50 🗢 🏎 201	Fit object to contents	
Layout	Y: 9 🗘 🚺 32		
Text format	4	Characteristics	
Limits	Margins		
Styles/Designs	3 • *** 2	Displayseler	ction list:
Miscellaneous		Button for selec	tion list:
Security	_ <b>E</b> ∠ ▼ 3444 ∠		

- → Repeat the previous steps for the text lists → "Text\_list\_main\_switch" and → "Text list\_automatic" to insert them directly one below the other to the left of the date and time. Change the size and font so that the text has enough space.
- → The connection of the "Text\_list\_main\_switch" is made using the  $\rightarrow$  "-K0" tag from the "Tag table\_sorting station".

~ [	Details	view				Template_Symbo	olic I/O field_2 [Symb	olic I/O field]		<b>Properties</b>	🗓 Info 🗓 🗓 Diagnostics 📃 🗖 🗉
						Properties	Animations Eve	ents Texts			
N	lame	Data typ	e Details	Comment		Property list	General			19 Ma	
•	-87	Bool	9611.3	sensor part	^	General	Process			Contents	
	-88	Int	%IW64	sensor actu		Appearance					
	-K0	Bool	B %I0.1	main switch	-	Design	Tag:	-K0			Text list: Text_list_main_switch 🔳 🏲
•	-M2	Bool	%Q0.3	cylinder -M	=	Layout	PLC tag:	"-КО"	7		e entries: 3
	-M3	Bool	%Q0.4	cylinder -M		Text format	Address:		Bool		
	-P1	Bool	%Q0.5	display "mai		Limits			0001		
	-P2	Bool	%Q0.6	display "ma		Styles/Designs	Bit number:	0			
•	-P3	Bool	%Q0.7	display "aut		Miscellaneous					
-	-P4	Bool	%Q1.0	display "em		Security	Mode				
	-P5	Bool	%Q1.1	display "aut			Mode	Output	T		
a	-P6	Bool	%01.2	display cyli	~		Mode:	output			
<			III	>							

→ The connection of the "Text\_list\_automatic" is made using the → "Memory\_Automatic\_Start\_Stop" tag from "MOTOR\_AUTO\_DB1[DB1]".

✓ Details view	Template_Symbolic	c I/O field_3 [Symbolic I/O field]	💁 Properties 🚺 Info 🚺 😨 Diagnostics 💿 💷 🤜 🗸
Name Offset	Property list	nimations Events Texts General	
Sensor_end_cf_conveyor     Sensor_end_cf_conveyor     Sensor_end_cf_conveyor     Reset_Counter_Workpieces_Plastic     Conveyor_motor_automatic_mode     Actual_Volue_Magazine_plastic     Memory_automatic_start_stop     Memory_conveyor_start_stop     Memory_ede_detection	Appearance Design Layout Text format Limits Styles/Designs Miscellaneous	Process Tag: MOTOR_AUTO_DB_Memory_automatic [1] PLC tag: MOTOR_AUTO_DB.Memory_automati Address: Bool Bit number: 0 \$	
Mernory_coge_uerection     Mernory_coge_uerection     FIEC_Timer_overrun     FIEC_Counter_plastic	Security	Mode Mode: Output	•

→ Under "Appearance" in "Properties", change the "Color" of "Background" to  $\rightarrow$  "Gray" for  $\rightarrow$  "Text\_list\_main\_switch" and  $\rightarrow$  "Text\_list\_automatic".

	lic I/O field_3 [Symbolic I/O		<b>Q</b> Properties	🗓 Info 追 🗓 Diagnostics	, 78
Properties	Animations Events	Texts			
Property list	Appearance				
General	Background		Border		
Appearance	Dackground		border		
Design		Color: 198, 195, 198	в 🕶	Width: 4	
Layout	Eill	pattern:		Style: Double line	
Text format	•				
Limits	Corne	er radius:		Color: 66, 73, 82 💌	
Styles/Designs			Backgr	round color: 99, 101, 115 💌	
Miscellaneous	Text				
Security		Color:			
		More colors.			

 $\rightarrow~$  Now switch to the "Animations" tab for  $\rightarrow$  "Text\_list\_main\_switch" and

 $\rightarrow$  "Text\_list\_automatic", select "Display" and click  $\rightarrow$   $\stackrel{\text{\tiny ext}}{=}$  "Add new animation".

Template_Sym	bolic I/O field_2	[Symbolic I/	0 field]	Server Property Prope	Properties	<u>i</u> Info	<b>Diagnostics</b>	18-
Properties	Animations	Events	Texts					
	Ani	imation types	i					
Overview Display								
Tag connect	ions							
🕶 📸 Display		Appearan	ice	<u> </u>	Dynam	ize colors and	flashing	
Add new	animation	Visibility		📑 🎽	Make v	isibility dynam	ic	
▶ J Movements	•							

 $\rightarrow~$  In the displayed dialog, select  $\rightarrow$  "Appearance" and click  $\rightarrow$  "OK".

Add animation	×
Select the animation you want to add.	
Appearance	
	OK Cancel

→ Under "Appearance" of both "Symbolic IO fields", add a range with value  $\rightarrow$  "1" (signal state "High") and change the "Background color" to  $\rightarrow$  "Green".

Template_Symbolic I/O fie	ld_2 [Symbolic I/O field]	<b>Properties</b>	i Info	<b>Diagnostics</b>	18-
Properties Animatic	ons Events Texts				
	Appearance				
Overview	Tag Name: Address:			Type         Range         Multiple bits         Single bit	•
			und color	Flashing	
	1 0. <add new=""></add>	255,0 49,	52,74 💌	No	

→ The connection of the "Text\_list\_main\_switch" is made again using the  $\rightarrow$  "-K0" tag from the "Tag table\_sorting station".

	🔜 Save project ا	Summer concerns and	otions Tools X 🎝 ± (24	and the second	online 🖉 Go offline  🛔 📭 🗶 🖃 🛄 <search in="" project=""></search>	Totally In
_	ect tree				ic [KTP700 Basic PN] → Screen management → Templates →	Template_1 💶 🖬
De	evices					
196				Tahoma 🔳 12 💌	I U S A`±≣± A± №± 🖉 ± ≡ ± − ± ± 🗛 ±	:릐±빈±≌± ♂'
	😵 Online & diagr	ostics	^			
	🕨 🛃 Program block	s		SIEMENS		SIMATIC
	🕨 🚂 Technology ob	jects	≡	SIEWIENS		SIMAIL
	🕨 🔚 External sourc	e files				
	🔻 🚂 PLC tags					
	Show all ta	gs				
	📑 Add new ta				released Overview Sorting Station	switch OFF 12/
	💥 Default tag			emergency stop		matic stopped 10:5
		orting station [	30]			
	PLC data types				III > 100%	
	Watch and for	e tables	~	<b>x</b>		
~ D	etails view			Template_Symbolic I/O fiel	d_2 [Symbolic I/O field] 🔄 Properties 🚺 Info 🚺 🗓	Diagnostics
				Properties Animatio	is Events Texts	
					A	
Na	ame	Data type	Det	Overview	Appearance	
	-87	Bool	%I ^	Tag connections	Tag Ty	pe
•	-88	Int	%I	B Display	Name: -K0	Range
•	-K0	Bool	iii %l	Add new animation		
	-M2	Bool	%Q ≡	Add new animation	Address:	) Multiple bits
100	-M3	Bool	%Q	Movements		) Single bit 🛛 🌻
	-P1	Bool	%Q	Movements	Range  Background color Foreground color Flash	
-	-P2	Bool	%Q		1 Sackground color Poreground color Plasm	iing
	-P3	Bool	%Q		1 0, 255, 0 49, 52, 74 No	· · · · · · · · · · · · · · · · · · ·
10			%Q		cada news	
_	-P4	Bool				
() () () () () () () () () () () () () (	-P4 -P5	Bool	%Q			

- $\rightarrow~$  The connection of the "Text\_list\_automatic" is made using the
  - $\rightarrow$  "Memory\_Automatic\_Start\_Stop" tag from "MOTOR\_AUTO\_DB1[DB1]".

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roject Edit View Insert Online Option			nline 🖉 Go offline 🛔 🖪 🖛 🗶 🖃 🛄 <search in="" proje<="" th=""><th>Totally Inte</th></search>	Totally Inte
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<ul> <li>Program blocks</li> </ul>				
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MOTOR_SPEEDCONTROL [FCT0]				
MOTOR_AUTO [FB1]				
MAGAZINE_PLASTIC [DB3]		<	III > 100%	
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	>	Properties Animation		
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<ul> <li>Conveyor_motor_automatic_mode</li> <li>Actual_Value_Magazine_plastic</li> </ul>	-	, a morenicity	Range  Background color Foreground color	Flashing
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Memory_conveyor_start_stop			<add new=""></add>	
Memory_edge_detection				
IEC_Timer_overrun	×			
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→ The "Acquisition cycle" of all tags is also to be accelerated from 1 second to 100 milliseconds in the default tag table.

	➡ 3a								
Defa	ult tag table								
N	ame 🔺	Data type	Connection	PLC name	PLC tag	Addr	Access mode	Acquisition cycle	Source comment
-	-A1	Bool	HMI_Connection_1	CPU_1214C	"-A1"		<symbolic a<="" th=""><th>100 ms</th><th>return signal em</th></symbolic>	100 ms	return signal em
	-81	Bool	HMI_Connection_1	CPU_1214C	"-B1"		<symbolic a<="" td=""><td>100 ms</td><td>sensor cylinder</td></symbolic>	100 ms	sensor cylinder
-	-B2	Bool	HMI_Connection_1	CPU_1214C	*-B2*		<symbolic a<="" td=""><td>100 ms</td><td>sensor cylinder -</td></symbolic>	100 ms	sensor cylinder -
-	-83	Bool	HMI_Connection_1	CPU_1214C	"-B3"		<symbolic a<="" td=""><td>100 ms</td><td>sensor motor -M</td></symbolic>	100 ms	sensor motor -M
	-B4	Bool	HMI_Connection_1	CPU_1214C	*-B4*		<symbolic a<="" td=""><td>100 ms</td><td>sensor part at sl</td></symbolic>	100 ms	sensor part at sl
-00	-85	Bool	HMI_Connection_1	CPU_1214C	"-B5"		<symbolic a<="" td=""><td>100 ms</td><td>sensor metal pa</td></symbolic>	100 ms	sensor metal pa
-0	-86	Bool	HMI_Connection_1	CPU_1214C	"-B6"		<symbolic a<="" td=""><td>100 ms</td><td>sensor part in fro</td></symbolic>	100 ms	sensor part in fro
-00	-87	Bool 🔳	HMI_Connectio	CPU_1214C	*-B7*		<symboli td="" 💌<=""><td>100 ms</td><td>sensor part at er</td></symboli>	100 ms	sensor part at er
-	КО	Bool	HMI_Connection_1	CPU_1214C	"-КО"		<symbolic a<="" td=""><td>100 ms</td><td>main switch "ON</td></symbolic>	100 ms	main switch "ON
-00	MAGAZINE_PLASTIC_Plastic_Parts_Actual	Int	HMI_Connection_1	CPU_1214C	MAGAZINE_PL		<symbolic a<="" td=""><td>100 ms</td><td>Actual Value ma</td></symbolic>	100 ms	Actual Value ma
-	MOTOR_AUTO_DB_Memory_automatic_start_stop	Bool	HMI_Connection_1	CPU_1214C	MOTOR_AUTO		<symbolic a<="" td=""><td>100 ms</td><td>Memory used for</td></symbolic>	100 ms	Memory used for
-00	OPERATING_HMI_automatic_start	Bool	HMI_Connection_1	CPU_1214C	OPERATING_H		<symbolic a<="" td=""><td>100 ms</td><td>HMI pushbutton</td></symbolic>	100 ms	HMI pushbutton
-	OPERATING_HMI_automatic_stop	Bool	HMI_Connection_1	CPU_1214C	OPERATING_H		<symbolic a<="" td=""><td>100 ms</td><td>HMI pushbutton</td></symbolic>	100 ms	HMI pushbutton
-00	OPERATING_HMI_mode_selector	Bool	HMI_Connection_1	CPU_1214C	OPERATING_H		<symbolic a<="" td=""><td>100 ms</td><td>HMI mode selec</td></symbolic>	100 ms	HMI mode selec
-00	OPERATING_HMI_reset_counter_plastic	Bool	HMI_Connection_1	CPU_1214C	OPERATING_H		<symbolic a<="" td=""><td>100 ms</td><td>HMI reset count</td></symbolic>	100 ms	HMI reset count
-	-Q3	Bool	HMI_Connection_1	CPU_1214C	"-Q3"		<symbolic a<="" td=""><td>100 ms</td><td>conveyor motor</td></symbolic>	100 ms	conveyor motor
-	SPEED_MOTOR_Speed_Actual_Value	Real	HMI_Connection_1	CPU_1214C	SPEED_MOTOR		<symbolic a<="" td=""><td>100 ms</td><td>Speed actual va</td></symbolic>	100 ms	Speed actual va
-	Tag_ScreenNumber	UInt	<internal tag=""></internal>		<undefined></undefined>			100 ms	
<	Add new>								

- → Before the visualization is downloaded to the panel, compile the CPU and panel again and save the project. (→ CPU\_1214C → 1 → Panel KTP700 Basic → 1 → 1 Save project.)
  - → After successful compilation, the entire controller with the created program including the hardware configuration, as previously described in earlier modules, can be downloaded.

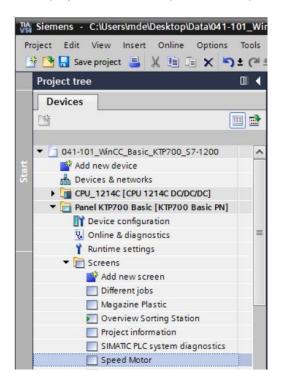
 $(\rightarrow \square)$ 

 $\rightarrow$  To download the visualization to the panel, follow the same procedure. Select the  $\rightarrow$  "Panel KTP700 Basic [KTP700 Basic]" folder and click the

 $\rightarrow$  **III** "Download to device" button.

## 7.14 Bar graph display

→ Next, the setpoint is to be specified for the motor speed control and the actual value is to be displayed. To do this, open the → "Speed Motor" screen with a double-click.



→ The text box in the center of the screen is to be removed by right-clicking on it and selecting
 → "Delete" in the displayed dialog.

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 $\rightarrow$  To display the actual speed value graphically, use drag & drop to move the  $\rightarrow$  "Bar graph"

object from  $\rightarrow$  "Elements" in Toolbox to the middle of the screen.

FP700_S7-1200	Panel KTP70	00 Basic [KTP700	Basic PN] ► Se	creens 🕨 Spee	d Motor 🗕		Toolb	ox.	<b>.</b> II
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→ Under "General" in "Properties", change "Maximum scale value" to  $\rightarrow$  50 and "Minimum scale value" to  $\rightarrow$  -50.

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General	2				
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Text format					
Limits/Ranges		E	Address:		
Styles/Designs	Minimum scale -50				
Miscellaneous	value:	_ <u>-</u> +			

→ For the process connection, select → "Program blocks" and the → "SPEED\_MOTOR[DB2]" data block below → "CPU\_1214C". Next, drag the → "Speed\_Actual\_Value" tag from the → Details view to the "Process tag" field.

TIA Siemens - C:\Users\mde\Desktop\Data\041	I-101_WinCC_Basic_KTP700		700_\$7-1200		_ 🗆 )
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<	Wiscenarieous		-		
Portal view     Overview	Speed Motor			The project 041-101_WinCC_Basic	c KTP

→ Under "Scales" in "Properties", select  $\rightarrow$   $\blacksquare$  "Show scale" and set "Divisions"  $\rightarrow$  2, "Marks label"  $\rightarrow$  1 and "Interval"  $\rightarrow$  10.

Bar_1 [Bar]		💁 Properties 🚺 Info 🚺 🖞 Diagnostics 💷 🗖 🗖 🔻
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Scales		
Label	Auto-scale:	Interval: 10
Layout	Divisions: 2	
Text format	Marks label: 1	
Limits/Ranges		
Styles/Designs		
Miscellaneous		

→ Under "Label" in "Properties", select  $\rightarrow$   $\blacksquare$  "Label" and set "Unit" $\rightarrow$  rpm and "Decimal places"  $\rightarrow$  2.

		Properties	🗓 Info 😟 🗓 Diagnostics 👘 🗆 🗕	
Properties	Animations Even	s Texts		
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Styles/Designs				
Miscellaneous				

ightarrow Under "Layout" in "Properties", change the position and size of the bar graph under ightarrow

"Position & size". Above the bar graph, insert  $a \rightarrow$  "Text field" A with text  $\rightarrow$  "Speed actual value" for the description.

041-101_WinCC_Basic_KTP70	0_\$7-1200   Panel KTP700	Basic [KTP700 Bas	ic PN] → Sci	reens 🕨	Speed Motor	_ 🖬 🖬 🕻
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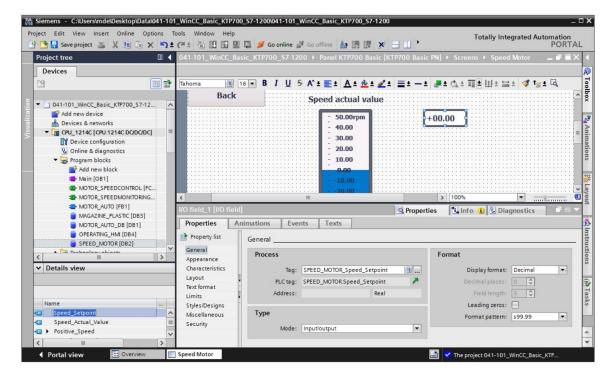
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		- 10.00 - 0.00					
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		20.00			•		

→ Under "General" in "Properties", keep "Type" → "Input/Output" and change the "Format pattern" to  $\rightarrow$  s99.99.

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Miscellaneous	Туре				Format pattern:	\$99.99	•
Security	Mode:	Input/output					

→ For the process connection, select → "Program blocks" and the → "SPEED\_MOTOR[DB2]" data block below → "CPU\_1214C".

Next, drag the  $\rightarrow$  "Speed\_Setpoint" tag from the  $\rightarrow$  Details view to the "Tag" field.



 $\rightarrow$  Under "Appearance" in "Properties", change the "Color" of "Background" to  $\rightarrow$  "Blue".

I/O field_1 [I/O f	ield]		💁 Pr	operties 🚺 Info 🔒	Diagnostics	
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Limits		Corner radius:		Color:	66, 73, 82	
Styles/Designs	•			Background color:	99, 101, 115 🔻	
Miscellaneous	Text					36
Security		Color:				
		Unit:	More colors			

 $\rightarrow$  Under "Text format" in "Properties", change "Alignment" "Horizontal" to  $\rightarrow$  "Right".

I/O field_1 [I/O fiel	d]		🖾 Properties 🚺 Info 🚺 🗓 Diagnostics	
Properties /	Animations E	vents Tex	ts	
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General	Format:			
Appearance	Format:			
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Miscellaneous		Horizontal:	Right	•
Security		Vertical:		•

- → Under "Layout" in "Properties", change the position and size of the IO field under → "Position & size".
- $\rightarrow$  Above the bar graph, insert a  $\rightarrow$  "Text field" A with text  $\rightarrow$  "Speed setpoint" for the description.

041-101_WinCC_B	asic_KTP7	00_ <mark>\$7</mark> -1	200 🕨	Panel KTP700	Basic [KT	P700 Basic I	PN] → Scree	ns ► Speed I	Motor	_ # # ×
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secondy										

- → The "Acquisition cycle" of the newly create tag is also to be changed from 1 second to 100 milliseconds in the default tag table.
- → Before the visualization is downloaded to the panel, compile the CPU and panel again and save the project. (→ Panel KTP700 Basic →  $\square$  →  $\square$  Save project.)
  - → To download the visualization to the panel, select the → "Panel KTP700 Basic [KTP700 Basic]" folder and click the →  $\blacksquare$  "Download to device" button.

### 7.15 Messages

A couple of alarm windows were already created when you used the wizard to create the Panel KTP700 Basic. We will now take a closer look at them.

### 7.15.1 General alarm settings

→ The first step is to make several settings for the display of alarms in Runtime. To do this, double-click the → "Runtime settings" folder in → "Panel KTP700 Basic". Under "General" in "Alarms", select → I alarm class colors", and under "System events", change → Display duration in seconds to "10".

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Project tree	◀ 041-101_WinCC_Basic	c_KTP700_S7-1200 🔸 Panel KTP700 Basic [KTP700 Basic PN] 🔸 Runtime settings 👘 🚊 🗖 🚍 >
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	_	Properties 1 Info i) Diagnostics
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#### 7.15.2 Alarm window

→ For the alarm windows to be displayed in the foreground in every screen, a → "Global screen" is available in the → "Screen management" folder of → "Panel KTP700 Basic". Open this with a double-click. Three alarm windows have already been created in this screen. In the first alarm window→ "System events", I "Pending alarms" and the alarm class I "System" are already selected under "General" in "Properties".



#### Note:

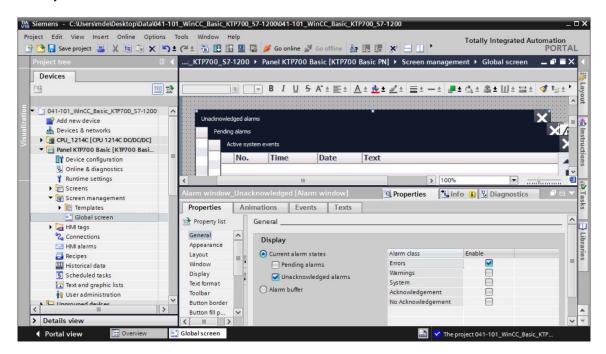
System events will be automatically displayed in Runtime for ten seconds.

→ The → "Pending alarms" alarm window is the second alarm window in the "Global screen" screen. Select I "Pending alarms" under "General" in "Properties". Select I "Errors" and I "Warnings" as alarm classes.

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#### Note:

- You will create alarm classes of types "Errors" and "Warnings" in the panel itself in subsequent steps.
- → The → "Unacknowledged alarms" alarm window is the third alarm window in the "Global screen" screen. Select I "Unacknowledged alarms" under "General" in "Properties". Select only I "Errors" here as the alarm classes.



### 7.15.3 Alarm indicator

→ In addition to the alarm windows, the "Global screen" screen also contains an → "Alarm indicator". Its purpose is to display an alarm window again, which the user hid by clicking it away. Under "General" in "Properties", select I "Errors: Pending messages", I "Errors: Acknowledged" and I "Warnings: Pending alarms" as the message classes.

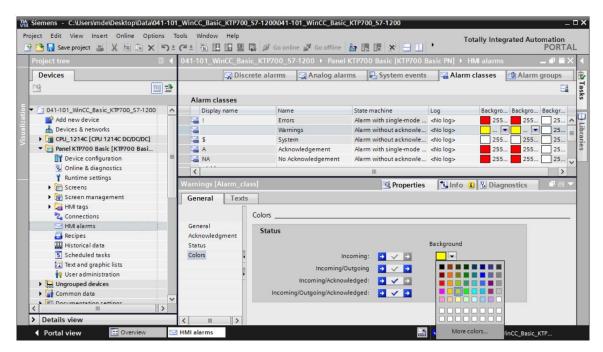
:_KTP700_S7-	1200 )	Pane	І КТР7	700 Ba	sic [KT	P700 Ba	sic PN] 🕨	Screen	i manag	ement )	Globa	screen		<b>■</b> ■ ×
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→ Under → "Events", the "ShowAlarmWindow" function is already entered for the "Click" event. Change the → "Object name" for "Click when flashing" to "Alarm window\_Unacknowledged" so that this alarm window will be opened here.

.:_KTP700_\$7-1200 ▶ Par	el KTP700 Basic [KTP700 Basic I	PN] 🕨 Screen management 🕨 Global screen 🛛 🗖 🗮 🕽
II 💌 B	<i>I</i> <u>U</u> <del>S</del> A <sup>*</sup> ± <u>≣</u> ± <u>A</u> ± <u>№</u>	호 🖉 최 🚍 8 - 8 🚛 <b>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</b>
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Click		
Click when flashing	<ul> <li>ShowAlarmWindow</li> </ul>	
-	Object name	Alarm window_Unacknowledged
	Display mode	Toggle
-		
-	<add function=""></add>	

#### 7.15.4 Settings of alarm classes

→ The → "HMI alarms" menu item is available in → "Panel KTP700 Basic" for configuration of the alarm system and creation of customized alarms. Open this with a double-click. The alarm classes to be used are already created in the "Alarm classes" menu item. These can still be changed, however. For the → "Warnings" alarm class, change the background color for the "Incoming" and "Incoming/Outgoing" statuses to → "Yellow".



### 7.15.5 System events

 $\rightarrow$  You can have system events automatically imported in the "System events" menu item by clicking  $\rightarrow$  "Yes".

	C_Basic_KTP700_S7			24	
5	Discrete alarms	Sanalog alarms	System events	Alarm classes	Alarm group
System eve	nts				
ID	Alarm text				
Im	ort system events		×		
	A				
10	Do you want	to import the system	n		
	events?				
	Apparently, no	system events have bee	n		
	imported yet.				
		Yes	No		
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-101_WinC	C_Basic_KTP700_S7	-1200 🕨 Panel KTP7	'00 Basic [KTP700 Ba	sic PN] ► HMI alarm	s _ 🗖
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System eve ID 9999 10111	Discrete alarms     Alarm text     Global: Unknown     Number	Analog alarms	<b>System events</b>		
System eve ID 9999 10111 10112	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not co	Analog alarms error %1,%2,%3,%4,%5,% contain any data records	<b>System events</b>		
System eve ID 9999 10111 10112 30010	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2.	<b>System events</b>		
System eve ID 9999 10111 10112 30010 30011	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag     Invalid value %1 i	Analog alarms error %1,%2,%3,%4,%5,% contain any data records J, error code: %1,%2. n parameter %2, error co	<b>System events</b> 66,%7,%8,%9.	Alarm classes	
System eve ID 9999 10111 10112 30010 30011 30012	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag     Invalid value %1 i     Invalid value %1 i	Analog alarms error %1,%2,%3,%4,%5,% contain any data records J, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra	System events	Alarm classes	
System eve ID 9999 10111 10112 30010 30011 30012 50000	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag     Invalid value %1 i     Overflow: no data	error %1,%2,%3,%4,%5,% contain any data records j, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC.	System events 6,%7,%8,%9. 	Alarm classes	
System even           ID           9999           10111           10112           30010           30011           30012           50000           50001	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag     Invalid value %1 i     Overflow: no data     Overflow status e	Analog alarms error %1,%2,%3,%4,%5,% contain any data records ), error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is	System events	Alarm classes	
ID           9999           10111           10112           30010           30011           30012           50000           50001           70011	Discrete alarms     Alarm text     Global: Unknown     Number     Recipe does not o     Error writing a tag     Invalid value %1 i     Overflow: no data     Overflow status e     Date/time could r	Analog alarms error %1,%2,%3,%4,%5,% contain any data records ), error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is not be set, error code: %	System events	Alarm classes	
System ever ID 9999 10111 10112 30010 30011 30012 50000 50001 70011 70016	Discrete alarms Alarm text Global: Unknown Number Recipe does not of Error writing a tag Invalid value %1 i Overflow: no data Overflow status e Date/time could r Cannot select scr	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is tot be set, error code: %7 een number %1.	System events	Alarm classes	
System eve ID 9999 10111 10112 30010 30011 30012 50000 50001 70011 70016 70024	Discrete alarms  Alarm text Global: Unknown Number Recipe does not of Error writing a tag Invalid value %1 i Overflow: no data Overflow status e Date/time could r Cannot select scr Error in system fu	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is not be set, error code: % een number %1. nction 'IncreaseValue': 1	System events	Alarm classes	
System even ID 9999 10111 10112 30010 30011 30012 50000 50001 70011 70016 70024 70025	Discrete alarms Alarm text Global: Unknown Number Recipe does not of Error writing a tag Invalid value %1 i Overflow: no data Overflow status e Date/time could r Cannot select scr Error in system fu Error in system fu	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is not be set, error code: % een number %1. nction 'IncreaseValue': T nction 'DecreaseValue':	System events 66,%7,%8,%9. ode: %3. nge [%3 - %4], error code running again. 1,%2. ag range exceeded. Tag range exceeded.	Alarm classes	
System even ID 9999 10111 10112 30010 30011 30012 50000 50001 70011 70016 70024 70025 70026	Discrete alarms Alarm text Global: Unknown Number Recipe does not of Error writing a tag Invalid value %1 i Overflow: no data Overflow: no data Overflow status e Date/time could r Cannot select scr Error in system fu Error in system fu Cannot move bac	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is not be set, error code: % een number %1. nction 'IncreaseValue': T nction 'DecreaseValue': t k one screen. No more s	System events 66,%7,%8,%9. ode: %3. nge [%3 - %4], error code running again. 1,%2. ag range exceeded. Tag range exceeded. creens saved.	Alarm classes	
ID           9999           10111           10112           30010           30011           50000           50001           70011           70016           70024           70025	Discrete alarms Alarm text Global: Unknown Number Recipe does not of Error writing a tag Invalid value %1 i Overflow: no data Overflow: no data Overflow status e Date/time could r Cannot select scr Error in system fu Error in system fu Cannot move bac Error in system fu	Analog alarms error %1,%2,%3,%4,%5,% contain any data records g, error code: %1,%2. n parameter %2, error co n parameter %2, valid ra exchange with the PLC. nded: data exchange is not be set, error code: % een number %1. nction 'IncreaseValue': 1 nction 'DecreaseValue': 2 k one screen. No more s nction 'ChangeConnection'	System events 66,%7,%8,%9. ode: %3. nge [%3 - %4], error code running again. 1,%2. ag range exceeded. Tag range exceeded.	Marm classes	

### 7.15.6 Analog alarms

→ Tags can be monitored for limits in "Analog alarms". Click "Add" to create a new alarm. For monitoring, select the → "SPEED\_MOTOR [DB2]" data block in → "CPU\_1214C" and drag the → "Speed\_Actual\_Value" tag from the → "Details view" to the "Trigger tag" field. Next, drag the → "Positive\_Speed\_Threshold\_Error" tag from the → Details view to the "Limit" field.

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ž	CPU_1214C [CPU 1214C DC/DC/DC]     Device configuration		5 1	Add		Errors	SPEED_	MOTOR_Speed_Act	ual_Value	SPEED_MOTOR_	Positive_Speed_Threshol	ld_Error 🔳  ∢	Higher	5
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	Main [OB1]													
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	MOTOR_SPEEDMONITORING													
	MOTOR_AUTO [FB1]													
	MAGAZINE_PLASTIC [DB3]													
	MOTOR_AUTO_DB [DB1]													
	OPERATING_HMI [DB4]													
	SPEED_MOTOR [DB2]	~												
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	Portal view     Overview		HMI aları	ms							The project 041-101	_WinCC_Basic_k		

→ Enter the text → "Error threshold exceeded motor pos. speed" in the "Alarm text" column, select the "Alarm class" → "Errors" and → "Higher" for mode. Follow the same procedure to create the three other alarms of alarm classes "Warnings" and "Errors" shown below.

	5	Discrete al	arms 🛛 🔀 Analog alarms 🛛 🛃	System events 🛛 🖓 Alarm classes 🖄 Ala	rm groups
•					5
Analog alarn	ns				
ID	Alarm text	Alarm class	Trigger tag	Limit	Limit mod
5 1	Error threshold exceeded motor pos. speed	Errors	SPEED_MOTOR_Speed_Actual_Value	SPEED_MOTOR_Positive_Speed_Threshold_Error	Higher
2	Warning threshold exceeded motor pos. speed	Warnings	SPEED_MOTOR_Speed_Actual_Value	SPEED_MOTOR_Positive_Speed_Threshold_Warning	Higher
3	Error threshold underran motor neg. speed	Errors	SPEED_MOTOR_Speed_Actual_Value	SPEED_MOTOR_Negative_Speed_Threshold_Error	Lower
SA 4	Warnung threshold underran motor neg. speed	Warnings	SPEED_MOTOR_Speed_Actual_Value	SPEED_MOTOR_Negative_Speed_Threshold_Warning	Lower
<add new=""></add>					
		Warnings	SPEED_MOTOR_Speed_Actual_Value	SPEED_MOTOR_Negative_Speed_Threshold_Warning	Lov

 $\rightarrow$  The tags relevant for the alarm system must be continuously updated cyclically.

For this, open the  $\rightarrow$  "Default tag table" of the panel and select the

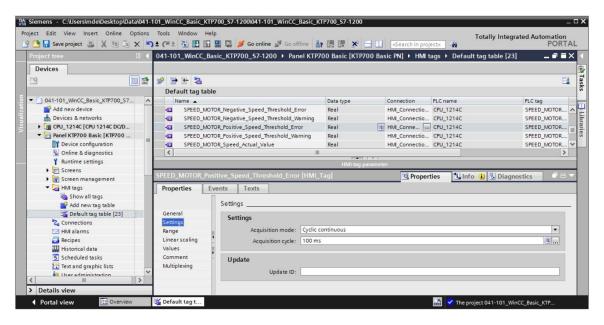
"SPEED\_MOTOR\_Positive\_Speed\_Threshold\_Error" tag. You can change the  $\rightarrow$ "Acquisition mode" under "Settings" in "Properties" to

 $\rightarrow$  "Cyclic continuous". Follow the same procedure to change and check the following tags: "SPEED\_MOTOR\_Speed\_Actual\_Value",

"SPEED\_MOTOR\_Positive\_Speed\_Threshold\_Warning",

"SPEED\_MOTOR\_Negative\_Speed\_Threshold\_Error"

"SPEED\_MOTOR\_Negative\_Speed\_Threshold\_Warning".



#### 7.15.7 Discrete alarms

→ Before you can create discrete alarms in the panel, you need a global tag with at least 16 bits in the CPU 1214C, which you will use to trigger the discrete alarms from the PLC. Here, you open the → "OPERATING\_HMI[DB4]" data block in the → "Program blocks" folder of "CPU 1214C" and create a global tag → "Group signals01" of data type → "Word".

🕒 💀 Save project 📑 🐰 🗎 🗊 🗴	< ") ±	Cal ±	1 🖸 🖬 🖳 🌌 🤇	Go online 🖉	Go offline	å? 🖪 I	• × = :		arch in proje	ct> 🖬	Totally Integrated Automation PORT/
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		OPER/	TING_HMI								
041-101_WinCC_Basic_KTP700_S7	^	Nar	ne	Data type	Start value	Retain	Accessible f	Writa	Visible in	Setpoint	Comment
Add new device	1		Static	1							
Devices & networks	2		mode_selector	Bool	false						HMI mode selector manual(0) / automatic(
▼ CPU_1214C [CPU 1214C DC/D	3	-	automatic_start	Bool	false						HMI pushbutton automatic start
Device configuration	≡ 4	-	automatic_stop	Bool	true						HMI pushbutton automatic stop
& Online & diagnostics	5	-0 -	reset_counter_plastic	Bool	false						HMI reset counter workpieces plastic
🔻 🛃 Program blocks	6		group_signals01	Word	16#0						HMI group signals for discrete alarms
Add new block	7		<add new=""></add>								
Hain [OB1]											
MOTOR_SPEEDCONTROL											
MOTOR_SPEEDMONITORI											
MOTOR_AUTO [FB1]											
MAGAZINE_PLASTIC [DB3]											
MOTOR_AUTO_DB [DB1]											

 $\rightarrow$  In the  $\rightarrow$  "Program blocks" folder, click  $\rightarrow$  "Add new block" to create



 $\rightarrow$  Function  $\rightarrow$  "Assign\_discrete\_alarms".

	Add new block
	Name:
	Assign_discrete_alarms
Siemens - C:\Users\mde\Desktop\Data\041-1 Project Edit View Insert Online Options	Language: FED Crganization block Okenual Automatic
Project tree	Description: Function block Functions are code blocks or subroutines without dedicated memory.
Devices	
	Function
Device configuration     Device diagnostics     Device diagnostics     Device diagnostics     Device diagnostics	Data block more
Add new block	> Additional information
Main [OB1]	Add new and open OK Cancel

→ In the "Assign\_discrete\_alarms" function, create a local input tag → "discrete\_alarm\_X0" of data type → "Bool" and a local output tag → "group\_signals01" of data type → "Word".
 In the first network, program a simple <sup>-[=]</sup> assignment of the → "discrete\_alarm\_X0" tag to the → "group\_signals01" tag.

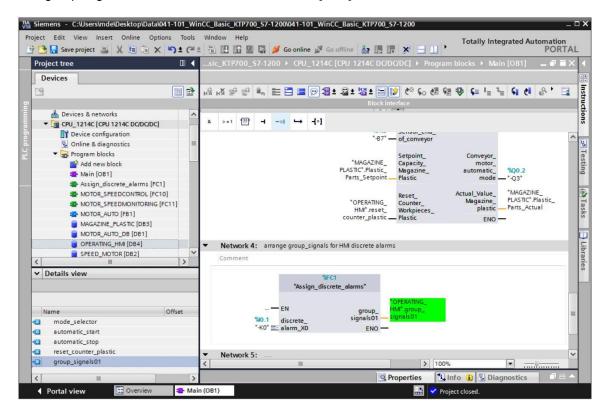
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Note:

The "Tag1.%X0" syntax is referred to as slice access in the TIA Portal. This enables, for example, bit-by-bit access to a tag of data type Byte, Word or DWord. If you need additional information on this, you can search the term "slice" in the STEP 7 online help.

→ Next, open the → "Main[OB1]" block in the "Program blocks" folder and call the → "Assign\_discrete\_alarms[FC1]" function → in "Network 4". Connect the input of the "Assign\_discrete\_alarms[FC1]" function with the **negated** global tag → "-K0" / %I0.1 / System "ON" (no) from the "Tag table\_Sorting station".

Connect the output of the "Assign\_discrete\_alarms[FC1]" function to the global tag  $\rightarrow$  "group\_signals01" from the "OPERATING\_HMI[DB4]" data block.



→ Return to → "HMI alarms" → "Discrete alarms" in "Panel KTP700 Basic". Click → "Add" to create a new alarm. Select the → "group\_signals01" tag you just created from the "OPERATING\_HMI[DB4]" data block.

Enter the text  $\rightarrow$  "Main switch OFF" in the "Alarm text" column, select the "Alarm class"  $\rightarrow$  "Warnings" and  $\rightarrow$  "0" for "Trigger bit". The "Trigger address" now displays "OPERATING\_HMI\_group\_signals01.x0".

Project tree 4 041-101_WinCC_Basic_KTP700_S7-1200 > Panel KTP700 Basic [N] > HM alarms   Devices   Discrete alarms ID alarm text Alarm class Trigger tag Trigger address HMI ack OPERATING_HM_group_signals01 a0 OPERATING_HM_group_signals01 a0 OPERATING_HM_group_signals01 a0 Properties For alarm For alarm Ceneral Trigger	🔁 🔚 Save project 📕 🔏 🗐 🗎 🗙 🏹 🗄	_										PORTA
Oddiality view      O	Project tree		041-101_WinCC	_Basic_	KTP/00_5/-	1200 • Par	nel KTP/00 Basic [KI	P/00 Basic P	N] ▶ HM	alarms	-	
Od1-101_WinCC_Basic_KTP700_57-1200     D     Alarm text     Alarm class     Trigger tag     Trigger     Trigger address     HMI ack.       W Add new Verice     D     Alarm text     Alarm class     Trigger tag     Trigger     Trigger address     HMI ack.       W Add new Verice     CPU_1214C (PM 1214C DC/DC/DC)     Imain switch OFF     Warnings     OPERATING_HM_group_signals01 w0     OPERATING_HM_group_signals01 w0     OPERATING_HM_group_signals01 w0     OPERATING_HM_group_signals01 w0       V Device configuration     V     Imain switch OFF     Imain switch OFF     Imain switch OFF     Imain switch OFF       V Device configuration     V     Screen management     Imain switch OFF     Imain switch OFF     Imain switch OFF       V Details view     General     Tigger     Imain switch OFF     Imain switch OFF     Imain switch OFF       Name     Magnetize     Imain switch OFF     Imain switch OFF     Imain switch OFF     Imain switch OFF       V Details view     Imain switch OFF     Imain switch OFF     Imain switch OFF     Imain switch OFF       Name     Imain switch OFF     Imain switch OFF     Imain switch OFF     Imain switch OFF       V Details view     Imain switch OFF     Imain switch OFF     Imain switch OFF     Imain switch OFF       Name     Imain switch OFF     Imain switch OFF	Devices				Carl Discret	te alarms	Analog alarms	System e	events	Alarm classes	🖞 Alarm g	roups
Od1-101_WinCC_Basic_KTP700_57-1200     Discrete alarms       ID     Alarm text     Alarm class     Trigger tag     Trigger       ID     Alarm text     Alarm class     Trigger tag     Trigger       ID     Alarm text     Alarm class     Trigger tag     OPERATING_HM_group_signals01 w0     OPERATING_HM_group_signals01 w0       ID     Property     CH_1214C (CPU 1214C DODODC)     CH_1214C (CPU 1214C DODODC)     CH_1214C (CPU 1214C DODODC)       ID     Property     CH_1214C (CPU 1214C DODODC)     CH_1214C (CPU 1214C DODODC)     CH_1414C (CH_142 group_signals01 w0     OPERATING_HM_group_signals01 w0       ID     Discrete alarm     Discrete alarm     Discrete alarm     ID       ID     C     III     IIII for (B) (S) Diagnostics     IIII for (B) (S) Diagnostics       ID     Exercts     IIII for (B) (S) Diagnostics     IIII for (B) (S) Diagnostics       ID     Exercts     IIIII for (B) (S) Diagnostics     IIII for (B) (S) Diagnostics       ID     Exercts     IIIII for (B) (S) Diagnostics     IIIII for (B) (S) Diagnostics       ID     Exercts     IIIII for (B) (S) Diagnostics     IIIII for (B) (S) Diagnostics       ID     Exercts     IIIII for (B) (S) (D) (S) (S) (S) (S) (S) (S) (S) (S) (S) (S	19g		⇒ 🕂									
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<sup>2</sup> Connections <sup>2</sup> HM alarms <sup>3</sup> Recipes <sup>3</sup> Details view <sup>1</sup> Name <sup>3</sup> Acknowledgment              Name <sup>3</sup> Acknowledgment	🕨 🗑 Screen management		Discrete_alarm_		ete_alarm]			Q Prop	erties	Info 🗓 🖸 Dia	gnostics	
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- → Before the visualization is tested, the "Acquisition cycle" of all newly created tags is to be accelerated again from 1 second to 100 milliseconds in the default tag table.
- → Before the visualization is downloaded to the panel, compile the CPU and panel again and save the project. (→ CPU\_1214C → 1 → Panel KTP700 Basic → 1 → 1 Save project.)
  - → After successful compilation, the entire controller with the created program including the hardware configuration, as previously described in earlier modules, can be downloaded.

 $(\rightarrow CPU_{1214C} \rightarrow \square)$ 

→ To download the visualization to the panel, follow the same procedure. Select the → "Panel KTP700 Basic [KTP700 Basic]" folder and click the  $\rightarrow$  III "Download to device" button.

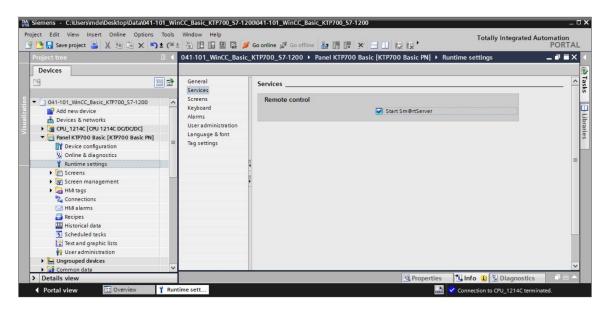
→ Analog alarms and discrete alarms will now be automatically displayed in the "Pending/Unacknowledged alarms" alarm window and in the "Alarm line" in Runtime. Details and help texts can be displayed in the alarm window and alarms can be acknowledged if necessary. If the alarm window has been closed, it can be displayed again by clicking the displayed alarm indicator. Various alarm classes appear in different colors.

SIEMI	ENS			SIMATIC HM
SIEMENS MUnacknowled	ged abrms			main switch OFF
No.	Time	Date	Text	
[ No.	12:08:04 AN	1 6/30/2017	Error thres	nold exceeded motor pos. speed
	Pending alarms			×
	No.	Time	Date	Text
		12:08:04 AM	6/30/2017	Error threshold exceeded motor pos. speed
		12:08:04 AM	6/30/2017	Warning threshold exceeded motor pos. speed
	1	12:06:46 AM	6/30/2017	main switch OFF
<b>.</b>				

## 7.16 Remote operation of Panel KTP700 Basic

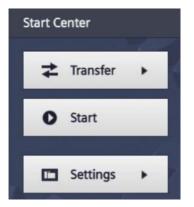
### 7.16.1 Activating web services for Runtime

→ To enable remote control, the → "Runtime settings" must be opened with a double-click in the configuration for → Panel KTP700 Basic. Under → "Remote control" in "Services", select the → I "Start Sm@rtServer" option.



### 7.16.2 WinCC Internet settings on Panel KTP700 Basic

→ Settings must also be made directly on the panel. Select → the "Settings" button in the "Start Center" immediately after switching on the power supply and starting the panel.



Note:

– You must select "Settings" in the "Start Center" quickly before Runtime automatically starts.



Internet

→ Under "Transfer, Network & Internet" click the <sup>Settings</sup> icon to navigate to the web server settings.

Start Center		
Transfer	Settings	1
O Start	System	
E Settings	Service & Date & Time Sounds System Commissioning Control/Info	
	Transfer, Network & Internet	
	Network Transfer Internet Interface Settings Settings	
- 0- 5	Display & Operation	

 $\rightarrow$  Select the following settings in the "Sm@rtServer" menu item.

Start Center		
<b>≵</b> Transfer	Sm@rtServer	
O Start	Sm@rtServer ON/OFF ON	
	Start automatically after booting ON	
Settings	Close with Runtime OFF	
Internet Settings Sm@rtServer	Communication Settings	
Import Certificate	Accept Socket connection ON	
Certificate Store	Encrypt communication OFF	

→ Under "Security Settings" and "Force Write Access", assign passwords (e.g. "sce") and select the settings shown here.

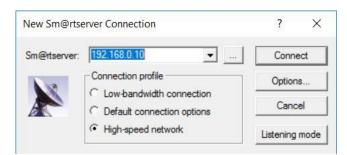
Start Center	Rechteckiges Ausschneiden
<b>↓</b> Transfer	Sm@rtServer
Start	Security Settings
	Enable empty passwords OFF
Settings	Password1: ******
Internet Settings	View only OFF
Sm@rtServer	Password2: *******
Import Certificate Certificate Store	View only OFF
	Enable force write access ON
	Password: ******

### 7.16.3 Starting remote access to Panel KTP700 Basic

→ To use remote access to your panel, you can start the  $\rightarrow$  "Sm@rtClient" tool installed with the TIA Portal.



 $\rightarrow$  Enter the IP address of the device  $\rightarrow$  "192.168.0.10" and click on  $\rightarrow$  "Connect".



 $\rightarrow$  A window indicating the status of the connection is displayed as well as another window where you must enter the password you set previously in the panel  $\rightarrow$  "sce"  $\rightarrow$  "OK".

Smartclient Connection	n ×
Connecting to 192.168.0	).10
Status: Authentication so	cheme requested.
	Hide
Standard VNC Authent	tication X
Sm@rtserver Host:	192.168.0.10
Thumbprint:	Show Server Certificate
	5 E9 D7 D0 D6 98 9F ) 8C 0F 6B 6B DB FE
User name: Password:	***
Encrypt communicati	

→ You then have the option of monitoring and operating the panel remotely and even changing the settings in Windows CE of the device.

SIEMENS SIMATIC HMI Overview So	Magazine Plastic	System screens	<ul> <li>✓ 6/28</li> <li>3:16:</li> </ul>
-B4	-B5 Förderband/Cor	-B6 Metall/ metal	-87 Plast
-B3 Motor active Speed actual value		M4 -82 -81	plast

## 7.17 Archiving the project

→ Finally, you should archive the complete project. Select → "Project" → "Archive ..." in the menu. Create a folder in which you want to archive your project and save your project as file type 'TIA Portal project archive'. (→ Project → Archive ... → SCE\_EN\_041-101 WinCC Basic with KTP700 and S7-1200.... → Save)

Ma Siemens - C:\Users\mde\Desktop\D	Data\041-	101_Win	ICC_Basic	_KTP700_S	7-1200\04	1-101_	VinCC_Basic_K	TP700	_\$7-120	0		_						_ <b>- ×</b>
Project Edit View Insert Online			Window		1 💋 Go d	online 🤬	Go offline	2 11	111 ×		•		т	otally l	ntegrate	d Aut	omation PORT	
- 💁 Open Migrate project	Ctrl+O						el KTP700 Bas	1		-	1	ens 🕨	Overvi	ew Sorti	ng Stati	ion	- • •	× <
Close	Ctrl+W																	攀
Save Save as Ctrl+	Ctrl+S Shift+S	•			<b>•</b> E	<u>8 I [</u>	J <del>S</del> A*±≣	± <u>A</u>	L ± <u> </u> ±	± <u>⊿</u> ±	≣± —	± J	± ₫\±	<b>本</b> ±山	± 🔛 ±	্থ 1	≝± ⊑a,	Layout
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Manage multiuser server projects				1				H				19					1	stru
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Start basic integrity check Upgrade				122 1223 12		:::::					-B6				::::::			
Print Print preview	Ctrl+P					-B4	-B5				Metal	/				-B7		Tasks
C:\\041-101_WinCC_Basic_KTP700_S7 D:\\031-600_Global_Data_Blocks_S7			Ē			-										-	Plastik/	
Exit	Alt+F4			Rutsch	e/Slide		Fi	örderba	and/Conv	veyor		-		-			plastic	Libraries
Speed Motor													Ca					es
System information		- 11				EM						-B	2 00	unter	workp	ieces	plasti	
User administration			:	-B3 Mot	tor activ	ve					M4				00	Re	set	~
Screen management		~	<	_		_	m	_	_			>		(m)	<b>T</b>			<u>e</u> _
> Details view	_									9	Properti	-	i Info	80	liagnost	tics		-
Portal view  Overvie	ew.	Over	view So									1	The proje	ct 041-10	1_WinCC	_Basic_	KTP	

# 8 Checklist – step-by-step instruction

The following checklist helps trainees/students to independently check whether all steps of the step-by-step instruction have been carefully completed and enables them to successfully complete the module on their own.

No.	Description	Checked
1	Program successfully changed in the CPU 1214C	
2	Successful compilation of the CPU 1214C without error message	
3	Successful download of the CPU 1214C without error message	
4	Process visualization successfully created for Touch Panel KTP700 Basic	
5	Successful compilation of the Touch Panel KTP700 Basic without error message	
6	Successful download of the Touch Panel KTP700 Basic without error message	
7	Switch on system (-K0 = 1) Cylinder retracted / feedback activated (-B1 = 1) EMERGENCY STOP (-A1 = 1) not activated AUTOMATIC mode (in panel) Automatic stop pushbutton not actuated (-S2 = 1) Briefly press the automatic start pushbutton (in panel) Sensor part at slide activated (-B4 = 1) Conveyor motor -M1 variable speed (-Q3 = 1) turns on and remains active The speed corresponds to the speed setpoint in the range of +/- 50 rpm	
8	Sensor at conveyor end activated (-B7 = 1) $\rightarrow$ -Q3 = 0 (after 2 seconds)	
9	Briefly press the automatic stop pushbutton (-S2 = 0 or in panel) $\rightarrow$ -Q3 = 0	
10	Activate EMERGENCY STOP (-A1 = 0) $\rightarrow$ -Q3 = 0	
11	Manual mode (in panel) $\rightarrow$ -Q3 = 0	
12	Switch off system (-K0 = 0) $\rightarrow$ -Q3 = 0	
13	Cylinder not retracted (-B1 = 0) $\rightarrow$ -Q3 = 0	
14	Speed > Speed limit fault max. $\rightarrow$ -Q3 = 0	
15	Speed < Speed limit fault min. $\rightarrow$ -Q3 = 0	
16	Values and alarms are displayed on the panel	
17	Project successfully archived	

# 9 Exercise

## 9.1 Task description – Exercise

The following functions are to be added to the process visualization in this exercise:

The **"Overview Sorting Station"** overview screen will display the "Setpoint" and "Actual" "Plastic" workpieces count.

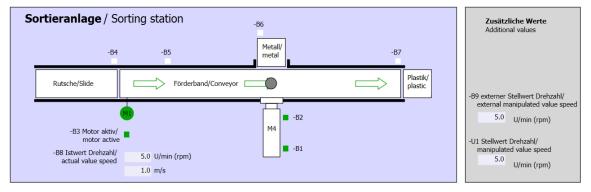
The **"Speed Motor"** screen will display the current speed and speed setpoint of the motor graphically and in IO fields. The speed setpoint can also continue to be specified here.

The error and warning thresholds for positive and negative motor speed are to be displayed and set here in IO fields. A red box in front of the IO fields indicates when a limit has been exceeded.

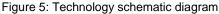
In the **"Magazine Plastic"** screen, the "Setpoint" and "Actual" count will be displayed graphically and in IO fields. The setpoint for the plastic parts can be specified in the range 0 to 20 in the IO field. The counter can also be reset here.

The emergency stop and the status of automatic mode is also to be monitored in the **alarm system.** If the emergency stop is triggered or automatic mode is stopped, a warning is to be displayed.

## 9.2 Technology schematic diagram



Here you see the technology schematic diagram for the task.



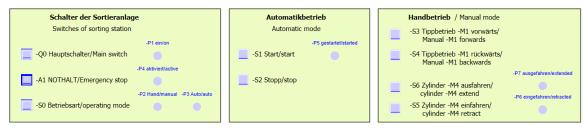


Figure 6: Operator panel

# 9.3 Reference table

DI	Туре	ID	Function	NC/NO
I 0.0	BOOL	-A1	Return signal emergency stop ok	NC
I 0.1	BOOL	-K0	Main switch "ON"	NO
10.2	BOOL	-S0	Mode selector manual (0) / automatic (1)	Manual = 0 Auto=1
10.3	BOOL	-S1	"Automatic start" pushbutton	NO
I 0.4	BOOL	-S2	Pushbutton automatic stop	NC
I 0.5	BOOL	-B1	Sensor cylinder -M4 retracted	NO
I 1.0	BOOL	-B4	Sensor part at slide	NO
I 1.3	BOOL	-B7	Sensor part at end of conveyor	NO
IW64	BOOL	-B8	Sensor actual motor speed +/-10V corresponds to +/- 50 rpm	

The following signals are required as global operands for this task.

DO	Туре	ID	Function	
Q 0.2	BOOL	-Q3	Conveyor motor -M1 variable speed	
QW 64	BOOL	-U1	Motor speed manipulated variable in both directions +/-10V corresponds to +/- 50 rpm	

0

Output

#### Legend for reference list

- DI Digital input DO Digital output
- Al Analog input AO Analog output
  - Input
- NC Normally Closed
- NO Normally Open

# 9.4 Planning

L

Plan the implementation of the task by yourself.

## 9.5 Checklist – Exercise

The following checklist helps trainees/students to independently check whether all steps of the exercise have been carefully completed and enables them to successfully complete the module on their own.

No.	Description	Checked
1	Program successfully changed in the CPU 1214C	
2	Successful compilation of the CPU 1214C without error message	
3	Successful download of the CPU 1214C without error message	
4	Process visualization successfully created for Touch Panel KTP700 Basic	
5	Successful compilation of the Touch Panel KTP700 Basic without error message	
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7	Switch on system (-K0 = 1) Cylinder retracted / return signal activated (-B1 = 1) EMERGENCY STOP (-A1 = 1) not activated AUTOMATIC mode (in panel) "Automatic stop" pushbutton not pressed (-S2 = 1) Briefly press "Automatic start" pushbutton (in panel) Sensor part at slide activated (-B4 = 1) Conveyor motor -M1 variable speed (-Q3 = 1) turns on and remains active The speed corresponds to the speed setpoint in the range of +/- 50 rpm	
8	Sensor at conveyor end activated (-B7 = 1) $\rightarrow$ -Q3 = 0 (after 2 seconds)	
9	Briefly press "Automatic stop" pushbutton (-S2 = 0 or in panel) $\rightarrow$ -Q3 = 0	
10	Activate EMERGENCY STOP (-A1 = 0) $\rightarrow$ -Q3 = 0	
11	Manual mode (in panel) $\rightarrow$ -Q3 = 0	
12	Switch off system (-K0 = 0) $\rightarrow$ -Q3 = 0	
13	Cylinder not retracted (-B1 = 0) $\rightarrow$ -Q3 = 0	
14	Speed > Speed limit fault max. $\rightarrow$ -Q3 = 0	
15	Speed < Speed limit fault min. $\rightarrow$ -Q3 = 0	
16	Values and alarms are displayed on the panel	
17	Project successfully archived	

# **10** Additional information

More information for further practice and consolidation is available as orientation, for example, Getting Started, videos, tutorials, apps, manuals, programming guidelines and trial software / firmware, under the following link:

siemens.com/sce/s7-1200

#### Preview "Additional information"

- Getting Started, Videos, Tutorials, Apps, Manuals, Trial-SW/Firmware
  - ↗ TIA Portal Videos
  - TIA Portal Tutorial Center
  - > Getting Started
  - ↗ Programming Guideline
  - Easy Entry in SIMATIC S7-1200
  - > Download Trial Software/Firmware
  - ↗ Technical Documentation SIMATIC Controller
  - ↗ Industry Online Support App
  - TIA Portal, SIMATIC S7-1200/1500 Overview
  - ↗ TIA Portal Website
  - ↗ SIMATIC S7-1200 Website
  - ↗ SIMATIC S7-1500 Website

### **Further information**

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