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# WinCC Communication to S7-1500, S7-1200 and ET 200SP

SIMATIC WinCC V7.2 or higher

https://support.industry.siemens.com/cs/ww/en/view/101908495

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# 1 Task



#### Introduction

This application example shows how the S7-1200, S7-1500 and ET 200SP can transfer tags and messages to WinCC. In addition, a secure connection is established between the S7-1500 and the HMI.

# 2 Solution

### 2.1 Overview

#### Configuration

The diagrammatic representation below shows the most important components of the solution.

Figure 2-1



#### Description

To communicate with each other, the devices use the "SIMATIC S7-1200, S7-1500 Channel" communication channel. SIMATIC WinCC V7.2 or higher provides this channel. Communication is based on TCP/IP.

Depending on the version used, the channel provides the following functionalities. All lower-version functions are also included in higher versions.

Depending on the WinCC version used, individual dialogs / tabs might have a different appearance.

#### WinCC V7.2

- Communication of the S7-1200<sup>1</sup>, S7-1500 and ET 200SP with WinCC singleuser systems.
- Establishment of a secure communication connection between WinCC and the S7-1500 (not possible for S7-1200 and ET 200SP).
- Absolute access to AS symbolic addresses of the automation system.
- Different channel diagnosis options.
- SIMATIC S7-1200: 32 connections
- SIMATIC S7-1500: 16 connections

#### WinCC V7.3 SE

- Absolute and symbolic access to AS symbolic addresses and messages of the controller (for single-user and multi-user systems).
- "Read from AS" functions that allow the user to read and apply the AS symbols with optimized block access.
- System messages (S7-1500 only)
- Chronological messaging (program alarm)

<sup>&</sup>lt;sup>1</sup> Firmware version V2.2 or higher

#### WinCC V7.4

- "Update" function that allows the user to synchronize project changes on the controller side with WinCC.
- "WinCC SysDiagControl" ActiveX control for system diagnostics in Runtime.
- Increases the maximum number of connections possible to:
  - SIMATIC S7-1200: 32 connections
  - SIMATIC S7-1500: 128 connections
- System tag for "Check connection" and "Disconnect connection".
- Raw data communication
   Is raw data supported for communication between WinCC and controllers of
   the S7-1200 / S7-1500 family?

#### WinCC V7.4 SP1

- SIMATIC S7-1200: up to 64 connections
- Supports full-text alarms in the same way as WinCC Runtime Professional V14
- Supports the S7-1500 software controller (S7-1507S)
   For more information, please refer to the following application example: <u>Joint Operation of WinCC V7 or WinCC V14/15 RT Prof. and Software</u> <u>Controller</u>
- Offline import of configuration data from TIA Portal for absolute and symbolic addresses
- Setting the prefix / suffix as the default value for tags for each connection
- Automatic update of S7-1500 messages

#### WinCC V7.5

- System tags are created with a click:
  - "Check connection"
  - "Disconnect connection"
- Direct connection of structured data types (e.g., array)

#### WinCC V7.5 SP1

- Redundant connection to S7-1500H
- Stopping Logging via System Tags

#### WinCC V7.5 SP2

- Connecting UDT-Derived DBs Directly as a Structure
- Secure Communication with TLS-protocol (as of update 4)

WinCC Communication to S7-1200/ S7-1500 Entry ID: 101908495, V2.2, 10/2022

#### Special aspects

Optimized access to AS symbolic addresses and controller alarms is provided to you by the online connection to the controller. The offline configuration is possible for absolute addresses. V7.4 SP1 or higher allows 'offline configuration without CPU connection' also for symbolic access.

The maximum number of connections possible is limited by the available system resources and their performance data, particularly CPU, RAM and Ethernet connection.

See FAQ:

Which quantity framework must you pay attention to for communication between an S7-1200 or S7-1500 controller and WinCC Runtime Professional?

#### Supported data types

The communication channel supports the following data types:

- Binary tag
- Signed 8-bit value
- Unsigned 8-bit value
- Signed 16-bit value
- Unsigned 16-bit value
- Signed 32-bit value
- Unsigned 32-bit value
- IEEE 754 32-bit floating-point number
- IEEE 754 64-bit floating-point number
- Text tag 8-bit character set
- Text tag16-bit character set (V7.3 or higher)
- Date and time format (V7.3 or higher)
- Raw data tag as byte array (V7.4<sup>2</sup> or higher)

#### Other communication features

- Cyclic reading of tags
- Time synchronization
- Export and import function
  - Export of tags from TIA Portal (for symbolic addressing and messages when running WinCC V7.4 SP1 or higher)
  - Import into WinCC using WinCC Configuration Studio

#### Scope

This application example does not include a description of:

- Configuration of the S7-1200, S7-1500 and ET 200SP in TIA Portal
- Installation of SIMATIC TIA Portal STEP 7 Professional and WinCC Basic knowledge of these topics is required.

<sup>&</sup>lt;sup>2</sup> Maximum data block length: 8000 bytes

#### **Required knowledge**

Basic knowledge of SIMATIC WinCC (V7.2 or higher) and TIA Portal STEP 7 Professional (V13 SP1 or higher) is required.

#### Sample files and projects

The following table contains all files and projects that are used in this application example.

Table 2-1

Component	Note
101908495_WinCC_S71200_S71500_Channel_V2_en.pdf	This document.

# 3

## Configuration and Project Engineering for WinCC V7.3 SE

This chapter describes how to read AS symbols with symbolic addressing and messages from the controller using WinCC V7.3 SE with the "SIMATIC S7-1200, S7-1500 Channel" and how to apply them to WinCC as tags and messages.

In addition, it illustrates how to handle project changes on the controller side.

#### Validity

This chapter is valid for:

- STEP 7 V13 or higher
- WinCC V7.3 SE
- S7-1200 (firmware version V2.2 or higher)
- S7-1500
- ET 200SP

#### **Components used**

This chapter was created with the following components.

#### Hardware components

#### Table 3-1

Component	No.	Order no.	Note
S7-1516-3 PN/DP	1	6AG1516-3AN00-7AB0	Alternatively, you can use a different S7-1500, S7-1200 or ET 200SP.
Development system	1	-	PC to configure the controller and WinCC. The hardware requirements for STEP 7 and WinCC apply.

#### Software components

#### Table 3-2

Component	No.	Order no.	Note
WinCC V7.3 SE	1	6AV63.17-3	-
TIA Portal STEP 7 V14 SP1 Professional	1	6AV2103-0AA04-0AA5	Alternatively, TIA Portal STEP 7 V14 SP1 Basic can be used for an S7-1200.

### 3.1 Loading AS symbols from an existing S7-1500 program

The following section describes how to establish secure communication with optimized block access with the controller's address range in SIMATIC WinCC using the "SIMATIC S7-1200, S7-1500 Channel" communication channel. To this end, you read and apply the AS symbols (tags) using the new "Read from AS" functionality.

Note You can only read AS symbols whose access rights are enabled for SIMATIC WinCC. Otherwise, SIMATIC WinCC would not find them.

Check your PG/PC interface settings to ensure proper communication. To do this, follow the instructions from the following video:

"Why is the connection from WinCC to the S7 controller not established via TCP/IP?"



#### Table 3-3

No.	Action
4.	In the OMS+ channel context menu, select the "New Connection" button to add a new connection. Tag Management Internal tags Internal tags SIMATIC 57-1200, 57-1500 Channel New Connection Struct Copy Paste Export
5.	In the associated context menu, click "Connection Parameters" of the "NewConnection_1" connection. Enter the connection parameters shown below. NewConnection_1 Connection_Options S7Plus network address 172.16.39.18 Access point: Product family: S7TONLINE For a connection to the ET 200SP, select the S7-1500 as the product family in step 3.

No.	Action
6.	Optional: If you want to establish a secure connection to the S7-1500, add a password in the "Options" tab. In TIA Portal, select the CPU properties, go to "Protection & Security" and specify the password. This is only required for the "No access (complete protection)" setting.
	Note Only the S7-1500 provides access protection. For more information on access protection, please refer to the "Configuring access protection for the CPU" chapter of the <u>"S7-1500 – Getting Started"</u> manual. In TIA Portal, access protection for the CPU is configured in the "Protection & Security" tab of the CPU properties.
	Enter password for access protection (level 1, 2 or 3) Without password, the level configured on the PLC is used.
7.	Start WinCC Runtime.

No.	Action				
8.	In the connection context menu, select "AS Symbols" > "Read from AS" to read the AS symbols.				
	Tag Management « 📦 Tags [ NewConnectio				
	Tag Management     Name       Internal tags     1       SIMATIC S7-1200, S7-1500 Channel     2       OMS+     3       New Group     2       Image: State of the state of th				
	Paste Delete Rename ► Export Connection Parameters ▲S Symbols				
	Save to file Load from file				
	The symbols will be read.				
	Read from AS Download AS symbols 00:01.029				
	(257 AS Symbols loaded)				
	Cancel				
	After the AS symbols have been successfully read, the following message appears. Select "OK" to confirm.				
	Read from AS				
	The AS Symbols were loaded successfully.				
	ОК				

No.		Α	ction					
9.	Go to the "AS Symbols" tab. This tab lists the AS symbols of the controller that							
	II AS Symbols [ NewConnection 1]							
			ata Typo Data aroa	Tag				
	1 Miver ON	Bool	Output	Tay	- É			
		N Bool	Output					
	3 Conveyor Find Filling	sition Bool	Output					
	4 Conveyor Move Cvc	e Bool	Output					
	5 Conveyor Fillposition	found Bool	Output					
	6 Conveyor_Cycle_don	e Bool	Output					
	7 VALVE_COLOR_C	Bool	Bit memory					
	8 VALVE_COLOR_M	Bool	Bit memory					
	9 VALVE_COLOR_Y	Bool	Bit memory		-			
	HI H Groups Tags AS	Symbols	I ∢ [	•				
10.	In the "Access" column, c	heck the mec	k boxes of the As	S symbols you want	to			
	apply to WinCC Tag Mana	agement. Win	CC automatically	creates associated				
	WinCC tags with symbolic	addressing.						
	II AS Symbols [ NewConn	ection_1]	Find	م	•			
	Access Name	AS D	ata Type Data area	Tag	~			
	1 Mixer_ON	Bool	Output	Mixer_ON				
	2 FILLING_VALVE_OPE	N Bool	Output	FILLING_VALVE_OPEN				
	3 Conveyor_Find_Fillpo	sition Bool	Output					
	4 Conveyor_Move_Cycl	e Bool	Output					
	5 veyor_Fillposition	_found Bool	Output					
	6 Cycle_don	e Bool	Output					
	7 VE_COLOR_C	Bool	Bit memory	VALVE_COLOR_C				
	8 VALVE_COLOR_M	Bool	Bit memory	VALVE_COLOR_M				
	9 VALVE_COLOR_Y	Bool	Bit memory	VALVE_COLOR_Y	-			
	Groups Tags AS	Symbols		<b>&gt;</b>				
11.	The "Tags" tab now displa	ays the WinCO	tags and their p	roperties.				
	<b>Find</b>							
	Name Dat	a type Length Fo	rm Connection Group	Address				
	1 COLOR_VALVE1_C Bin	ary Tag 1	NewConne	VALVE_COLOR_C				
	2 COLOR_VALVE1_K Bin	ary Tag 1	NewConne	VALVE_COLOR_K	=			
	3 COLOR_VALVE1_M Bin	ary Tag 1	NewConne	VALVE_COLOR_M				
	4 COLOR_VALVE1_Y Bin	ary Tag 1	NewConne	VALVE_COLOR_Y				
	5 Mixer_ON Bin	ary Tag 1	NewConne	Mixer_ON				
	6 OPPEN_VALVE2_Filling Bin	ary Tag 1	NewConne	FILLING_VALVE_OPEN				
	7 START_MIXING_Process Bin	ary Tag 1	NewConne	START_MIXING_Process				
	8 7 <u>15</u>							
	9				-			
	I I I I I Groups	5 Symbols	I 4 III	ŀ				
	( <b>L</b>							

You can change the tag names of the generated WinCC tags in the "Tags" a         "AS Symbols" tabs.         Image: Tags [NewConnection_1]         Image: Tags [NewConnection_1] <td< th=""><th>00</th><th>tional</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	00	tional									
You can change the tag names of the generated WinCC tags in the "Tags" a         "AS Symbols" tabs.	Op	lional.							_		
Image       Find         Image       Name       Name         Image       Name	Yo "AS	u can S Sym	change the tao bols" tabs.	g names	of the	e gen	erated	WinCO	C tags	in the "I a	ags" an
Name       Data type       Length       Form       Connection       Group       Address         1       COLOR_VALVE1_C       linary Tag 1       NewConne       VALVE_COLOR_C         2       COLOR_VALVE1_K       linary Tag 1       NewConne       VALVE_COLOR_K         3       COLOR_VALVE1_M       linary Tag 1       NewConne       VALVE_COLOR_M         4       COLOR_VALVE1_Y       linary Tag 1       NewConne       VALVE_COLOR_Y         5       Mixer_ON       linary Tag 1       NewConne       Mixer_ON         6       OPPEN_VALVE2_Filling       linary Tag 1       NewConne       START_MIXING_Process         8       X       Inary Tag 1       NewConne       START_MIXING_Process         8       X       Inary Tag 1       NewConne       START_MIXING_Process         9       Inary Tag 1       NewConne       START_MIXING_Process         9       Inary Tag 1       NewConne       START_MIXING_Process         8       X       Inary Tag 1       NewConne       START_MIXING_Process         9       Inary Tag 1       NewConne       START_MIXING_Process         9       Inary Tag 1       NewConne       START_MIXING_Process         9       Inary Tag 1 <t< th=""><th></th><th>Tags</th><th>NewConnectio</th><th>on_1]</th><th></th><th></th><th></th><th>Find</th><th></th><th></th><th>۹.</th></t<>		Tags	NewConnectio	on_1]				Find			۹.
1       COLOR_VALVE1_C       iinary Tag 1       NewConne       VALVE_COLOR_C         2       COLOR_VALVE1_K       iinary Tag 1       NewConne       VALVE_COLOR_K         3       COLOR_VALVE1_M       iinary Tag 1       NewConne       VALVE_COLOR_K         4       COLOR_VALVE1_Y       iinary Tag 1       NewConne       VALVE_COLOR_Y         5       Mixer_ON       iinary Tag 1       NewConne       VALVE_COLOR_Y         6       OPPEN_VALVE2_Filling       iinary Tag 1       NewConne       FILLING_VALVE_OPEN         7       START_MIXING_Process       iinary Tag 1       NewConne       START_MIXING_Process         8       jii       9		Name		Data type	Length	Form	Connecti	or Group	Addres	5	
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3       COLOR_VALVE1_M       binary Tag 1       NewConne       VALVE_COLOR_M         4       COLOR_VALVE1_Y       binary Tag 1       NewConne       VALVE_COLOR_Y         5       Mixer_ON       binary Tag 1       NewConne       Mixer_ON         6       OPPEN_VALVE2_Filling       binary Tag 1       NewConne       FILLING_VALVE_OPEN         7       START_MIXING_Process       binary Tag 1       NewConne       START_MIXING_Process         8       ✓       H       Groups       Tags       AS Symbols	2	COLOR	_VALVE1_K	Binary Tag	1		NewCon	ne	VALVE_	COLOR_K	
4       COLOR_VALVE1_Y       binary Tag 1       NewConne       VALVE_COLOR_Y         5       Mixer_ON       binary Tag 1       NewConne       Mixer_ON         6       OPPEN_VALVE2_Filling       binary Tag 1       NewConne       FILLING_VALVE_OPEN         7       START_MIXING_Process       binary Tag 1       NewConne       START_MIXING_Process         8       >             9              1       ✓       Groups       Tags       AS Symbols           1       ✓       Mixer_ON       Bool       Output       Mixer_ON       OPPEN_VALVE2_Filling         2       ✓       FILLING_VALVE_OPEN       Bool       Output       OPPEN_VALVE2_Filling         3       Conveyor_Find_Fillposition       Bool       Output       OPPEN_VALVE2_Filling         3       Conveyor_Gycle_done       Bool       Output       OPPEN_VALVE2_Filling         4       Conveyor_Gycle_done       Bool       Output       COLOR_VALVE1_C         8       ✓       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C	3	COLOR	_VALVE1_M	inary Tag	1		NewCon	ne	VALVE_	COLOR_M	
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Access Name       AS Data Type Data area       Tag         1       V       Mixer_ON       Bool       Output       Mixer_ON         2       V       FILLING_VALVE_OPEN       Bool       Output       OPPEN_VALVE2_Filling         3       Conveyor_Find_Fillposition       Bool       Output       OPPEN_VALVE2_Filling         4       Conveyor_Move_Cycle       Bool       Output          5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       V       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       V       VALVE COLOR M       Bool       Bit memory       COLOR_VALVE1 M	Ш	AS Sy	mbols [ NewCo	nnection_	1]			Find			۹.
1       V       Mixer_ON       Bool       Output       Mixer_ON         2       V       FILLING_VALVE_OPEN       Bool       Output       OPPEN_VALVE2_Filling         3       Conveyor_Find_Fillposition       Bool       Output       OPPEN_VALVE2_Filling         4       Conveyor_Move_Cycle       Bool       Output       Output         5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       V       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       V       VALVE_COLOR_M       Bool       Bit memory       COLOR_VALVE1 M		Access	Name		A	S Data	Type Da	ta area	Taq		
2       ✓       FILLING_VALVE_OPEN       Bool       Output       OPPEN_VALVE2_Filling         3       Conveyor_Find_Fillposition       Bool       Output         4       Conveyor_Move_Cycle       Bool       Output         5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       ✓       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       ✓       VALVE_COLOR_M       Bool       Bit memory       COLOR_VALVE1_M	1	<b>V</b>	Mixer_ON		В	ool	Ou	tput	Mixe	r_ON	
3       Conveyor_Find_Fillposition       Bool       Output         4       Conveyor_Move_Cycle       Bool       Output         5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       VALVE_COLOR_M       Bool       Bit memory       COLOR_VALVE1_M	2	1	FILLING_VALVE_C	PEN	В	ool	Ou	tput	OPP	EN_VALVE2	Filling
4       Conveyor_Move_Cycle       Bool       Output         5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       VALVE_COLOR_M       Bool       Bit memory       COLOR_VALVE1_M	3		Conveyor_Find_Fi	llposition	В	ool	Ou	tput			
5       Conveyor_Fillposition_found       Bool       Output         6       Conveyor_Cycle_done       Bool       Output         7       VALVE_COLOR_C       Bool       Bit memory       COLOR_VALVE1_C         8       VALVE_COLOR_M       Bool       Bit memory       COLOR_VALVE1_M	4		Conveyor_Move_0	Cycle	В	ool	Ou	tput			
6         Conveyor_Cycle_done         Bool         Output           7         ✓         VALVE_COLOR_C         Bool         Bit memory         COLOR_VALVE1_C           8         ✓         VALVE_COLOR_M         Bool         Bit memory         COLOR_VALVE1_M	5		Conveyor_Fillposit	tion_found	В	ool	Ou	tput			
7         VALVE_COLOR_C         Bool         Bit memory         COLOR_VALVE1_C           8         VALVE COLOR M         Bool         Bit memory         COLOR_VALVE1_M	6		Conveyor_Cycle_c	lone	В	ool	Ou	tput			
8 VALVE COLOR M Bool Bit memory COLOR VALVE1 M	7	1	VALVE_COLOR_C		В	ool	Bit	memory	COL	OR_VALVE1	С
	8	1	VALVE_COLOR_M		В	ool	Bit	memory	COL	OR_VALVE1	M
9 VALVE_COLOR_Y Bool Bit memory COLOR_VALVE1_Y	9	<b>V</b>	VALVE_COLOR_Y		В	ool	Bit	memory	COL	OR_VALVE1	Y

The tag name is composed as follows: "DataArea\_BlockName\_ItemName"

In the table, the separators are converted as follows ("," or "-" in the item name remain unchanged).

<b>—</b> :	~ 4
Figure	3-1

-						
	Access	Name	AS Data	Data area	-7	Tag
	~	Static1	UInt	Data_block_1		Data_block_1_Static1
	<b>V</b>	Static_2	UInt	Data_block_1		Data_block_1_Static_2
	<b>V</b>	Static.3	UInt	Data_block_1		Data_block_1_Static_3
	<b>V</b>	Static,4	UInt	Data_block_1		Data_block_1_Static,4
	<b>V</b>	Static-5	UInt	Data_block_1		Data_block_1_Static-5
	<b>V</b>	Static 6	UInt	Data_block_1		Data_block_1_Static_6

**Notes** Execute the "Read from AS" command again if there are any project changes regarding the controller.

If WinCC Runtime is stopped and Tag Management is closed, symbolic addressing and the "AS Symbols" tab will no longer be displayed. To display both again in Tag Management, use the "Read from AS" command.

## 3.2 What's new for AS messages

The following section shows you how to read AS messages from the controller and how to apply them to your WinCC project, including the associated message texts.

Note

Only the S7-1500 can load AS messages.

The message length must be limited to a maximum of 400 characters.



No.	Action	
1.	Open the "Alarm logging" editor. Alarm logging « Messages Grow System, requires acknowledgment Message blocks Message groups System messages Analog alarms Grow As Messages	
	Image: Tag Management         Image: Alarm logging         Image: Tag Logging         Image: Tag Logging         Image: Tag Logging	

No.	Action								
2.	In the project tree, go to "AS Messages and open your S7-1500 connection. Use the "Load from AS" command to import the messages of the CPU.								
	Alarm logging «								
	Messages Gror System, requires acknowledgment System, without acknowledgment Message blocks Message groups System messages Analog alarms AS Messages NewConnection Load from AS Save to file Car Manager Save to file Car Manager Car Manager								
3									
5.	Load from AS Load messages/ text list entries from AS 00:00.531 (2573 text list items loaded) Cancel								
	Load from AS The messages were loaded successfully from the AS. OK								

No.		Action								
4.	In list	In the "Used" column, check the check boxes of the AS symbols and text lists you want to apply.								
		AS Te	ext lists [ a	available ]	Find		<b>₽</b> -			
		Used	Library ID	Text list ID	Text (ENU)	Text (Neutral)	*			
	1		0	280	@2W%d@	@2W%d@				
	2		1	2	STOP (firmware update)					
	3		1	6	Vendor-specific					
	4		1	8	Short-circuit					
	5		1	253	@1W%t#7W@					
	6		1	254	Error: @1W%t#7W@ on @8W%t#280K@  > Component: @6W%t#					
	7		1	255	Error: @1W%t#7W@  > HW_ID= @6W%5u@, @8W%t#7W@ char					
	8		1	32776	Help: Check the state of the connecting cables.					
	9		1	280	@2W%d@	@2W%d@				
	10		1	510	Acromag	Acromag				
	11		2	6	Input					
	12		2	8	Undervoltage					
	13		2	253	@1W%t#7W@ - @5W%t#7W@					
	14		2	254	Error: @1W%t#7W@ @5W%t#7W@  > Component: @6W%t#276	ł				
	15		2	255	Error: @1W%t#7W@ @5W%t#7W@  > HW_ID= @6W%5u@					
	16		2	32776	Help: Check the power supply.					
	17		2	280	@2W%d@	@2W%d@				
	18		2	510	Rockwell Automation	Rockwell Automation	1			
	19		3	2	STOP (initialization)					
	20		3	6	Output					
	21		3	8	Overvoltage					
	22		3	253	@1W%t#7W@ - @5W%t#7W@		-			
	14 4		AS Messa	ges / AS Te	xt lists		H.			

#### Alarm class configuration

When loading AS messages of a SIMATIC S7-1500, WinCC automatically assigns the messages to an alarm class/alarm type with an appropriate setting.

#### Table 3-5

STEP	7	WinCC acknowledgment philosophy			
Acknowledgment		"incoming" acknowledgment	"outgoing" acknowledgment	"outgoing" without status	
No acknowledgment		"incoming" acknowledgment	"outgoing" acknowledgment	"outgoing" without status	
No acknowledgment	Information only	"incoming" acknowledgment	"outgoing" acknowledgment	"outgoing" without status	

**Bold** = applicable

Not bold = not applicable

**Note** The alarm classes in TIA Portal should be matched to the alarm classes in WinCC Configuration Studio, if possible. After importing, this makes it easier to assign them in WinCC Configuration Studio.

It is useful to color code the alarm types ("incoming", "outgoing", ...). As a result, the alarm type can be assigned more quickly and easily, e. g. in the AlarmControl.

## 3.3 Effects of project changes in the controller

If you modify the project on the controller side, you have to reload the AS symbols and messages using the context menu or the import function. In this case, the properties of the AS symbols and messages are compared to the properties from the WinCC project.

If the AS symbol names or symbolic addresses do not match, the "AS Symbols" tab will be highlighted in red. If the AS messages have changed, they will be silhouetted in red in the "AS Messages" tab. Tooltips with information on possible causes are displayed.

**Note** TIA Portal automatically generates the symbolic addresses of the AS symbols. They depend on the associated AS symbol properties. Due to symbolic access, address changes in the CPU program do not affect the symbolic address.

#### Option in the event of a changed tag ID in WinCC V7.3 SE

The <u>"Update" function 4.2</u> is not available in WinCC V7.3 SE. The assignment can be restored using the "Export / Import" function of WinCC Configuration Studio.

**Note** This kind of "updating" is only possible if you have performed the export operation before changing the project on the controller side.

Figure 3-2



- 1. The CPU has been configured and loaded.
- 2. Tags have been read and configured in WinCC. Export created in WinCC Configuration Studio at the connection level or a higher level.
- 3. Project change on the controller side, e. g. project copy, has been opened and loaded.
- 4. AS symbols are re-read in WinCC =>IDs are new (red)
- 5. All symbolic names are assigned to the ID during the import process and thus updated.

### 3.4 Connection with absolute addressing

WinCC V7.2 or higher allows you to use the "SIMATIC S7-1200, S7-1500 Channel" communication channel to establish communication with non-optimized blocks:

In TIA Portal, go to the block properties and uncheck the "Optimized block access" check box in the "Attributes" tab.

#### Figure 3-3

General	
General	Attributes
Information	
Time stamps	
Compilation	Only store in load memory
Protection	Data block write-protected in the device
Attributes	
Download with	Optimized block access
•	

To get the absolute address (offset), compile the block in TIA Portal. Figure 3-4

	-	Na	me	Data type	Offset	Start value
1	-	•	Static			
2			Static_1	DWord	0.0	16#0
3		•	Static_2	DWord	4.0	16#0
4	-00	•	Static_3	DWord	8.0	16#0

#### Note

As soon as you make changes to the block (e. g., another input), the offset will no longer be displayed. After recompiling, you can read it again.

		Na	me	Data type	Offset	Start value
1	-	•	Static			
2	-00	•	new_Static	Bool 🔳		false
3		•	Static_1	DWord		16#0
4		•	Static_2	DWord		16#0
5	-	•	Static_3	DWord		16#0

For more information on creating tags, please refer to the following manual: WinCC V7.2: Communication > Configuring the tags

#### Import / export with TIA Portal

• When running V7.4 SP1 or lower, this operation is only possible with absolute addressing.

• Symbolic addressing can be exported when running V7.4 SP1 or higher.

The following restrictions exist:

- No side-by-side installation with WinCC Professional (TIA Portal)
- No measurement archives
- No chronological messages

The tag export or import consists of two steps:

- Exporting the tags from TIA Portal
- Importing the data using WinCC Configuration Studio

#### How to export tags

Table 3-6

No.		Description						
1.	Create a new DB in TIA	Create a new DB in TIA Portal and disable optimized block access.						
2.	Compile the block to ge	t absolute addressing	j (offset).					
3.	Create a dummy HMI p	roject (e. g., Basic Pa	inel).					
4.	Use drag and drop to m from "symbolic" to "abs	love the block to a scr olute".	reen and change the	access mode				
5.	Click the "Export" butto	n to export the HMI ta	igs.					
	学 📑 🗄 🐁							
	Def z g table							
	No		Data type	Connection				
	Data_block_3_	_manual_new_Static	Bool	HMI_Connection_2				
	Data_block_3_	_manual_Static_1	DWord	HMI_Connection_2				
	Data_block_3_	_manual_Static_2	DWord	HMI_Connection_2				
	Data_block_3_	_manual_Static_3	DWord	HMI_Connection_2				
	Export HMI tags			×				
	Path for the export f	ile: Documents\Automatisier	ung\HMITags.xlsx					
			Exp Cance	1				

#### How to import tags

Table 3-7										
No.	Description									
1.	In WinCC Configuration Studio, create an S-1200, S7-1500 channel for your CPU. The connection name must be the same as in the export file.									
2.	Import the TIA Portal export file.									
	File     Edit     View     Help       Tag Management     «									
	Image: Tag Management         Internal tags         Image: Tag Management         Image:									

Note

In WinCC V7.3 SE / WinCC V7.4, you should use either "absolute addressing" or "symbolic addressing".

Absolute addressing allows only the offline import / export operation. If the symbolic addresses are read using the "Read from AS" function, you have to create the absolute addresses manually.

### 3.5 Better overview of a large number of tags

For a better overview of AS symbols, there are various options to customize the views. The methods described below make it easier to handle AS symbols and tags.

In addition, e.g., prefixes can be used to combine structures.

#### Search

The "Search" function allows you to limit the displayed AS symbols or tags to desired areas.

Figure 3-5

П	I AS Symbols [ NewConnection_1 ] - Search results							×
	Access	Name	AS Da	Data area	Tag		bata 17pc	4
1		DataRecordRead.REQ	Bool	SITOP_BUF8600_DB	SITOP_BUF8600_DB_DataRecordRead_REQ_	1	Binary Tag	(AĬ)
2		DataRecordRead.REQ	Bool	SITOP_BUF8600_DB_1	SITOP_BUF8600_DB_1_DataRecordRead_RE	Q	Binary Tag	
3		DataRecordRead.REQ	Bool	SITOP_BUF8600_DB_2	SITOP_BUF8600_DB_2_DataRecordRead_RE	Q	Binary Tag	Ŷ
4	<b>V</b>	DataRecordRead.REQ	Bool	SITOP_BUF8600_DB_3	SITOP_BUF8600_DB_3_DataRecordRead_RE	Q	Binary Tag	1
5	1	業						
6								

#### Find & Replace

The "Find and Replace" function allows you to include, e.g., prefixes for certain blocks or structures in the name. As a result, you can define new search terms that you can use to create your desired overviews for each search.

#### Figure 3-6



Note

After re-reading the tags, all the changes made by the "Find and Replace" function have been overwritten and may have to be made again.

When running WinCC V7.4 SP1 or higher, you can set <u>Prefix / suffix for tags 5.1</u> as the default value instead of the "Find & Replace" function.

**Note** The default setting of the search in WinCC Configuration Studio is limited to the "Name" column. "Search in" allows you to customize the settings.



# 4

# Configuration and Project Engineering for WinCC V7.4

This chapter shows system diagnostics and the "update" options when project changes are made on the controller side.

You can still use the procedures for AS symbols and AS messages described in WinCC V7.2 and V7.3 SE.

#### Validity

This chapter is valid for:

- STEP 7 V13 or higher
- WinCC V7.4
- S7-1200 (firmware version V2.2 or higher)
- S7-1500
- ET 200SP

#### **Components used**

This chapter was created with the following components.

#### Hardware components

#### Table 4-1

Component	No.	Order no.	Note
S7-1516-3 PN/DP	1	6AG1516-3AN00-7AB0	Alternatively, you can use a different S7-1500, S7-1200 or ET 200SP.
Development system	1	-	PC to configure the controller and WinCC.
			The hardware requirements for STEP 7
			and WinCC apply.

#### Software components

#### Table 4-2

Component No.		Order no.	Note
WinCC V7.4	1	6AV63.17-4	-
TIA Portal STEP 7 V14 SP1 Professional	1	6AV2103-0AA04-0AA5	Alternatively, TIA Portal STEP 7 V14 SP1 Basic can be used for an S7-1200.

### 4.1 System diagnostics

SIMATIC WinCC V7.4 or higher provides the "WinCC SysDiagControl" ActiveXControl for system diagnostics. You will find this control in the Graphics Designer's "Controls" toolbar.

Figure 4-1



For more information on the configuration, please refer to the <u>WinCC V7.4: Communication</u> manual.

The "WinCC SysDiagControl" shows faults and errors of the SIMATIC S7-1200 and S7-1500 controllers. It provides an overview, which enables you to quickly locate error sources.

The ActiveXControl provides the following views:

- Diagnostic overview Shows the status of the controller and its submodules for all available SIMATIC S7-1200/S7-1500 channels.
- Detail view
   Displays information about the selected controller.
- Diagnostic buffer view Displays current data from the controller's diagnostic buffer. Messages are only displayed if the AS messages are loaded from the controller and applied to WinCC.

#### Figure 4-2

😣 WinCC S	SysDiagControl		
☆ 🗢	⇒ 🖫		
Diagnostic	overview		
Status	Name	Operating mode	
1	Plant		
8	S7-1500-Station_1		
L	1		
Ready			12:53:29 PM

#### Figure 4-3

WinCC SysDiagControl		<u> </u>
🏠 🗢 🚔		
S7-1500-Station_1		
Property	Value	
> Status	📸 Error, Subordinate state: Error	
> Name	S7-1500-Station_1	
> Operating mode	N/A	
> Rack	0	
> Slot		
> Type	S71500/ET200MP-Station	
> Item number		
> Address	32*	
> Plant designation		
> Location identifier		
> Sub-system	0	
> Station		
> Subslot		
> Sub-address		
> Software version		_
> Installation		_
> Additional information		_
> Error Text		_
> Manufacturer ID		_
> Hardware version		_
> Profile ID		_
> Specific profile details	r	_
> I&M data version	r	_
> Serial number	r	_
> Revision Counter		_
Ready	12:53:58 PM	.d

#### Note

The current data from the diagnostic buffer must be loaded using the "Diagnostic buffer" menu item (

C or VBScript (run, e.g, by clicking a button) allows you to jump from an AS message selected in the WinCC AlarmControl to the WinCC SysDiagControl. To do this, the AS message must already have been loaded from the controller and applied to WinCC as messages.

#### In C:

```
SetPropChar(lpszPictureName,"<Name_SysDiaControl>").","NavigateTo",
GetPropChar(lpszPictureName,"<Name_AlarmControl>","DiagnosticsContext"));
```

#### In VBS:

```
ScreenItems("<Name_SysDiaControl>").NavigateTo =
ScreenItems("<Name AlarmControl>").").DiagnosticsContext
```

#### Note

Toggling between the controls using a script is only possible for system messages.

For more information on this and on how to configure the control, please refer to the <u>WinCC V7.4: Communication</u> manual.

## 4.2 "Update" function

SIMATIC WinCC V7.4 provides the "Update" function. After project changes on the controller side, symbolic addresses can change. The "Update" function re-reads the AS configuration. In addition, it restores consistency by reassigning the symbolic addresses to the AS symbol names. The AS symbol name is used as a reference.

To use the function, the AS symbols and messages must already have been read and applied as a WinCC tag or WinCC messages.

#### Note "Update" function not possible

#### Access rights changed

If you disable the access rights of AS symbols, they can no longer be accessed by WinCC. As a result, "updating" is no longer possible. If you subsequently reread the AS configuration, the WinCC tags will be silhouetted in red.

Tags	CMYK	RGB	Convert

		Name	Datentyp	Adresse	Rema	Sichtbar in HMI	Erreichba
1	-	RECIPE_RGB_CONVERT_R	Int	%MW48			
2		RECIPE_RGB_CONVERT_G	Int	%MW44			<b>~</b>

#### AS symbol name changed

The "Read AS symbols" function is based on the AS symbol name. If you change the AS symbol name and then re-read the AS configuration, "updating" is no longer possible.

The changed AS symbol name is available in WinCC as a new AS symbol and you have to apply it as a new WinCC tag. Delete the unused WinCC tag in the "Tags" tab.

For the following project changes on the controller side, the symbolic addresses of the AS symbols will change. Use the "Update" function.

- The current CPU program has been replaced by an identical CPU program (or parts of it) from the reference project (project copy) and reloaded to the controller.
- Change of the data type of a CPU tag (also in the DB).
- Note WinCC performs automatic data type formatting between CPU data types and HMI data types. If you change the data type of a CPU tag, a data type change might affect the tag's points of use. Make sure to make any necessary changes.

The following table shows how to update your WinCC tags and WinCC messages.

Table	4-3
-------	-----

No.	Action											
1.	For AS symbols: Open Tag Management and re-read the AS symbols. Then go to the "AS Symbols" tab.											
	For mes	ssades:										
	Open "A Message	larm logging" an es" tab.	d re-ı	read the AS	messages	s. Then go to	o the	"AS				
2.	For AS	symbols:										
	1. Sele	ct the rows of the	AS	symbols you	i want to u	ipdate.						
	📙 AS Symb	ools [ \$7-1500 ]										
	Access	Name	AS Data	a Type Data area	Tag	Data Type	Length	Format adaptation				
	43	RECIPE_RGB_CONVERT_G	Short	Bit memory								
	44	RECIPE_RGB_CONVERT_B	Short	Bit memory								
	45 🗸	NUMBER_CANS	UInt	Bit memory	NUMBER_CANS	Signed 32-bit value	4	LongToSignedDword				
	46	RECIPE_CurrentValue_C	Int	Bit memory								
	For mes	ssages:										
	2. Sele	ct the rows of the	AS	messages y	ou want to	o update.						
	🙀 AS Mes	sages [ available ]										
		Number in AS Message	e block	Info Text (ENU)				Info User text 1 (ENU)				
	1 ( 🍋 )	1 Info Rep	ort AP	Short name: @6W9	6t#260K@ Order	number: @6W%t#2	65K@	Info: @1W%t#7W(				
	2	2 Info Rep	ort AP	Short name: @6W9	6t#260K@ Order	number: @6W%t#2	65K@	User message: @1				
	3	3 Info Rep	ort AP	Short name: @6W9	6t#260K@ Order	number: @6W%t#2	65K@	Security event: @1				
	4	4 Info Rep	oort AP	Short name: @6W9	6t#260K@ Order	number: @6W%t#2	65K@	Security informatio				
	5	13 Info Rer	ort AP	Short name: @6M/9	6t#760K@ Ordor	number: @6\//%t#7	65K@	CPII info: @1\W%t±				

lo.							Acti	on					
3	3. For AS symbols:												
	4 Undate the AS symbol using the "Undate" button in the associated context												
	menu.												
			svm	bols [ \$7-150	01								
		Acce		Name			AS Data Typ	e Data area		Tag			
	4	13		RECIPE RGB	CONV	/FRT G	Short	Bit memory		rug			
	4	14		RECIPE RGB	CONV	/ERT B	Short	Bit memory					
			<b>V</b>	NUMBER CAN	NS.		liInt	Bit memory		NUMBER	R CANS		
		50		RECIPE_Cur	ЖC	Cut		Bit memory			-		
	4	17		FillingLevel_		ору		Filling					
	4	18		FillingLevel_	p	acto		Filling					
	4	19		FillingLevel_	<u> </u>	aste		Filling					
	5	50		FillingLevel_	F	ind and Re	place 🕨	Filling					
	5	51		NUMBER_CA				LAD_Control	_Color_Valves_D	В			
	5	52		RECIPE_VAL	D	elete		LAD_Control	_Color_Valves_D	В			
	5	53		RECIPE_VAL		elect all		LAD_Control	_Color_Valves_D	В			
	5	54		RECIPE_VAL				LAD_Control	_Color_Valves_D	В			
	5	55		RECIPE VAL		eselect all		LAD Control	_Color_Valves_D	в			
_													
	5	56		OPEN VALV	🕲 U	lpdate		LAD_Control	_Color_Valves_D	в			
5	5. 5	56 57		OPEN VALV	U	lpdate		LAD_Control	_Color_Valves_D Color Valves D	B			
5	5. 5 5. 5	56 57		OPEN VALV	U	lpdate		LAD_Control	_Color_Valves_D Color Valves D	B			
5	5. 5 6. 7. F	56 57 or m	es	OPEN VALV	U	lpdate		LAD_Control LAD Control	_Color_Valves_D Color Valves D	B			
5 6 7	5. 5 6. 7. F	or m	es	OPEN VALV OPEN VALV	(2) U		a the "I Ir	LAD_Control LAD Control	_Color_Valves_D Color Valves D		od cont		
5 6 7 8	5. 5 5. 7. F 3. U	or m	e t	open valv open valv sages: he AS mes	ۍ کې	lpdate le usin	g the "Up	LAD_Control LAD Control	_Color_Valves_D Color Valves D tton in the a	BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	ed conte		
5 6 7 8	5. 5 6. 7. F 3. U	or m Jpdat	e t	open valv open valv sages: he AS mes	😵 U	lpdate	g the "Up	LAD_Control LAD Control	_Color_Valves_D Color Valves D	B B Associate	ed conte		
5 6 7 8	5. 5 6. 7. F 3. U	or m Jpdat menu	es et J.	OPEN VALV OPEN VALV sages: he AS mes	ssag	<sup>Ipdate</sup> le usin	g the "Up	LAD_Control LAD Control	_Color_Valves_D Color Valves D	B B ASSOCIAT	ed conte		
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### 4.3 Connection-specific tags

In order to monitor the state of the connection to the S7-1500, the following two @system tags are available.

- "@<ConnectionName>@ForceConnectionState"
- "@<ConnectionName>@ConnectionState"

#### "@<ConnectionName>@ForceConnectionState" tag

In the connection, create the "@<ConnectionName>@ForceConnectionState" tag to define the connection state between a WinCC station and S7-1200 / S7-1500:

• "1": Connecting.

If you configure "1" as the start value, starting Runtime establishes the connection to the S7-1200 / S7-1500.

• "0": Disconnecting.

For the tag to be initialized when starting Runtime, assign an "absolute address" to the tag. In addition, this tag must not be a binary tag.

#### "@<ConnectionName>@ConnectionState" tag

Use the connection-specific "@<ConnectionName>@ConnectionState" tag to determine the current connection state:

- "1": The connection is ready.
- "0": The connection is interrupted or disconnected.
- **Note** WinCC V7.5 or higher allows you to create these tags with a click in the context menu of each connection.



# 5

## Configuration and Project Settings for WinCC V7.4 SP1

This chapter describes how to import configuration data offline and how to specify the prefix / suffix as the default value.

You can still use the procedures for AS symbols and AS messages described in WinCC V7.2, V7.3 SE and V7.4.

#### Validity

This chapter is valid for:

- STEP 7 V14 or higher
- WinCC V7.4 SP1
- S7-1200 (firmware version V2.2 or higher)
- S7-1500
- ET 200SP

#### **Components used**

This chapter was created with the following components.

#### Hardware components

Table 5-1

Component	No.	Order no.	Note
S7-1516-3 PN/DP	1	6AG1516-3AN00-7AB0	Alternatively, you can use a different S7-1500, S7-1200 or ET 200SP.
Development system	1	-	PC to configure the controller and WinCC.
			The hardware requirements for STEP 7
			and WinCC apply.

#### Software components

Table 5-2

Component	No.	Order no.	Note
WinCC V7.4 SP1	1	6AV63.17-4	-
TIA Portal STEP 7 V14 SP1 Professional	1	6AV2103-0AA04-0AA5	Alternatively, TIA Portal STEP 7 V14 SP1 Basic can be used for an S7-1200.

## 5.1 Prefix / suffix for tags

This section describes how to set the prefix/suffix as the default value for tags for each connection.

#### Procedure

Table 5-3

No.						Ac	tion					
1.	In Configuration Studio, go to Tag Management and select the connection for which you want to create a prefix or suffix.											
2.	Enter the desired prefix	:/su	ffix in	the c	conn	ectic	on properties.					
	Tag Management «	II AS	Symbols	[ Conne	ction_I	Name ]	Find	<del>ب</del> م	Propert	ies -	- Connection	
		Acc	ess Nar	ne	AS Da	at Data Ta	lq Dia la constanti da constanti		□ Selection			
	🗈 🍄 Internal tags	735	3		Bool	Data	-		Object typ	е	Connection	
	🖃 🎚 SIMATIC S7-1200, S7-1500 Channel	736	4		Bool	Data			Object nar	ne	Connection_	Name
		737	S	tatic_1	UInt	Data			E General		Connection	Vame
		738		tatic_2	UInt	Data			ID		2	turric.
	Structure tags	739		1	Bool	Data			Connection	Para	meters 6!::::S7ONL	NE!::172.16.39
		741	1	2	Bool	Data			Assignme	nt		
		742	S	tatic_1	UInt	Data			Communic	ition ( #	driver SIMATIC S7-:	1200, S7-1500
		743	S	tatic_2	UInt	Data			E Various	ii.	0115+	
		744	S	tatic_3	UInt	Data			Creator ID		0	
		745							Last Chang	е	10/11/2017	7:43:43 AM
		740							AS Symbol	ols		
		748							Prefix		Prefix_	
		740							Julia		Julik	
3. 4.	Now go to "AS Symbols	3" > '  eck t	Reac	l from	1 AS	tag v	read the AS s	symbols	uffix.			
	Tag Management	« []	AS Sym	ibols [ C	Conne	ction_I	Name ] Find		<del>ب</del> م	1	Properties - As	S symbol
	📮 🎹 Tag Management		Access	Name		AS Da	at Data Tag		*	Ξ.	Selection	
	🖶 🍄 Internal tags	735	i 🗖	3		Bool	Data			(	Object type	AS symbol
	. SIMATIC S7-1200, S7-1500 Chann	el 736	i 🗖	4		Bool	Data			(	Object name	(no selection)
		737		Stati	ic_1	UInt	Data				AS Properties	
	- K Connection_Name	738		Stati	ic_2	UInt	Da				Name	
	- 🐼 Structure tags	739	( 🔍	Stati	ic_3	UInt	Da Prefix_Data_block	_1_Static_3-S	uffix		AS Length	
		740	<b>V</b>	11		Bool	Da Prefix Data block	3 manual 1	1-Suffix	Í	Data area	
		741		12		Bool	Data			9	Symbolic Address	
		742		Stati	IC_1	UInt	Data			1	Address	
		74:		Stati	IC_2	UInt	Data			Ξ (	OS Properties	
		744		Stati	IC_3	UINT	Data			1	Access	
		74:									Tag	
		740	,	_							Data Type	
		745									Length	
		740								1 6	Format adaptation	
		750										
		75	1									
	1											

Note

If you want to subsequently use a prefix or suffix for tags that have already been used, you have to uncheck the "Access" check box and check it again.

Alternatively, you can use the "Find & Replace" function to assign prefix and suffix.

**Notes** If changes are made to the controller, it is absolutely necessary to execute the "Read from AS" command again.

If WinCC Runtime is stopped and Tag Management is closed, symbolic addressing and the "AS Symbols" tab will no longer be displayed. To display both again in Tag Management, use the "Read from AS" command.

## 5.2 What's new for AS messages

When running WinCC V7.4 SP1 or higher, S7-1500 messages can be applied automatically after message changes. To enable this, check the "Auto Update" check box at the connection level in "Alarm logging".

#### Figure 5-1

Alarm logging «		Messages	Find	<mark>ب</mark> م	Ę	👔 Properties	- Connection
🖃 🖂 Messages		Number	Message tag	•	Ξ	Selection	
Error	1					Object type	Connection
System, requires acknowledgment	2					Object name	Connection_Name
H- System, without acknowledgment	3				Ξ	General	
	4					ID	5
	5					Name	Connection_Name
Message groups	6					IP address	172.16.39.18
System messages	7					Access point	S7ONLINE
	8				Г	Produce rarriiry	37 1300
	0				Ľ	Auto Undato	
Connection Name	10			_			
	10						

# **Note** If you have already read the AS messages manually using "Read from AS", first delete the read messages in WinCC. Then you can check the "Auto Update" check box to ensure that the messages are not duplicated.

# 5.3 Offline import of configuration data for absolute and symbolic addresses

When running WinCC V7.4 SP1 or higher, the "SIMATIC SCADA Export for TIA Portal" tool allows you to perform an offline import of AS tags and AS messages from TIA Portal to WinCC.

This tool is not part of the general setup. You can download the version-specific version in the following entry:

SIMATIC SCADA Export for TIA Portal

**Note** This tool exports and imports all AS tags and AS messages. It is not possible to select single tags and/or messages.

#### Procedure

Table 5-	4	
No.	Action	
1.	In TIA Portal, open your project with the S7-1500 CPU to be exported.	
2.	Select your CPU and select "Online" > "Export to SIMATIC SCADA".	
	Project Edit View Insert Online Options Tools Window Help	
	📑 🔁 🔚 Save project 🚇 💋 Go online 🛛 Ctrl+K	ne 🔊 Go offl
	Project tree State of the Ctrl+M	
	Devices Simulation	
	Stop runtime/simulation	
	Export to SIMATIC SCADA	ral
	EnS_Visu_Funktest     Download to device     Ctrl+L	
	Extended download to device	ral
	Download and reset PLC program     Download user program to Memory Card	neral setting
	HMI_1 [TP1200 Cor	
	RT_Professional [SII]     Load snapshots as actual values	
	Fair Production line 1     Load start values as actual values	User inter
	Ungrouped devices III Upload from device (software)	
	Common data     Upload device as new station (hardware and software)	Show list o
	Documentation set     Backup from online device	
	Monthand Contraction Contractio Contraction Contraction Contraction Contraction Contraction Contr	
	Ctrl+U	
	Start CPU Ctrl+Shift+E	
	Online & diagnostics     Ctrl+D	
3.	Enter a name for the file to be exported and specify the storage path.	
4.	Click the "Export" button.	
	The file is exported.	
5.	In WinCC Explorer, open your project into which you want to import the S CPU data.	7-1500
6.	In WinCC Configuration Studio, open "Tag Management".	
7.	If a connection does not yet exist for the CPU, create the channel and the connection. See Chapter Loading AS symbols from an existing S7-1500 3.1	<u>,</u> program

		Action		
Select the connection. In t data.	the context	menu, sele	ct "Load from file" to ir	nport the
Tag Management	~	📦 Tags [ C	Connection_Name ]	Find
Tag Management     Tag Management     FrocessHistorian     Script     TagLoggingRt     SIMATIC S7-1200, S7-15     OMS+	500 Channel	Name           1         ※           2         3           4         5           6         7		
Connection	New Group			
	Copy Paste Delete			
×	Rename Export		-	
	AS Symbols	Parameters	II Read from AS	
		20 21 22 23	Save to file	
	Select the connection. In f data. Tag Management Tag Management Internal tags Script TagLoggingRt SIMATIC S7-1200, S7-12 OMS+ Connection	Select the connection. In the context data.	Select the connection. In the context menu, selectata.	Select the connection. In the context menu, select "Load from file" to in data.



# 6

# Configuration and Project Engineering for WinCC V7.5

You can still use the procedures for AS symbols and AS messages described in WinCC V7.2, V7.3 SE, V7.4 and V7.4 SP1.

#### Validity

This chapter is valid for:

- STEP 7 V15 or higher
- WinCC V7.5
- S7-1200 (firmware version V2.2 or higher)
- S7-1500
- ET 200SP

#### **Components used**

This chapter was created with the following components.

#### Hardware components

Table	6-1
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No.	Order no.	Note
1	6AG1516-3AN00-7AB0	Alternatively, you can use a different S7-1500, S7-1200 or ET 200SP.
1	-	PC to configure the controller and WinCC.
		The hardware requirements for STEP 7 and WinCC apply.
	<b>No.</b> 1 1	No.         Order no.           1         6AG1516-3AN00-7AB0           1         -

#### Software components

Table 6-2

Component	No.	Order no.	Note
WinCC V7.5	1	6AV63.17-5	-
TIA Portal STEP 7 V15.1 Professional	1	6ES7822-105	Alternatively, TIA Portal STEP 7 V15.1 Basic can be used for an S7-1200.

## 6.1 Using tags from array-type "program blocks"

WinCC V7.5 allows you to import structured data types (array) directly from TIA Portal into WinCC Configuration Studio. They are no longer listed separately.





No.	Description / or action
6.	Enter the connection parameters shown below.
	NewConnection X
	Connection
	S7Plus network IP address: Access point: Product family: Password Change Password: Repeat password:
	OK Abbrechen Hilfe
7.	Optional: If you want to establish a secure connection to the S7-1500, use the "Change" button to add a password. In TIA Portal, select the CPU properties, go to "Protection & Security" and specify the password. This is only required for the "No access (complete protection)" setting.
	Change Passwort
	Note Only the S7-1500 provides access protection. For more information on access protection, please refer to the "Configuring access protection for the CPU" chapter of the
	" <u>S7-1500 – Getting Started</u> " manual. In TIA Portal, access protection for the CPU is configured in the "Protection & Security" tab of the CPU properties.
8.	Start WinCC Runtime.
9.	In the connection context menu, select "AS Symbols" > "Read from AS" to read the AS symbols.
	Symbols     AS Symbols [ NewConnection ]       Image: WewConnection     Access     Modified     Name     Comment       Image: DB_Ventilator1     1     Image: DB_Ventilator2     Image: DB_Ventilator3     Image: DB_Ventilator3       Image: DB_Ventilator4     Image: DB_Ventilator4     Image: DB_Ventilator4     Image: DB_Ventilator4     Image: DB_Ventilator4

			De	scription / or ac	tion	
Cli	ick the st	ructures yo	u want t	o use.		
S	ymbols		🛄 «	AS Symbols [ DB	Ventilator Array	/]
	NewCon	nection		Access	Modifie	d Name
_		entilator1		1		DB Ventilator[5]
		entilNor Array		2	î	DB Ventilator[6]
				3		DB Ventilator[7]
				4		, po_renance() ]
		entilate		5		
		entilator4		6		
;	مامد مانماد					"Calast all"
RI	Access	ine Acces	s colum		menu, choose	e Select all .
1	Access	⊉↓	Sort in asce	nding order		
1			e	- diamandari		
2		Ĩ Ã↓	Sort in desc	ending order		
3		A ZO	Remove sor	ting		
4						
5		Y	Filter			
6			Filter only o	n first level		
7						
8		¥	Cut			
0		Ba	C			
9		43	Сору			
10		<b>E</b>	Paste			
11						
12			Find and Re	place 🕨		
13			Dalata			
14			Delete			
15			Select all			
16			Select all			
17	'		Deselect all	( 🍋 )		
18						
10			Hide			
20			Unhide	•		
20						
21			Unpin			
Th	is selects	s all lower-l	evel iten	าร.		
	Access		Modified	Name	Comment	Data Type
				DB_Ventilator[5]		
1				SetSpeed		Signed 16-bit value
1				RampUpTime		Floating-point number 32-
1 2 3				RampDownTime		Floating-point number 32-
1 2 3 4		<b>V</b>		rampoornini		
1 2 3 4 5		V		MaxSpeed		Floating-point number 32-
1 2 3 4 5 6				MaxSpeed OnOff		Floating-point number 32-1 Binary Tag
1 2 3 4 5 6 7				MaxSpeed OnOff SetDirection		Floating-point number 32-t Binary Tag Binary Tag
1 2 3 4 5 6 7 8				MaxSpeed OnOff SetDirection JogRight		Floating-point number 32-b Binary Tag Binary Tag Binary Tag
1 2 3 4 5 6 7 8 9				MaxSpeed OnOff SetDirection JogRight JogLeft		Floating-point number 32-b Binary Tag Binary Tag Binary Tag Binary Tag
1 2 3 4 5 6 7 8 9 10				MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord		Floating-point number 32-b Binary Tag Binary Tag Binary Tag Binary Tag Unsigned 16-bit value
1 2 3 4 5 6 7 8 9 10 11		V 3 3 9 9 9 9 9		MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed		Floating-point number 32-1 Binary Tag Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value
1 2 3 4 5 6 7 8 9 10 11 11		Ø       Ø       Ø       Ø       Ø       Ø       Ø       Ø		MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate		Floating-point number 32-1 Binary Tag Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag
1 2 3 4 5 6 7 8 9 9 10 11 11 12 13		マ マ マ マ マ マ マ マ マ マ マ マ マ マ マ マ マ マ マ		MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate ActualDirection		Floating-point number 32-b Binary Tag Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag Binary Tag
1 2 3 4 5 6 7 8 9 10 11 11 12 13 14		<ul> <li>マ</li> <li>マ</li></ul>		MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate ActualDirection SpeedLimitActive		Floating-point number 32-b Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag Binary Tag Binary Tag
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate ActualDirection SpeedLimitActive Temperature		Floating-point number 32-1 Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag Binary Tag Binary Tag Floating-point number 32-1
1 2 3 4 5 6 7 7 8 9 10 11 11 12 13 14 15 16				MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate ActualDirection SpeedLimitActive Temperature ▷ DB_Ventilator[6]		Floating-point number 32-1 Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag Binary Tag Binary Tag Floating-point number 32-1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17				MaxSpeed OnOff SetDirection JogRight JogLeft StatusWord ActualSpeed Rotate ActualDirection SpeedLimitActive Temperature ▷ DB_Ventilator[6] ▷ DB_Ventilator[7]		Floating-point number 32-1 Binary Tag Binary Tag Binary Tag Unsigned 16-bit value Signed 16-bit value Binary Tag Binary Tag Binary Tag Floating-point number 32-1

No.		De	escription / or action		
12.	From the Symbols view, return to Tag Management.				
	Sy	mbols 🔤 🦛	AS Symbols [ DB_Ventilate	or_Array]	
		VewConnection	Access	Modified	Name
		B			DB_Ventilator[5]
		DB_Ventilator_Array	2		SetSpeed
		DB_Ventilator2	3		RampUpTime
		DB_Ventilator3	5		MaxSpeed
		DB_ventilator4	6		OnOff
13.	The	e "Tags" tab displays the a	utomatically generated t	ags.	
1	۲	Tags [ NewConnection ]			
		Name			Comment
	1	DB_Ventilator_Array_DB_Venti	lator[5]_ActualDirection		
	2	DB_Ventilator_Array_DB_Venti	lator[5]_ActualSpeed		T
	3	DB_Ventilator_Array_DB_Venti	lator[5]_JogLeft		
	4	DB_Ventilator_Array_DB_Venti	lator[5]_JogRight		
	5	DB_Ventilator_Array_DB_Venti	lator[5]_MaxSpeed		
	6	DB_Ventilator_Array_DB_Venti	lator[5]_OnOff		
	7	DB_Ventilator_Array_DB_Venti	lator[5]_RampDownTime		
	8	DB_Ventilator_Array_DB_Venti	lator[5]_RampUpTime		
	9	DB_Ventilator_Array_DB_Venti	lator[5]_Rotate		
	10	DB_Ventilator_Array_DB_Venti	lator[5]_SetDirection		
	11	DB_Ventilator_Array_DB_Venti	lator[5]_SetSpeed		
	12	DB_Ventilator_Array_DB_Venti	lator[5]_SpeedLimitActive		
	13	DB_Ventilator_Array_DB_Venti	lator[5]_StatusWord		
	14	DB_Ventilator_Array_DB_Venti	lator[5]_Temperature		
	15	DB_Ventilator_Array_DB_Venti	lator[6]_ActualDirection		
	16	DB_Ventilator_Array_DB_Venti	lator[6]_ActualSpeed		
	17	DB_Ventilator_Array_DB_Venti	lator[6]_JogLeft		
	18	DB_Ventilator_Array_DB_Venti	lator[6]_JogRight		
	19	DB_Ventilator_Array_DB_Venti	lator[6]_MaxSpeed		
	20	DB_Ventilator_Array_DB_Venti	lator[6]_OnOff		
	21	DB_Ventilator_Array_DB_Venti	lator[6]_RampDownTime		
	22	DB_Ventilator_Array_DB_Venti	lator[6]_RampUpTime		
	14	Groups Tags AS	structures AS Symbols	/	

# 7

## Configuration and Project Engineering for WinCC V7.5 SP1

The procedures described in WinCC V7.2, V7.3 SE, V7.4, V7.4 SP1, and V7.5 regarding AS symbols and AS alarms are still possible.

#### Validity

This chapter is valid for:

- STEP 7 as of V15
- WinCC V7.5 SP1
- S7-1200 (as of firmware version V2.2)
- S7-1500
- ET 200SP

## 7.1 Redundant system S7-1500R/H

With WinCC V7.5 SP1, it is possible to establish a connection to a redundant S7-1500 system. The procedure for this is described in the WinCC Information System:

SIMATIC HMI WinCC V7.5 SP1 WinCC Information System > Communication > SIMATIC S7-1200, S7-1500 Channel > Channel configuration

### 7.2 Software redundancy for S7-1500R/H

Starting with WinCC V7.5 SP1, it is possible to build up a "software redundancy" with a S7-1500R/H CPU by means of system tags and script. The procedure is described here:

SIMATIC HMI WinCC V7.5 SP1 WinCC Information System > Communication > SIMATIC S7-1200, S7-1500 Channel > Channel configuration

## 7.3 Stopping Logging via System Tags

You can use the system tags from Section 1 to selectively remove connections. If you set the value of the "ForceConnectionStateEx" tag to "0", then the logging of the associated process tag is stopped.

If you set the value to "1", the process tags of the corresponding communication channel are logged again.

# 8

## Configuration and Project Engineering for WinCC V7.5 SP2

The procedures described in WinCC V7.2, up to V7.5 SP1 regarding AS symbols and AS alarms are still possible.

#### Validity

This chapter is valid for:

- STEP 7 as of V15
- WinCC V7.5 SP2
- S7-1200 (as of firmware version V2.2)
- S7-1500
- ET 200SP

#### Recommendation

Use the "SIMATIC SCADA Export for TIA Portal" and "Load from file", as this procedure offers more functionalities:

- Structure of the blocks as in the TIA Portal
- Readout of structures with names

### 8.1 Connecting UDT-Derived DBs Directly as a Structure

With WinCC V7.5 SP2, you can export UDTs with the "SIMATIC SCADA Export for TIA Portal" and create and use a WinCC structure via import. In this way, you do not create single tags, but instead the whole structure variable with one click.

#### 8.1.1 SIMATIC SCADA Export for TIA Portal

This tool is available for download in the Industry Online Support via this link.

**Note** The tool is linked to the respective TIA Portal version and can be loaded separately for the respective version.

### 8.1.2 Importing a Structure and Creating WinCC Structure Tags



No.	Procedure						
3.	The structure type and its elements are displayed in the Tag Management.						
	III Tag Management - WinCC Configuration Studio						
	<u>File Edit View Tools H</u> elp						
	Tag Management « Structure tags [All ]						
	Internal tags						
	E ↓ SIMATIC S7-1200, S7-1500 Channel 2						
	Structure tags						
	adopted with elements						
	maxSpeed						
	setDirection						
	- v statusWord 15						
	or otate 16 17 17 17 17 17 16 17 16 17 17 17 17 17 17 17 17 17 17 17 17 17						
	- Q actualDirection     18       - Q speedLimitActive     19						
	temperatureFactor						
	22						
	Tag Management     23       24						
	Alarm Logging 25						
	Tag Logging 27 28						
	Image Logging       27         Image Logging       27         Image Logging       27         Image Logging       28         Image Logging       28         Image Logging       28         Image Logging       27						
	Image: Logging       27         Image						
	Tag Logging       27         Image: Structure tag       27         Image: Structure tag       28         Image: Structure tag       28         Image: Structure tag       28         Image: Structure tag       27         Image: Structure tag       28						
	Image: Logging       27         Image						
	Image: Logging       27         Image: Logging       28         Image: Logging       28         Image: Logging       27         Image: Logging       28         Image						
	Image: Logging       27         Image: Logging       28         Image						
	Create a structure tag After the structure has been defined, the structure tags can be created in the "A Symbols" tab. When the box is checked, the structure tags are created. If ag Management - WinCC Configuration Studio File Edit View Tools Help Symbols Ventilator_StruFind Access Modified Name Comment ProgramBlocksFolder ProgramBlocksFolder Comment Access Modified Name Comment Comment Access Modified Name Comment Access Modified Name Comment Comment Access Modified Name Comment Access Name Access N						
	Image: Logging       27         Image: Logging       28         Image: Logging       27         Image: Logging       28         Image						
	Create a structure tag After the structure has been defined, the structure tags can be created in the "A Symbols" tab. When the box is checked, the structure tags are created. If Tag Management - WinCC Configuration Studio File Edit View Tools Help Symbols [Ventilator_StruFind Access Modified Name Comment 1 Ventilator8 2 7 28 27 27 28 27 27 28 27 27 28 27 27 28 27 27 28 27 27 27 27 27 27 27 27 27 27						
	Image: Logging       27         Image: Logging       28         Image: Logging       27         Image: Logging       28         Image						
	Image: Logging       27         Image: Logging       Image: Logging         Image: Logging       Image: Logging         Image: Logging       Image: Logging         Image: Logging       Image: Logging         After the structure tag       After the structure tags can be created in the "A Symbols" tab.         When the box is checked, the structure tags are created.       Image: Logging         Image: Logging       Image:						
	Image Logging       Image Logging       Image Logging       Image Logging         Create a structure tag       Atter the structure has been defined, the structure tags can be created in the "A Symbols" tab.         When the box is checked, the structure tags are created.         Image Logging       Image Logging						
	Image: Teg Logging       27         Image: Teg Logging       1         Image: Teg Logging       1 </td						
	Create a structure tag After the structure has been defined, the structure tags can be created in the "A Symbols" tab. When the box is checked, the structure tags are created. If Tag Management - WinCC Configuration Studio Eile Edit View Tools Help Symbols File Edit View Tools Help Symbols File ProgramBlocksFolder Fig Data Ventilator9 Ventilator3Data Ventilator5_to_7_Data Ventilator3Data Ventilator5_to_7_Data Ventilator9 Ventilator3Data Ventilator9 Ventilator3Data Ventilator3D						
	Create a structure tag After the structure has been defined, the structure tags can be created in the "A Symbols" tab. When the box is checked, the structure tags are created. If Tag Management - WinCC Configuration Studio File Edit View Tools Help Symbols File Edit View Tools Help Symbols File Data Ventilator_Struct Ventilator9 Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank1Data Tank						
	Image Logging       Image Logging<						
	Image Logging       Image Logging       Image Logging       Image Logging       Image Logging         Image Logging						

No.	Procedure				
5.	The structure tags are automatically created by WinCC.				
	II Tag Management - WinCC Configuration Studio				
	<u>F</u> ile <u>E</u> dit <u>V</u> iew Too <u>l</u> s <u>H</u> elp				
	Tag Management 🥢 📦 Structure tags [ typeVentilatorData ]				
	Tag Management				
	🗄 🍄 Internal tags 1 Ventilator8 0 S71500				
	Empl SIMATIC S7-1200, S7-15 2 Ventilator9 0 S71500				
	⊡ <mark>  </mark> OMS+ 3 <del>}</del>				
	a ₩ \$71500				
	Ventilator2 V 0				
	III 🗹 III 🧱 🗰 III 🐠 🛣 📩 🙀 🔸 🕨 Structure type elements 🖉 Structure tags 🤇 Str				
	Ready NUM English (Uni				
_					
6.	The individual structure tag elements are also created in the Tag Management.				
	Structure tag elements [ typeVentilatorData ]				
	Name Comment Data type Let				
	1 Ventilator8.actualDirection Actual turning direct Binary Tag 1				
	2 Ventilator8.actualSpeed Actual speed 0 to 13 Signed 16-bit value 2				
	3 Ventilator8.jogLeft Inching left, only cha Binary Tag 1				
	4 Ventilator8.jogRight Inching right, only cl Binary Tag 1				
	5 Ventilator8.maxSpeed Max. speed (0135( Floating-point number 32-bit IEEE 4				
	6 Ventilator8.onOff Start/stopp motor (1Binary Tag 1				
	7 Ventilator8.rotate Motor status on/off Binary Tag 1				
	8 Ventilator8.setDirection Direction command Binary Tag 1				
	9 Ventilator8.setpointSpeed Speed setpoint 0 to Signed 16-bit value 2				
	10 Ventilator8.speedLimitActive Motor status Speed Binary Tag 1				
	11         Ventilator8.statusWord         Status information c Unsigned 16-bit value         2				
	12 Ventilator8.temperatureFactor Motor temperature 1 Floating-point number 32-bit IEEE 4				
	13         Ventilator9.actualDirection         Actual turning direct Binary Tag         1				
	14 Ventilator9.actualSpeed Actual speed 0 to 13 Signed 16-bit value 2				
	I I I I Structure type elements Structure tags Structure tag elements				

#### 8.1.3 Secure Communication with TLS Protocol

As of version V7.5 SP2 Update 4, WinCC supports the secure communication by STEP 7 for the channel "SIMATIC S7-1200, S7-1500 Channel", which is available with the TIA Portal as of V17.

STEP 7 components configured for "Secure Communication" use an asymmetric key procedure with a public key and a private key. TLS (Transport Layer Security) is used as the encryption protocol.

To use the "Secure Communication" of the TIA Portal V17 in the WinCC project, import the data records from a TIA Portal project with the corresponding settings.

#### Procedure

How to use the TLS protocol is described in this entry:

Industry Online Support: WinCC V7 - Secure Communication (https://support.industry.siemens.com/cs/ww/en/view/109798498)

# 9 General

# 9.1 Creating a new connection with its own name at runtime

When WinCC Runtime is activated, the name of a connection cannot be changed. If you create a new connection, it is automatically named "NewConnection\_x".

The following description shows you how to create a new S7-1500 connection with WinCC Runtime activated and specify a connection name of your choice.

Tab	ole	9-	1
1 UL	10	0	

No.	Description
1.	In Tag Management, go to "SIMATIC S7-1200, S7-1500 Channel" and select the "OMS+" object.
2.	Select the "Connections" tab.
3.	In the "Name" column, directly enter the name of the new connection and press "Return" to confirm it.
4.	Now you can specify the connection parameters for the CPU.

Note

The description is not valid for WinCC V7.5.

## 9.2 Update function overview table

This table shows the project changes after which you should use the "Update" function.

Table	9-2
Table	3-z

Description	The address changes	DB relevant to HMI	Update function
Data type of tags relevant to HMI changed in DB and symbols reloaded from AS	Old address becomes red, tag gets new address	Yes	Necessary
CPU from backup project loaded with identical DB structure	Old address becomes red, tag gets new address	Yes	Necessary
DB between two CPUs replaced	Old address becomes red, DB gets new address	Yes	Necessary
DB from reference project added	Old address becomes red, DB gets new address	Yes	Necessary
Change of data type on CPU	Old address becomes red, tag gets new address	Yes	Necessary
Tag name already exists, AS symbols are read and selected to be applied	A new tag with the tag name of the AS symbol + _1 is created	Yes	Not necessary
DBs from global library added to project	Addresses have not changed	No	Not necessary
CPU firmware upgrade	Addresses have not changed	-	Not necessary
Device change of Addresses have not CPU changed		Yes	Not necessary
Change of symbol name on CPU Yes		Yes	AS symbol must be re-read, re- applied and re- connected.

# 9.3 "SIMATIC S7-1200, S7-1500 Channel" channel diagnosis

For the channel diagnosis of the "SIMATIC S7-1200, S7-1500 Channel" communication channel, WinCC provides the following tools:

- "Status Logical Connections" function
- "WinCC Channel Diagnosis Control" ActiveXControl
- "Channel Diagnosis" program

The channel diagnosis allows you to query the status of the current connections.

#### "Status - Logical Connections" tool

The "Status - Logical Connections" function is a tool integrated in SIMATIC WinCC. To use it, you must start Runtime. Select "Tools > Connection Status" to access the function.

The tool displays the most important parameters of all the connections that have been created. This includes the following connection parameters:

- Connection ID
- Connection name
- Current connection state
- Number of tags read
- Number of read requests
- Number of tags written
- Number of write requests

You can cyclically update the connection parameters. You will find the "Cyclic update" setting in the bottom part of the dialog.

Figure 9-1

St	Status - Logical Connections						
	Tag ID	Name	State	Tag read	Read req	Tag written	Write req
	3	NewConn	ОК	389	0	1	0
ſ	1 la data						
I	Cvclic up	date (	4 🚔 x	250 ms )	Update	Help	Close
L			· · · · · · · · · · · · · · · · · · ·				

#### "WinCC Channel Diagnosis Control" ActiveXControl

For the channel diagnosis in Runtime, SIMATIC WinCC provides the "WinCC Channel Diagnosis Control" ActiveXControl.

Just like the "Status - Logical Connections" tool, it displays the most important connection parameters of all the connections that have been created. Use the "Controls" toolbar to add the control to your Runtime screen.

#### Figure 9-2

Channels/Connections Configuration

In addition, the ActiveXControl provides a trace function. This function allows you to trace the behavior of a channel in a trace file. Moreover, the connection parameters are recorded in a log file.

#### Figure 9-3

Channels/Connections Configuration		
SIMATIC S7-1200, S7-1500 Channel	<ul> <li>Output Filename:</li> </ul>	SIMATIC_S7-1200S7-1500_Channel
Flags		
	<pre> <not defined="">  <not defined=""></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></not></pre>	TraceFile max. Files: 0 max. Size: 1400000 Overwrite: 0 Enable: 0
<pre> <not defined="">   <not defined="">   <not defined="">   <not defined=""></not></not></not></not></pre>	<pre> <not defined=""></not></pre>	Save

#### "Channel Diagnosis" tool

The "Channel Diagnosis" tool is a program that works independently of SIMATIC WinCC. To analyze the connections, Runtime must be active. It reflects the structure and functionality of the "WinCC Channel Diagnosis Control" ActiveXControl. To find the tool, enter the term "Channel Diagnosis" in the Windows search box.

**Note** For more information on channel diagnosis, please refer to the "Channel Diagnosis" chapters of the following manuals:

WinCC V7.3: Communication

WinCC V7.4: Communication

WinCC V7.5: Communication

# 10 Appendix

### **10.1** Service and Support

#### **Industry Online Support**

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks at: <u>https://support.industry.siemens.com</u>

#### **Technical Support**

The Technical Support of Siemens Industry provides you with fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts.

You send queries to Technical Support via Web form: siemens.com/SupportRequest

#### SITRAIN – Digital Industry Academy

With our globally available training courses for our products and solutions, we help you achieve with practical experience, innovative learning methods and a concept that's tailored to the customer's specific needs.

For more information on our offered trainings and courses, as well as their locations and dates, refer to: <u>siemens.com/sitrain</u>

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Our service offer includes the following services:

- Product training
- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog: <u>https://support.industry.siemens.com/cs/sc</u>

#### Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for iOS and Android: https://support.industry.siemens.com/cs/ww/en/sc/2067

## 10.2 Links & Literature

Table 10-1

	Торіс
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to this entry https://support.industry.siemens.com/cs/ww/en/view/101908495
\3\	SIMATIC S7-1500 Getting Started https://support.industry.siemens.com/cs/ww/en/view/71704272
\4\	"WinCC V7.2: Communication" manual https://support.industry.siemens.com/cs/ww/en/view/73568736
\5\	"WinCC V7.3: Communication" manual https://support.industry.siemens.com/cs/ww/en/view/102691766
\6\	"WinCC V7.4: Communication" manual https://support.industry.siemens.com/cs/ww/en/view/109736225
\7\	Which quantity framework must you pay attention to for communication between an S7-1200 or S7-1500 controller and WinCC Runtime Professional? https://support.industry.siemens.com/cs/ww/en/view/98699910
\8\	Compatibility Tool for Automation and Drive Technology https://support.industry.siemens.com/kompatool
\9\	Why is the connection from WinCC to the S7 controller not established via TCP/IP? https://support.industry.siemens.com/cs/ww/en/view/79689088
\10\	Joint Operation of WinCC V7 or WinCC V14/15 RT Prof. and Software Controller https://support.industry.siemens.com/cs/ww/en/view/109750290

## 10.3 Change documentation

Table 10-2

Version	Date	Modifications
V1.0	10/2014	First version
V1.1	06/2015	CPU ET 200SP added.
V1.2	06/2016	Chapter 4 "Better overview of a large number of tags" added.
V2.0	01/2018	Document revised regarding new functions with V7.4 SP1. Several chapters added.
V2.1	04/2019	Document revised for WinCC V7.5.
V2.2	07/2021	Document revised for WinCC V7.5. SP1 and WinCC V7.5. SP2
V2.2	10/2022	Note for ET 200SP added