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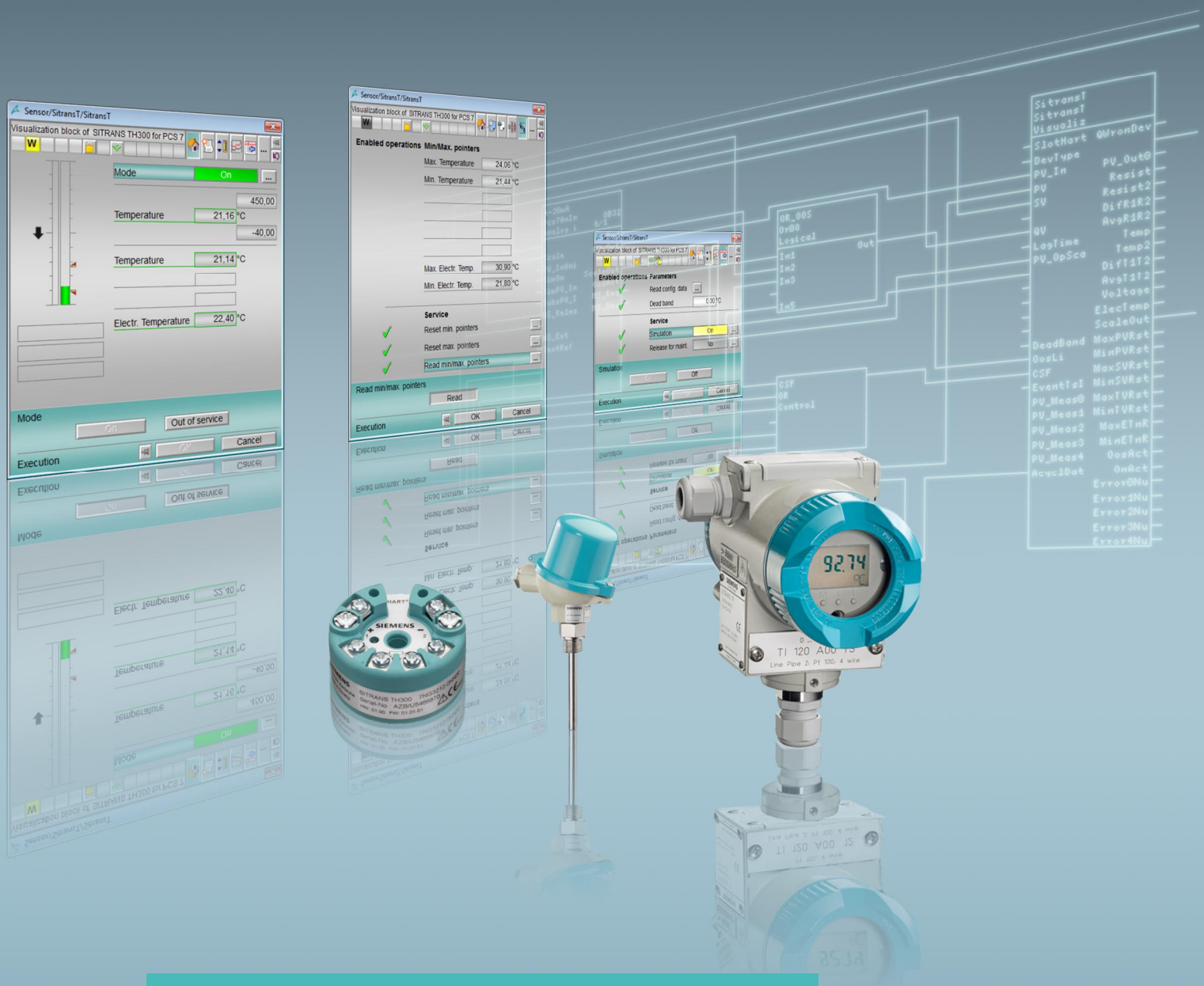

Configuring Temperature Acquisition Using SITRANS TH300 in PCS 7 Using the SITRANS Library

SIMATIC PCS 7 V8.2 and SITRANS Library V6.0

https://support.industry.siemens.com/cs/ww/de/view/109747401

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Table of contents

1 Introduction

Aim of the Application Example

The aim of this application example is to describe how you integrate a SITRANS field device in SIMATIC PCS 7 with the help of the SITRANS Library.
The SITRANS Library contains special function and channel blocks that make it possible to read out device parameters from a SITRANS field device by means of acyclical communication. In addition to configuring a SITRANS measuring point, we will show you the functions and benefits when using the library by comparison with the Advanced Process Library (APL).

Core contents

This Application Example covers the following core contents:

- Hardware configuration using a SITRANS TH300 with the help of SIMATIC PDM
- Configuring a measuring point of the SITRANS Library
- Handling the faceplate of the SITRANS Library

Validity

This application example applies to PCS 7 V8.2 with SITRANS Library V6.0.

2 Task and solution

2.1 The task

In process automation and, in particular, in the chemicals, pharmaceuticals, and oil sectors, field devices are absolutely indispensable. Since they supply important process values in industrial plants, which are used in huge amounts, it is important to integrate field devices efficiently into process control systems and to design process control on a transparent basis.

Field devices supply variables, parameters, and diagnostic data in addition to the process value, which provide operators with important information. This information should be available to operators at the operator station (OS)

2.2 Solution

This application example describes linking of a SITRANS field device in SIMATIC PCS 7 with the help of the SITRANS Library.

We will present the "SitransT" measuring point of the SITRANS Library, which is used amongst other things to link the SITRANS TH300 temperature transmitter. The measuring point consists of channel blocks of the Advanced Process Library (APL) and channel and function blocks of the SITRANS Library. Using the measuring point leads to a significant reduction in the amount of engineering effort that is needed to integrate field devices.

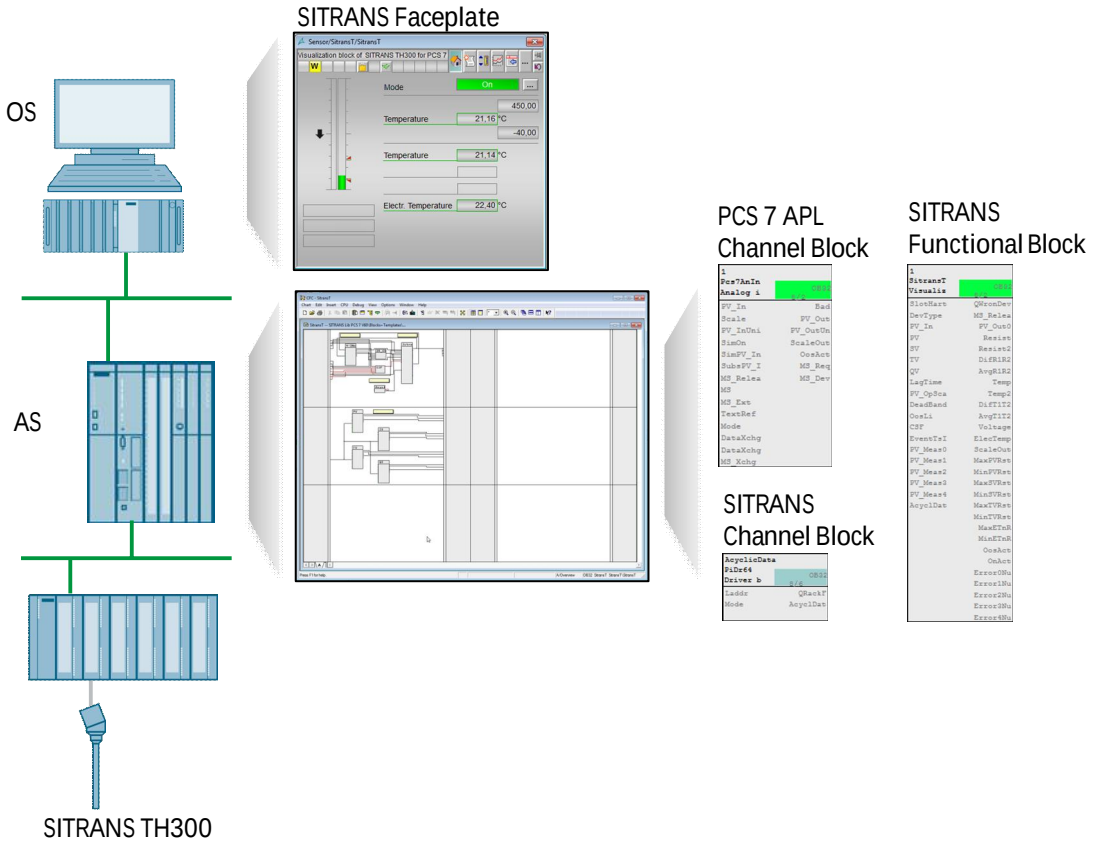
The temperature transmitter is linked to the distributed peripherals by means of the HART protocol. In this example, we will configure three of the four possible HART variables. You carry out configuration of the field device as well as operator control and monitoring in the familiar PCS 7 environment.

You can use the shown solution for both new configurations and for integration into existing projects.

Benefits of the SITRANS Library

- Less configuration effort needed
- Representation of additional device information
- Clear display of process variables
- Device-specific faceplates
- Easier process control

Fig. 2-1



Comparison of SITRANS and APL solutions when integrating field devices

Table 2-1

	SITRANS solution	APL standard solution
Representation of process values and HART variables	In one faceplate	In separate faceplates
Alignment of device functions by EDD	Yes	No
Alignment of scaling and unit with the field device	Yes	No
Automatic assignment and naming of the process value and HART variables	Yes	No
Min/max pointer	Yes	No
Gradient limits	For process value only	Yes
Deadband	For process value only	Yes
Warning/alarm limits	For process value only	Yes

3 Hardware and software components

This application example was created using the following components:

Software components

Table 3-1: Software components

Component	Note
SIMATIC PCS 7 V8.2	
APL Library V8.2	Part of SIMATIC PCS 7 V8.2
SITRANS Library V6.0	Is available for downloading
SIMATIC PDM V9.0	License is not included in SIMATIC PCS 7

Note The SITRANS Library V6.0 is available for download at the following entry: https://support.industry.siemens.com/cs/ww/en/view/65741624

Note You can find a list of the PCS 7 versions supported by the SITRANS Library at the FAQ "Which SIMATIC PCS 7 Versions are supported by the SITRANS Library?": https://support.industry.siemens.com/cs/ww/en/view/85285872

Hardware components

Table 3-2: Hardware components

Component	Note
CPU 410-5H	Firmware version V8.1.2
ET 200M	6ES7 153-4BA00-0XB0 V4.0
HART analog module	6ES7 331-7TF01-0AB0 V3.x
SITRANS TH300	HART Firmware version 1.1.4

4 General library information

How it works

The SITRANS LIBRARY allow you to integrate process instruments from the SITRANS and SIPART product families efficiently into the SIMATIC PCS 7 process control system. The library consists of several function and channel blocks that are based on the APL standard. Symbol displays and faceplates, which are also based on the APL standard, are available for representation on the operator and maintenance station.

The integration options below are supported for field devices:

- 4 to 20 mA
- HART
- PROFIBUS PA

The library contains ready-made measuring point types to make it quicker and easier to configure and link SITRANS field devices. Apart from this, SITRANS faceplates make available device parameters that have not been previously represented by reading acyclical data in OS Runtime.

Note You can find a list of the devices that are supported in the SITRANS Library at the FAQ "Devices in the SITRANS Library V6.0": https://support.industry.siemens.com/cs/ww/en/view/109738509

Channel and function blocks

The library contains various function blocks that take into account the functions and device data of a SITRANS field device. The function blocks process the cyclical and acyclical data that channel blocks make available from the field device and represent this data on the faceplate. The acyclical data is read out of the field device by an event that is triggered in the faceplates. The library makes available special channel blocks that transfer the data from the DP slave to the SITRANS Library's function block.

Process tag types

The SITRANS Library provides a total of 14 process tag types for integrating SITRANS and SIPART process instruments. The process tag types are completely configured CFC plans that you can copy directly into your project. In this application example, we will configure the "SitransT" process tag type for the SITRANS TH300 temperature transmitter.

Text library

In addition to the blocks, the library also includes a text library containing with the message texts and symbol displays for operation via the OS.

4.1 Information about the "SitransT" process tag type

Function

The "SitransT" process tag type is a completely configured CFC plan that is used to integrate the SITRANS TH300 and SITRANS TR300 temperature transmitters in PCS 7.

Structure

The "SitransT" process tag type is divided into two sheets. It consists of the following blocks:

1. "Pcs7AnIn" APL channel block
2. "Or08" and "OR" APL logic blocks
3. "SitransT" SITRANS function block
4. "PiDr64" SITRANS channel block
5. "FbAnIn" APL channel block

Fig. 4-1

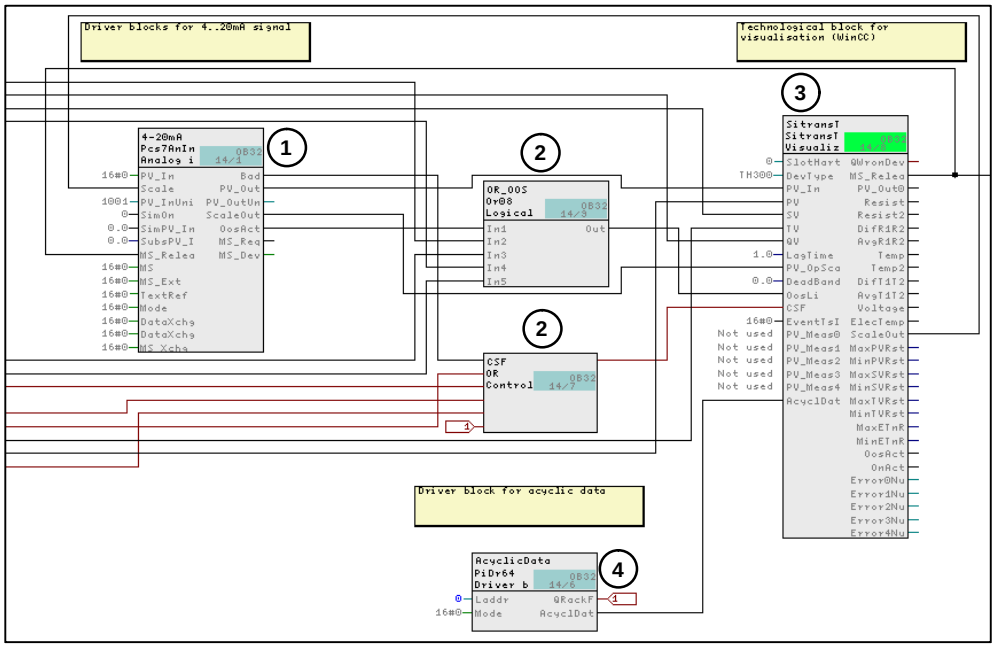
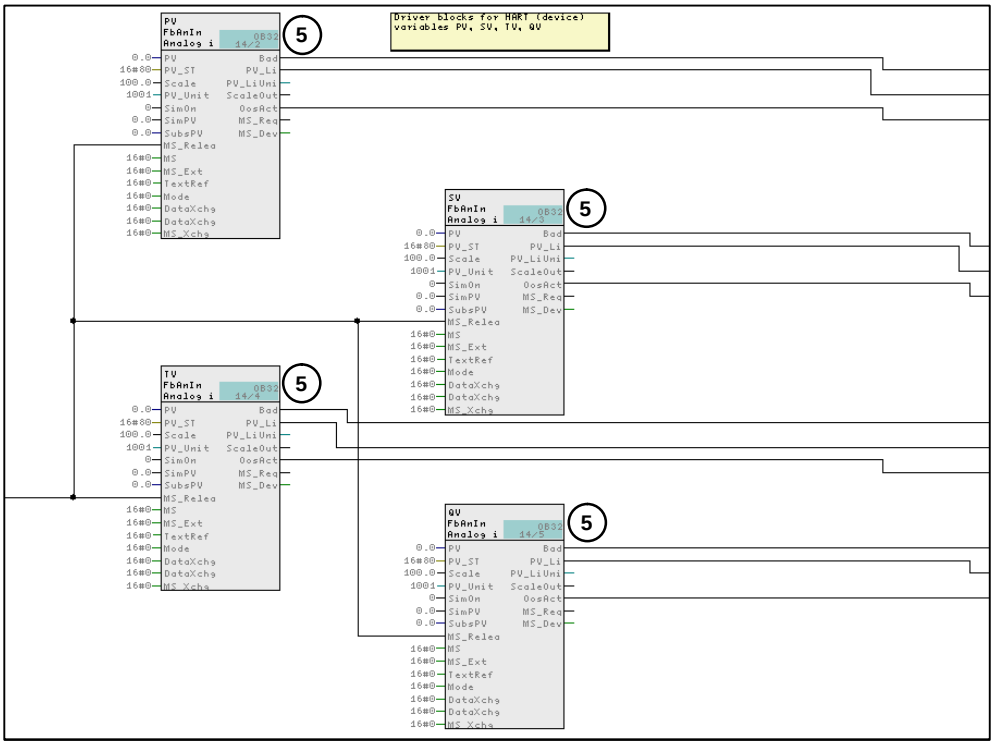


Fig. 4-2



Explanation of the blocks of the "SitransT" measuring point

Table 4-1

Block	Block designation	Function
Sheet 1		
Pcs7AnIn	4 to 20 mA	(Cyclical) loading of the analog process value
SitransT	SitransT	Function block between the APL-channel blocks and the SITRANS channel block, interface to the user program and for visualization
PiDr64	AcyclicData	• Transfer of the acyclical data of a DP slave • Reading the diagnostics data of a DP slave
Or08	OR_OOS	Logical OR with eight inputs
OR	CSF	Logical OR with a variable number of inputs
Sheet 2		
FbAnIn	PV	(Cyclical) loading of the primary variables
	SV	(Cyclical) loading of the secondary variables
	TV	(Cyclical) loading of the tertiary variables
	QV	(Cyclical) loading of the quaternary variables

Note The process tag type contains the necessary interconnections between the blocks mentioned above. If you do not use all four HART variables, you can delete the unneeded channel blocks for reading values PV, SV, TV, and QV in the measuring point. In addition, you must set the corresponding feature bits on the "SitransT" block to 0.

4.2 Installation

1. Download SITRANS Library V6.0 for SIMATIC PCS 7 V8.2 at the entry "Software for integration of the SITRANS product family in SIMATIC": https://support.industry.siemens.com/cs/ww/en/view/65741624.
2. Save the downloaded file in a folder of your choice.
3. Double-click on the .exe file to start installation of the SITRANS Library and follow the instructions in the setup.

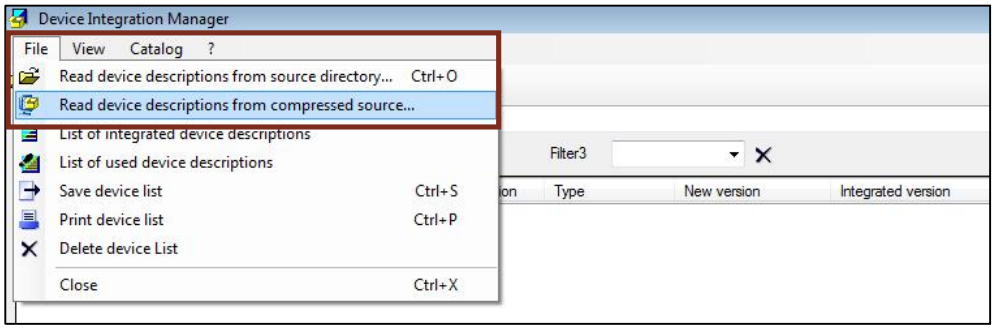
5 Preparation

5.1 Integrating the device descriptions in the Device Integration Manager

To integrate the SITRANS field device in the HW Config and parameterize it in SIMATIC PDM, you must first integrate the Electronic Device Description in the Device Integration Manager (DIM).

1. The entire device description is located on the SIMATIC PCS 7 V8.2 installation CD in the following path: "DVD_2 > 77_PDM_V9.0+Upd1 > HWKDevices > catalog". Archive the "catalog" folder and save the save it on your computer.
2. Open the Device Integration Manager from the Start menu.
3. On the menu bar, click on "File > Read device description from compressed source". Select the EDD from the path mentioned above and click on "Open".

Fig. 5-1

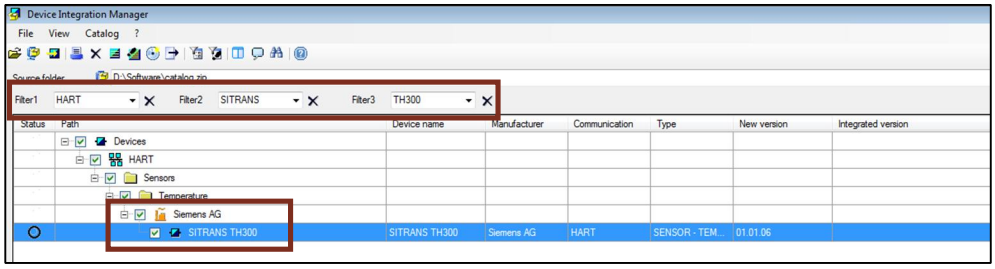


Note

Integrating the entire EDD may take a few minutes. To speed up the process, it is sensible just to integrate the field devices that are used in the project. In this application example, you just need to integrate the EDD of the SITRANS TH300 transmitter. You can download the EDD of the SITRANS TH300 at the entry "EDD: SITRANS TH300 HART - HART - SIMATIC PDM": https://support.industry.siemens.com/cs/ww/en/view/103656120

4. If you have opened the complete EDD archive, you must first deselect the "Devices" checkbox in the "Path" column. Then, use the filter function to search for the SITRANS TH300 transmitter. Select the "SITRANS TH300" check box in the "Path" column.

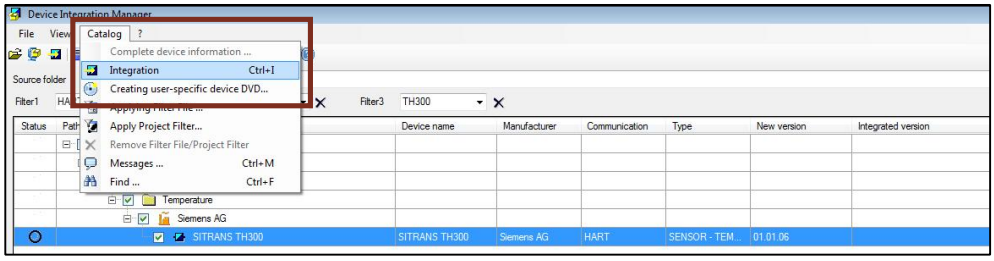
Fig. 5-2



NOTICE	**When selecting the transmitter, make sure that it is on the list of HART devices.**

5. On the menu bar, click on the "Catalog -> Integration" menu command.

Fig. 5-3



The symbols below show the processing status:

Fig. 5-4

Symbol	Status
✔	Der Export wurde fehlerfrei ausgeführt.
!	Beim Export sind Meldungen und Warnungen aufgetreten.
✖	Der Export wurde wegen eines Fehlers nicht ausgeführt.
🔒	Das Objekt wird gerade anderweitig bearbeitet.
○	Der Export wurde bei diesem Gerät nicht ausgeführt
✖	Die Funktion wird von diesem Gerät nicht unterstützt.
↻	Der Export wird bei diesem Gerät gerade ausgeführt.

6. Close the DIM after successfully carrying out integration.

5.2 Copying the SitransT process tag type

Copying the used APL channel blocks into the master data library

If APL channel blocks "Pcs7AnIn" (FB1869) and "FbAnIn" (FB1813) are already in the master data library of your project, you can skip the "Copying the used APL channel blocks into the master data library" step.

Note Since APL channel blocks "Pcs7AnIn" and "FbAnIn" are missing in the SITRANS Library for licensing reasons, you must copy them before copying the process tag type into your project's master data library.

Open module library "PCS 7 AP Library V82" in SIMATIC Manager and copy blocks "FB1869" and "FB1813" into your multiproject's master data library.

Copying the SitransT process tag type

1. Open module library "PCS 7 AP Library V60" in SIMATIC Manager and copy the "SitransT" process tag type into your multiproject.

Note The "SitransT" block calls internally APL blocks "ChkREAL" (FC260) and "SelST16" (FC369) that are not supplied in the SITRANS library. If these two blocks are not located in your project's master data library, copy them from the APL before you load the project.

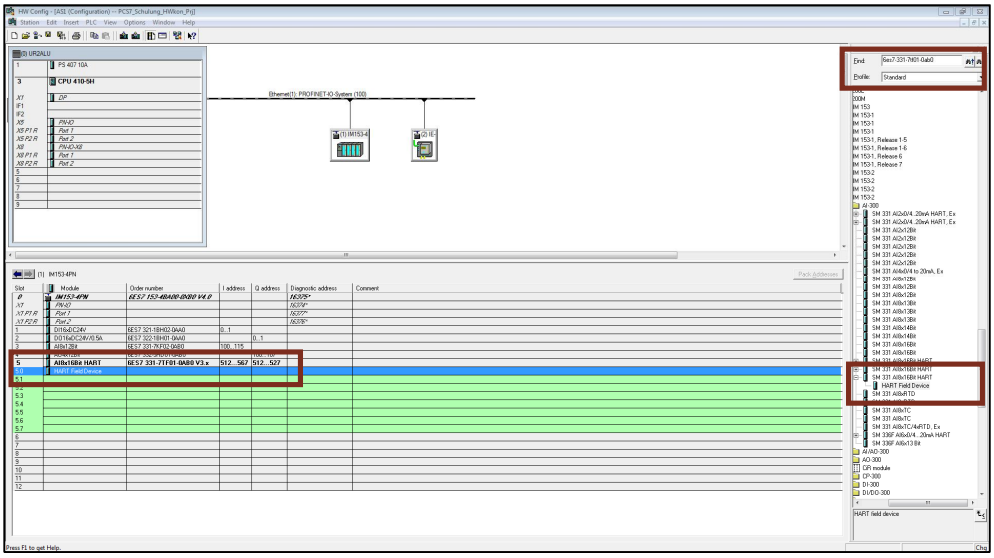
2. Open module library "PCS 7 AP Library V82" in SIMATIC Manager and copy blocks "FC260" and "FC369" into your multiproject's master data library.

6 Engineering

6.1 Configuring the hardware

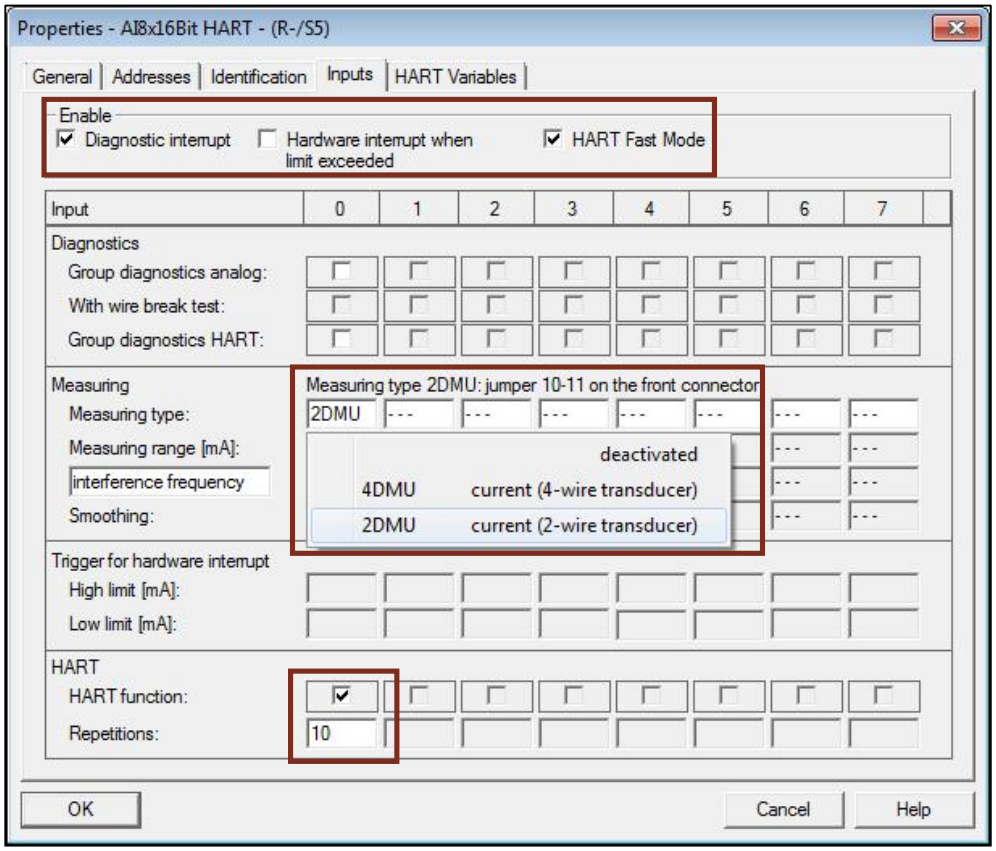
1. In the "Find" input field, enter the MLFB number of the HART input module to which the transmitter is to be connected. Drag the associated HART field device and drop it on the desired slot (here, slot 0).

Fig. 6-1



2. Open the object properties of the HART input module.
3. In the "Inputs" dialog box, select channel 0. To do this, select the measuring type from the "measuring type" drop-down list: in this case, 2DMU current (2-wire transducer).
4. Select the "Diagnostic interrupt", "HART Fast Mode", and "HART function" checkboxes.

Fig. 6-2

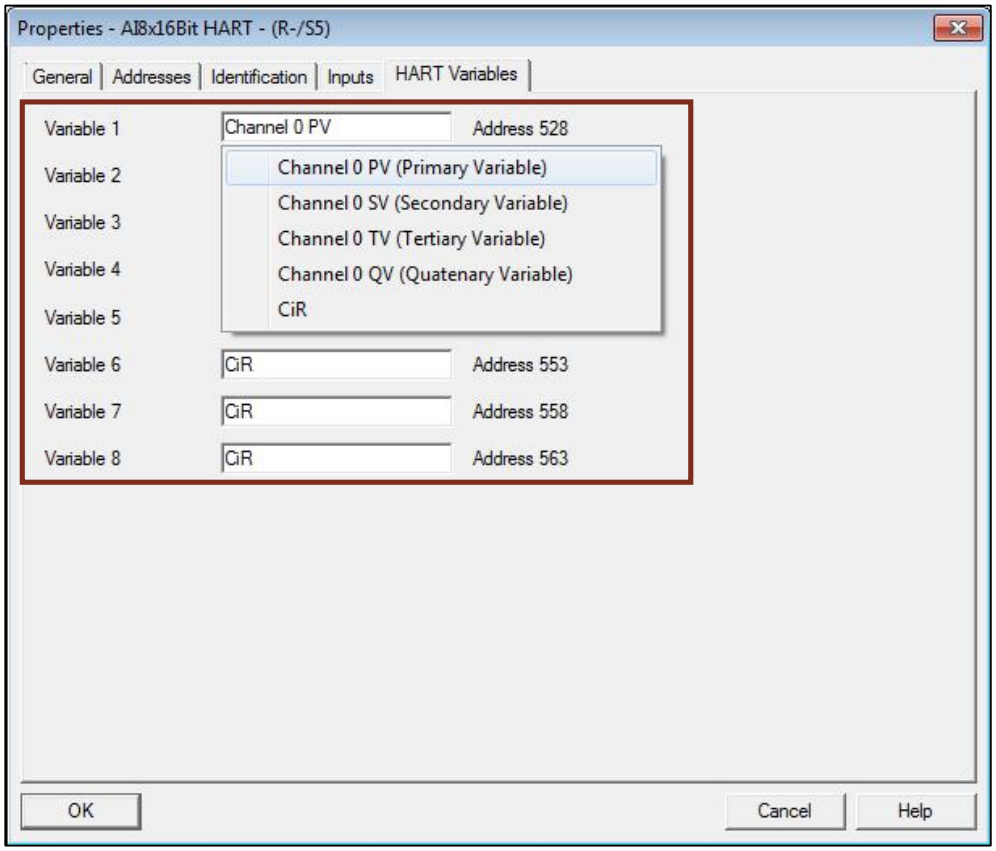


5. In the object properties, switch to the "HART variable" dialog box. On the drop-down bar, choose the "Channel 0 PV", "Channel 0 SV", and "Channel 0 QV" entries. Using this setting, you activate three of the four possible HART variables of the connected SITRANS TH300 transmitter on channel 0 and assign them to the respective address bands.

Note

To be able to activate more HART variables during operation, we advise you to assign the "CiR" setting to the unassigned variables. CiR (Configuration in Run) allows you to make changes to the configuration, e.g. to add HART variables in ongoing operation of a system; this means that the CPU does not enter the Stop state when the configuration is loaded.

Fig. 6-3



6. Save your configuration and compile it and then download it to the CPU.

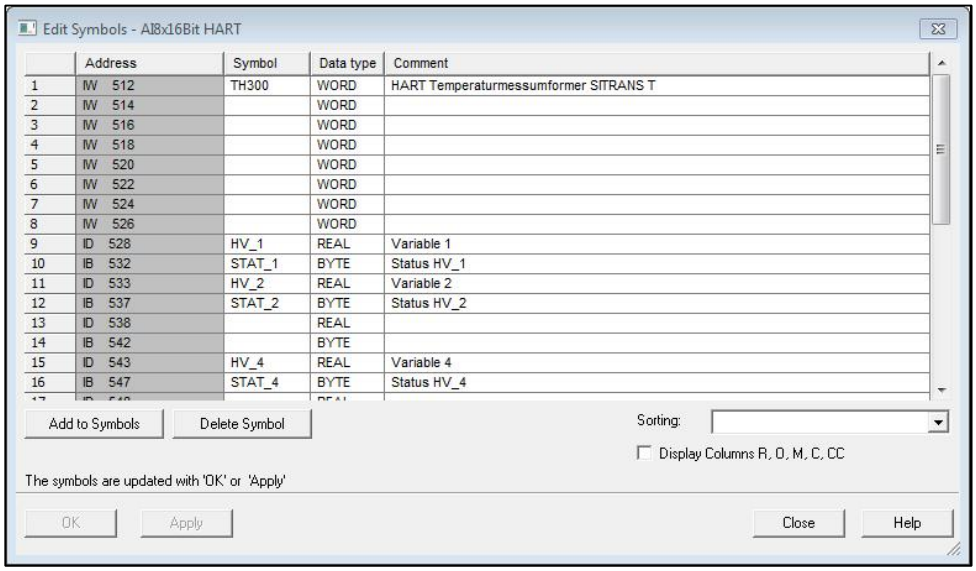
Symbol table

Edit the available components as described in the table below:

Table 6-1

Address	Symbol	Data type	Comment
IW 512	TH300	WORD	HART SITRANS TH300 transmitter
ID 528	HV_1	REAL	Variable 1
IB 532	STAT_1	BYTE	Status HV_1
ID 533	HV_2	REAL	Variable 2
IB 537	STAT_2	BYTE	HV2 status
ID 543	HV_4	REAL	Variable 4
IB 547	STAT_4	BYTE	HV4 status

Fig. 6-4



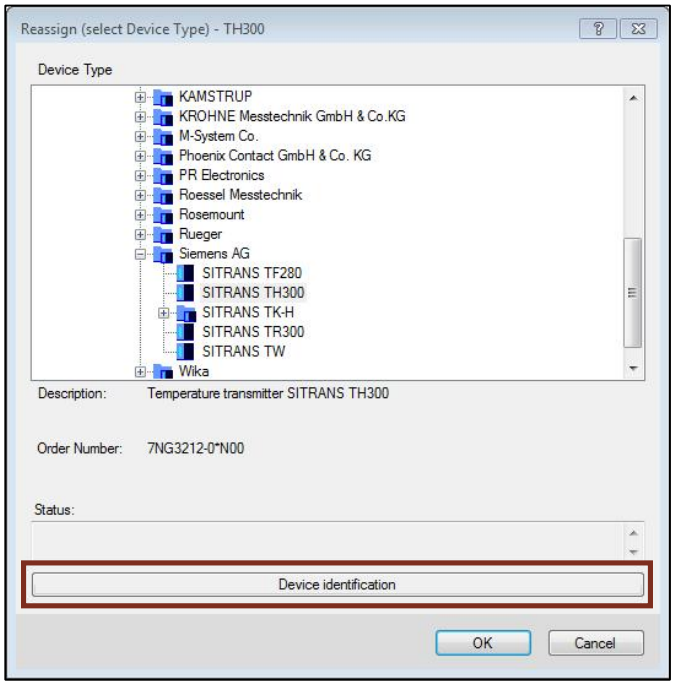
6.2 Parameterizing the SITRANS TH300 in SIMATIC PDM

Assigning devices in HW Config

To commission the transmitter and assign parameters to it like TAG, unit, and measuring limits, for example you first parameterize the parameters of the SITRANS TH300 in SIMATIC PDM and then load them to the transmitter. To do this, you must first assign in PDM the the connected transmitter in HW Config by means of the EDD.

1. Double-click on the HART field device in the HW config in channel 0. The system opens the "Reassign (select Device Type)" dialog box of the Process Device Manager.
2. Click on the "Device identification" pushbutton: PDM searches the device data of the SITRANS TH300 from the EDD that was integrated before. This process can take a few seconds.

Fig. 6-5



Note If the Process Device Manager does not assign the transmitter automatically, you can search the "Device type" list manually for the transmitter. When selecting, pay attention to the protocol that is used.

3. Store the HW config when you have successfully assigned the transmitter. Leave HW Config open for the next steps.

Note You can reassign a field device as follows: Right click on "HART field device > SIMATIC PDM > Reassign (select Device Type)"

Parameterizing the SITRANS TH300 in SIMATIC PDM

After you have assigned the transmitter in HW Config, you can parameterize it in SIMATIC PDM.

Open PDM by double-clicking on the HART field device.

PDM shows you a table containing the device information of the SITRANS TH300.

Explanation of the most important device parameters of the SITRANS TH300

Table 6-2

Parameter	Comment
HART variables (PV to QV)	The HART variables that are available with a field device depends on the device type. PDM automatically assigns the HART variables in dependence on the connection type via EDD.
Class	Using the "Class" parameter, you can choose the connected sensor. Here, you choose between resistance-based sensor, mV encoder, resistance thermometer and thermocouple.
Sensor connection	Under "Sensor connection", you enter the connection by means of which the sensor is connected to the transmitter. For information on how you can connect the sensors to the transmitter, refer to the SITRANS TH300 user manual. https://support.industry.siemens.com/cs/ww/en/view/109480744
Type of connection	You can connect up to two sensors. Here, you can choose whether you want the temperature of sensor 1 or of sensor 2 to be displayed via the 4 to 20 mA signal. Apart from this, you can choose the differential value (S1-S2 or S2-S1) or the average value as a process value. The system assigns the HART variables accordingly.
Unit	°F or °C
Start of scale value/full scale value	Scaling of the process value

To determine whether there is a perfect connection between the field device and the Engineering Station (ES), you must first update the diagnostics data.

1. To do this, click on the "Diagnostics > Diagnostics" menu command on the menu bar. Click on the "Start" button.
2. If diagnostics completes with no messages or warnings, upload the data from the field device to PDM.
3. On the menu bar, click on the “Device > Upload to PU/PC…" menu command. Click on "Start". Loading can take several minutes.

Once the parameters have been uploaded from the field device, you can parameterize it. The values in the "Value" column that have a gray background are statistical ones and you cannot change them.

Parameter assignment example

Table 6-3

Parameter	Value
TAG	TH300
Description	SITRANS TH300
Primary variable	Sensor 1

Parameter	Value
Secondary variable	Sensor 1
Tertiary variable	n.c.
Quaternary variable	Electronics temperature
Class	Resistance thermometer
Sensor connection	Three-wire
Type of connection	Normal connection
Unit	°C
Start of scale value	-50
Full scale value	400

1. To load parameterization to the field device, click on the “Device > Upload to PU/PC…" menu command on the menu bar. Start uploading. The data is transferred to the field device.
2. Start a value comparison to check the offline and online values. To do this, click on the "Device > Value comparison" menu command on the menu bar. Select "Online data of current object" and click the "Apply" pushbutton.

Symbol description

Fig. 6-6

Icon	Description
	**Deactivated** No device description (EDD) from the device catalog has yet been assigned to the field device / Field device cannot be accessed.
	**Not validated** A device description from the device catalog has been assigned to the field device.
	**Communication faulty** Communication error, communication has been interrupted or no communication could take place with the device at the configured address. The device cannot provide detailed diagnostic information.
	**Assignment error** The field device is incompatible with the configured field device or the device has been configured incorrectly. The device cannot provide detailed diagnostic information.
	**Maintenance alarm** Maintenance is required immediately as there is a device fault.
	**Maintenance demanded** Maintenance is required to prevent a possible device fault from occurring. Additional diagnostic information is available.
	**Maintenance required** Maintenance must be scheduled. No functional restriction has been diagnosed for the field device, service is requested. Additional diagnostic information is available.
	**Manual mode** There is a communication connection with the field device. The device is in manual mode.
	**Simulation mode** There is a communication connection with the field device. The device is in manual mode. For example, the device is in manual "simulation mode".
	**Out of service** There is a communication connection with the field device. The device is in manual mode. For example, the device is in manual "Out of service" mode.
	**Configuration error** Field device fault due to a parameter/interconnection error or configuration error in the hardware components. A maintenance alarm is triggered automatically.

Fig. 6-7

Icon	Description
	**Configuration warning** Field device warning due to invalid parameters for which substitute values are used. A maintenance request is triggered automatically.
	**Configuration changed** The parameters set for the device do not match the parameter data saved in the project. Communication with the device is possible to carry out a value comparison or to change parameter settings.
	**Unknown diagnostics status** Unknown field device status due to invalid parameters for which substitute values are used. A maintenance request is triggered automatically.
	**Process value alarm** At least one process value has exceeded or fallen below a hardware interrupt limit whose parameters were assigned in the device. Communication with the device is possible.
	**Process value warning** At least one process value has exceeded or fallen below a process warning limit whose parameters were assigned in the device. Communication with the device is possible.
	**Process value tolerance** At least one process value has exceeded or fallen below a process tolerance limit parameter set in the device. Communication with the device is possible.
	**No messages** No functional restrictions or diagnostic information known.
	**No diagnostic check** No functional restrictions known. The field device does not support additional diagnostic information.
	**Test mode (background color of diagnostics icon)** The device is in local test mode. All the displayed information or diagnostics may be simulated. The information transferred to the automation systems (measured values and status) may also be simulated.

Note You can find detailed information about SIMATIC PDM in the "SIMATIC Process Control System PCS 7 Help for SIMATIC PDM (V9.0 SP1)" manual by visiting: https://support.industry.siemens.com/cs/ww/en/view/109482406

6.3 Configuring the "SitransT" measuring point

Explanation of important connections of the SitransT measuring point

The most important connections of the SitransT block are explained in the table below. For detailed descriptions of the block connections, refer to the online help or the SITRANS Library operating manual:
https://support.industry.siemens.com/cs/ww/en/view/109737969

Table 6-4

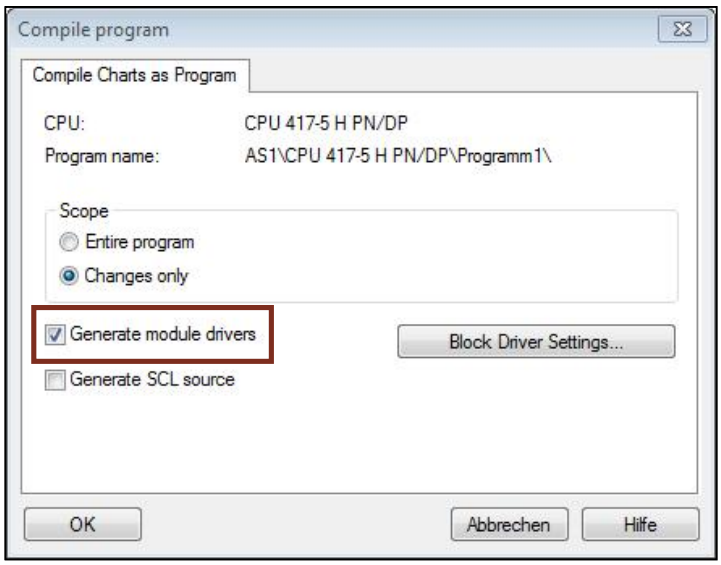
Block	Terminal designation	Comment
SitransT	SlotHart	The slot number of the SITRANS TH300 within the HART input module in the ET 200M; it can be found in the HW config
	DevType	Input of the device type
	PV_In	Process value 4 to 20 mA signal
	PV, SV, TV, QV	Connections of the first to the fourth HART variable
	Feature bit 2	HART communication

Block	Terminal designation	Comment
		between the module and the controller is present
	Feature bit 3	Primary variable is used
	Feature bit 4	Secondary variable is used
	Feature bit 5	Tertiary variable
	Feature bit 6	Quaternary variable
PiDr64	Laddr	Logical base address of the DP slave

Interconnecting the measuring point

1. To instantiate the measuring point, interconnect the "PV_In" inputs of channel blocks "4 to 20 mA", "PV", "SV", "TV", and "QV" with the corresponding input word or double word from HW Config.
2. Parameterize input "Laddr" of SITRANS channel block "AcyclicData" with the address of the 4 to 20 mA signal (can be found in HW config). The PCS 7 driver wizard installs all of the required driver blocks at compilation. The "Generate module drivers" checkbox must be selected at compilation.

Fig. 6-8



3. At the "SlotHart" input of SITRANS function block "SitransT", parameterize the slot number of the SITRANS TH300 within the HART input module (in this case, 0).
4. At feature bits 2, 3, 4, and, 6 configure whether communication is to be carried out via the HART protocol and, if necessary, which HART variables are to be used. Set the corresponding feature bits to 1. In this application example, three of the four possible HART variables are used.

Note Correct configuration of the SlotHart input is a mandatory requirement and the block does not check this.

Interconnection of the measuring point is summarized in the table below:

Table 6-5

Block	Block designation	Input	Interconnection with operand
Pcs7AnIn	4 to 20 mA	PV_In	TH300
FbAnIn	PV	PV	HV_1
		PV_ST	STAT_1
	SV	PV	HV_2
		PV_ST	STAT_2
	QV	PV	HV_4
		PV_ST	STAT_4

Table 6-6

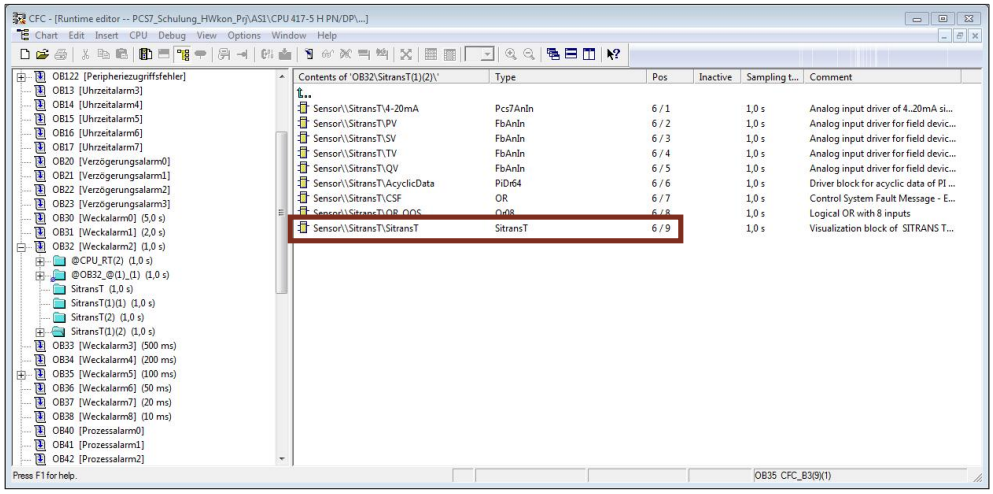
Block	Block designation	Input	Value
PiDr64	AcyclicData	Laddr	512
SitransT	SitransT	SlotHart	0
		DevType	TH300
		Feature bit 2	1
		Feature bit 3	1
		Feature bit 4	1
		Feature bit 6	1

NOTICE Use the CFC editor to install the block in a cyclic interrupt OB (OB30 to OB38). The block is also installed automatically in the startup OB (OB100). In addition, to connect the I/O signals, it is imperative to call the "Pcs7AnIn" channel blocks (cyclic data, 4 to 20 mA), "FbAnIn" (HART variables) and "PiDr64" (acyclic data) in the same interrupt OB and startup OB (OB100). In this connection, it is important for the channel blocks to be called before the SitransT function block in each case.

Change the execution order of the blocks by clicking on menu command "Edit > Execution order" on the menu bar of the CFC plan. Choose the block folder from the list in which the blocks of the measuring point have been stored (in this case, OB32). Drag the SITRANS function block to the end of the list.

Save the CFC plan and compile it. After this, upload the program to the CPU.

Fig. 6-9



The screenshots below show the completely interconnected sheets of the SitransT measuring point.

Fig. 6-10

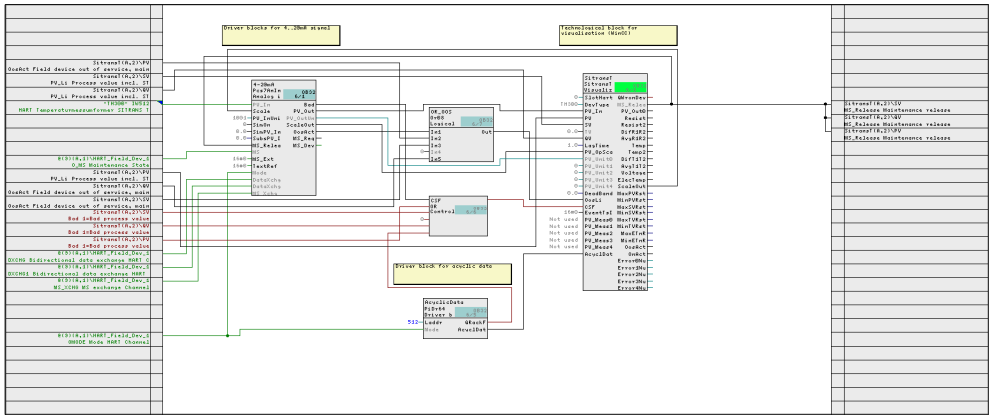
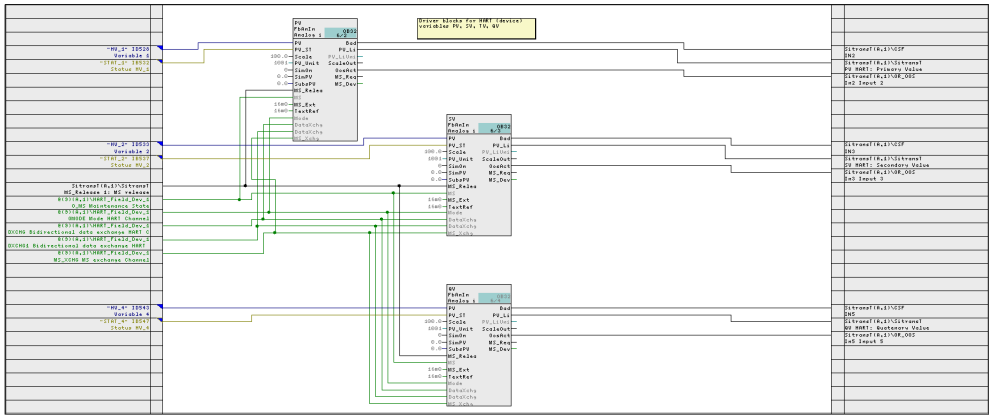


Fig. 6-11



Configuring the parameter unit and scaling manually

The measuring point has been interconnected such that the system reads the unit and scaling parameters from the field device when reading the configuration data and applies them in OS Runtime. If you configure the unit and scaling manually on APL block "Pcs7AnIn", interconnection of the measuring point must be adapted according to the table below. For this, you must first set input "PV_Unit0" visible in the object properties of function block "SitransT".

Table 6-7

Block designation	Output	Block designation	Input	Note
4 - 20 mA	PV_OutUnit	SitransT	PV_Unit0	Add interconnection
SitransT	ScaleOut	4 to 20 mA	Scale	Delete interconnection

Note The units of the HART variables are oriented toward the unit of the process value that is parameterized in the field device. The unit of the HART variables must not be different from the unit of the process value. Interconnection of the unit of APL channel blocks "FbAnIn" to SITRANS function block "SitransT" applies the unit in OS Runtime that is parameterized on the block; however, the measured values of the variables are not standardized correctly.

7 SITRANS faceplate

After compilation of the OS, the system generates the symbol displays and the faceplates of the SitransT measuring point automatically in OS Runtime.

Complying with the APL styleguide consistently means that operation of the SITRANS faceplates is intuitive for operators and that they do not need a long time for orientation in the SITRANS Library.

By providing process values and HART variables on one faceplate, SITRANS Library offers an advantage compared to standard configuration using APL. This makes representation of the process pictures clearer and simplifies process control for operators.

7.1 Operator control and monitoring

The SitransT function block provides the following views:

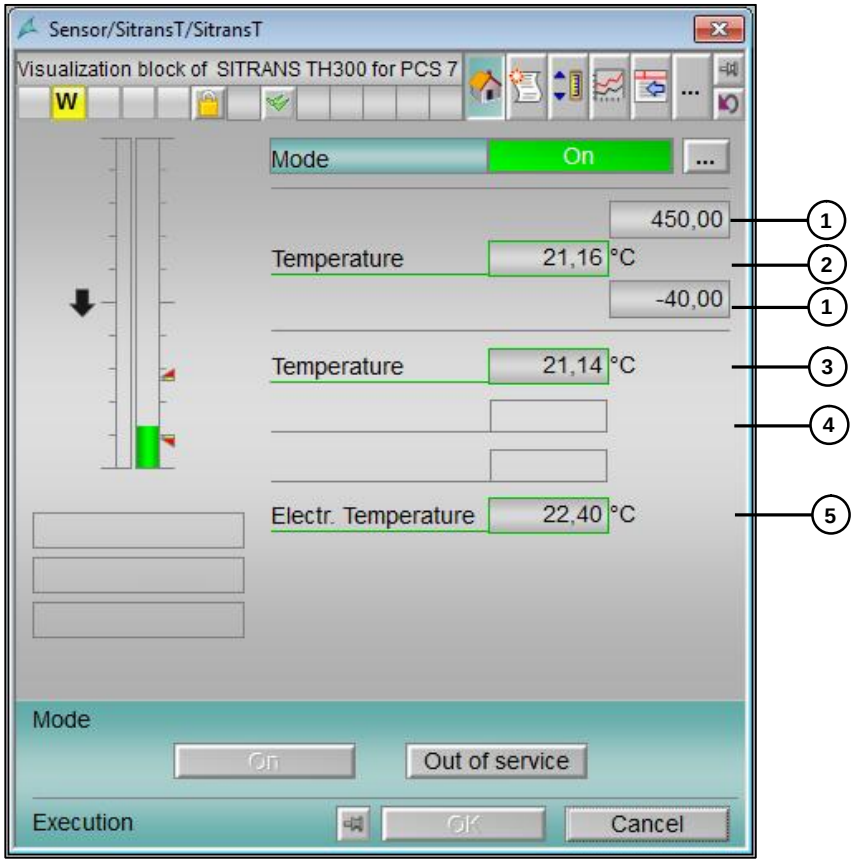
- Standard view
- Alarm view
- Limit view
- Trend view
- Parameter view
- Preview
- Memo view
- Batch view
- Min/max pointer view

Below, we will explain the views of the SITRANS faceplate in more detail that differ from the views of the APL faceplates at integration of a SITRANS TH300.

7.1.1 Standard view

In standard view, depending on the configuration of the 4 to 20 mA signal and the four HART variables, the system displays the process values for resistance, resistance of channel 2, difference/average value of resistances, temperature, temperature of channel 2, difference/average value of temperature, voltage, and/or electronics temperature. If a measured value is not assigned to a variable, the field is hidden.

Fig. 7-1

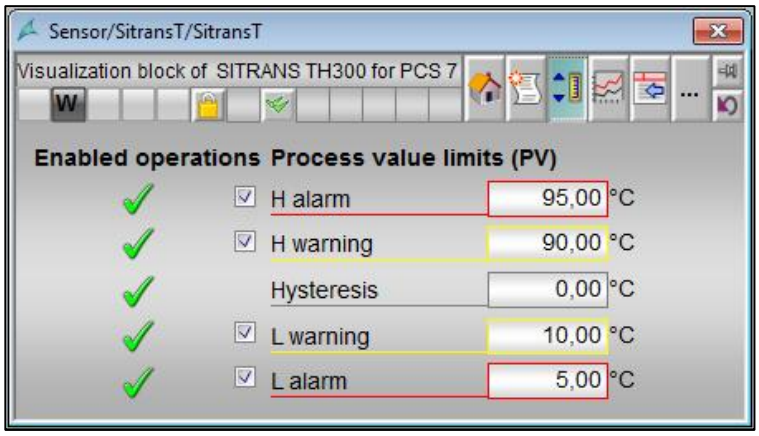


- Scaling of the process value (1)
- Process value (4 to 20 mA signal) (2)
- Primary variable (3)
- Secondary variable (hidden, since not assigned by PDM) (4)
- Quaternary variable (5)

7.1.2 Limit view

In this view, the process value limits specify the 4 to 20 mA signal.

Fig. 7-2



7.1.3 Parameter view

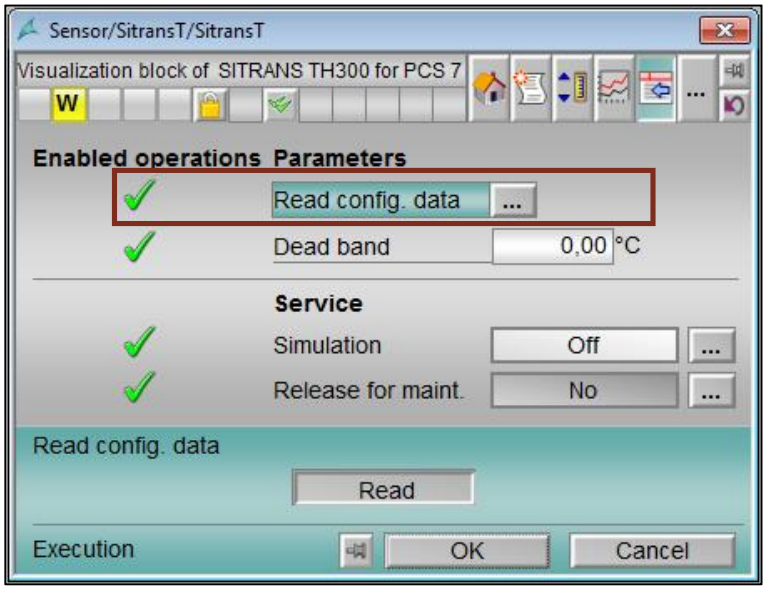
Reading configuration data

In this area, you read all of the configuration data that is relevant to the SITRANS TH300 from the module. The faceplate reads out the following data and parameters:

- Configuration of the 4 to 20 mA signal and the HART variables
- Units of the 4 to 20 mA signal and the HART variables
- Scaling of the 4 to 20 mA signal

If changes are made to these parameters in PDM or the field device, this function allows you to easily transfer values in the ongoing process. This guarantees constant data consistency between the field level and PCS 7.

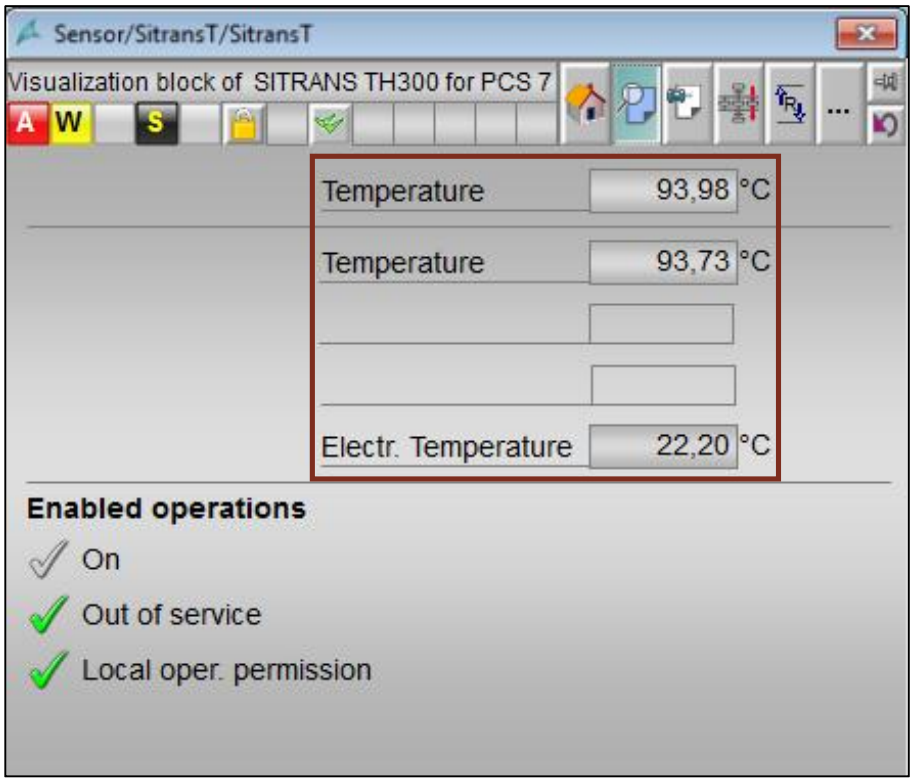
Fig. 7-3



7.1.4 Preview

This area shows the current process values (PV_In, PV, SV, TV, QV).

Fig. 7-4

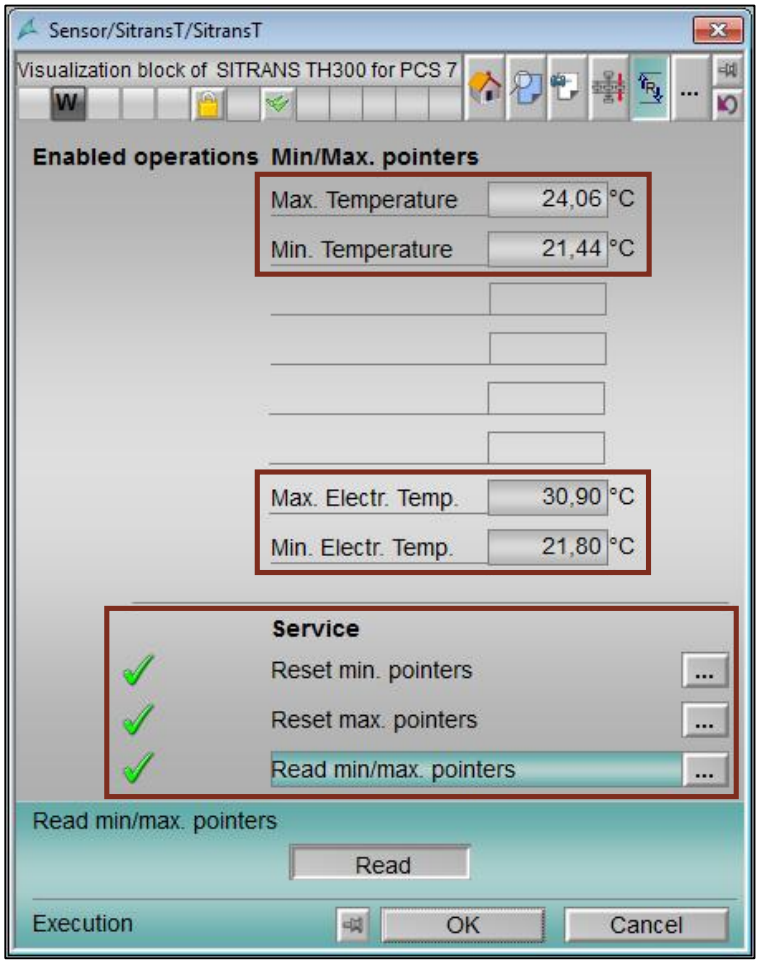


7.1.5 Min/max pointer view

In this area, the system displays the latest values that have been read out for the min/max pointers. The name of the configured measured value is displayed depending on the "PV_Meas" to "PV_Meas4" variables (HART variables), in this case "Max./Min.temperature" and "Max./Min. Elect. Temp.". You read out the min/max pointers from the module by clicking on the "Read min/max pointers" pushbutton. You can reset the minimum and maximum values of the min/max pointers separately.

- Maximum value of min/max pointer PV (primary variable)
- Minimum value of min/max pointer PV (primary variable)
- Maximum value of min/max pointer SV
- Minimum value of min/max pointer SV
- Maximum value of min/max pointer TV
- Minimum value of min/max pointer TV
- Maximum value of min/max pointer QV
- Minimum value of min/max pointer QV

Fig. 7-5



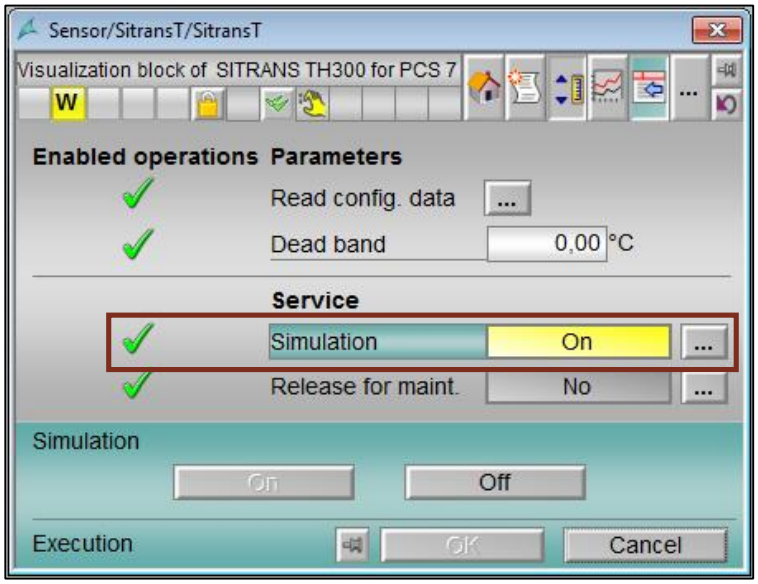
7.2 Simulation

You can start simulation of the process values by clicking on the "Simulation" pushbutton in the faceplate in parameter view. Before simulation can be started, the system needs to read the configuration data once.

The values below can be simulated by means of the faceplate:

- 4 to 20 mA signal
- HART variables (PV, SV, TV, and QV)

Fig. 7-6



The values below can be simulated by means of parameterization on the SitransT function block in the CFC plan:

Table 7-1

Value	Input
Resistance of channel 1	SimRLi
Resistance of channel 2	SimR2Li
Differential resistance of channel 1/2	SimDifRLi
Temperature of channel 1	SimTLi
Temperature of channel 2	SimT2Li
Temperature difference of channel 1/2	SimDifTLi
Voltage	SimVLi
Electronics temperature	SimETLi

To be able to simulate the values that are stated in the table, you must set inputs "PV_Meas0" to "PV_Meas4" of the SitransT function block to visible in the object properties.

In online mode, double-click on one of the inputs mentioned above and specify the value that you want to simulate. After parameterization, you can simulate the values in the faceplate in the the usual way.

It is also possible to simulate the values in the CFC plan. To do this, enter values at the inputs of the SitransT function block that are stated in the table.

Fig. 7-7

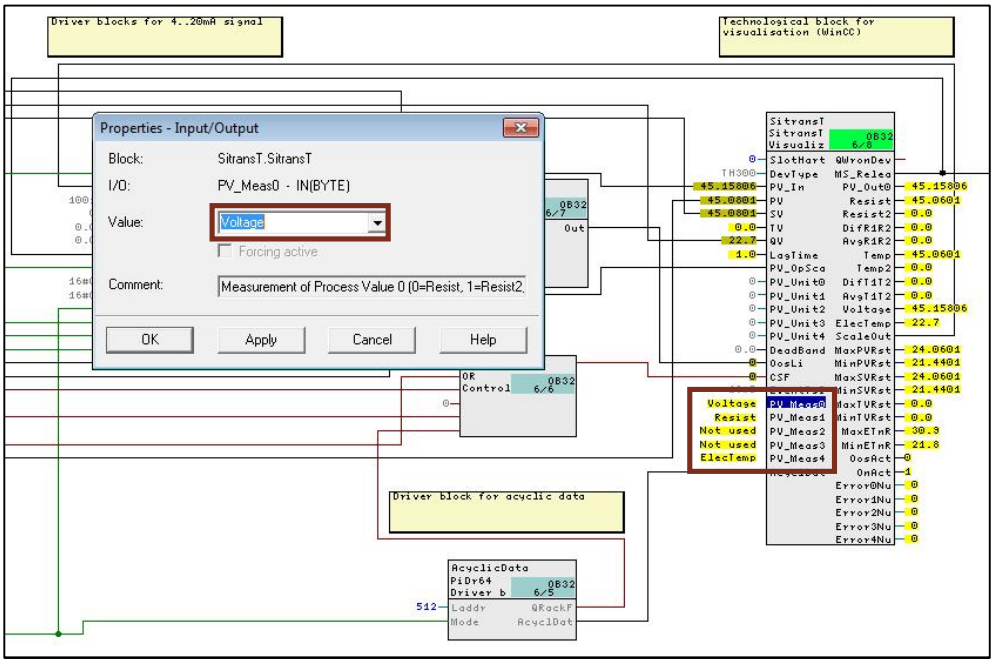
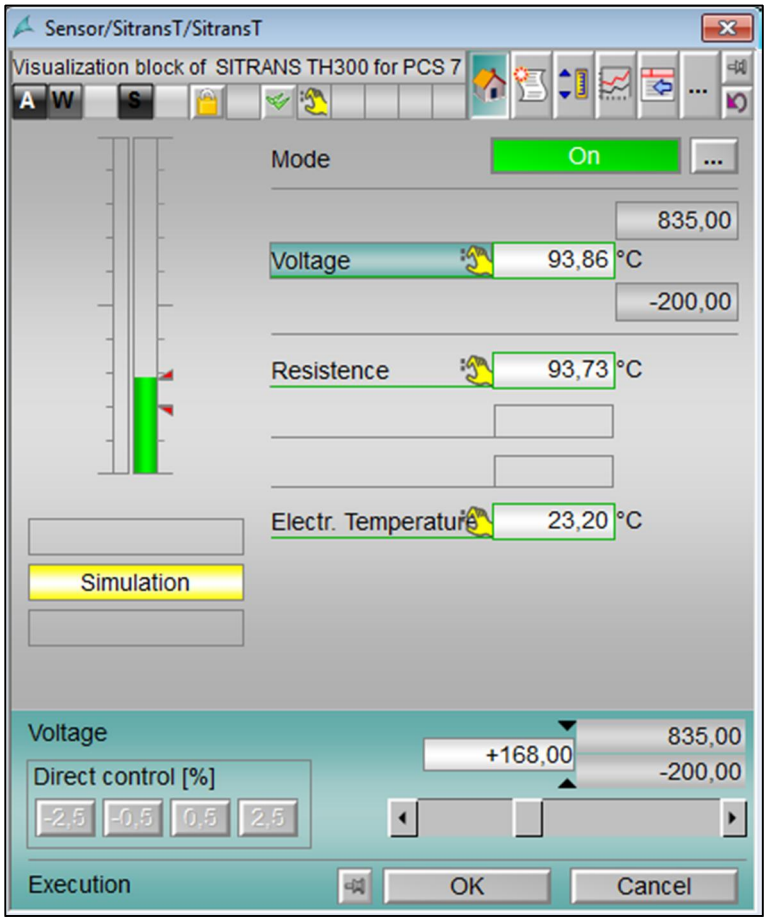


Fig. 7-8



Simulating the measuring point without a connected field device

To start simulation of the measuring point in the SITRANS faceplate without a connected field device, you must first make parameterization settings in the CFC plan.

First of all, you must manually define parameters "PV_Meas0" to "PV_Meas4" (process value and HART variables) on the SitransT function block in the CFC plan. After you have defined the parameters, simulation can be carried out by means of the faceplate in the usual way.

The values below can be simulated in the CFC plan by means of the faceplate after previous parameterization:

- Resistance
- Resistance of channel 2
- Difference in resistance
- Average resistance
- Temperature
- Temperature of channel 2
- Temperature difference
- Average temperature
- Voltage
- Electronics temperature

To be able to simulate the values that are stated above, you must first set inputs "PV_Meas0" to "PV_Meas4" of the SitransT function block to visible in the function block's object properties.

In online mode, double-click on one of the inputs mentioned above and specify the value that you want to simulate. After parameterization, you can simulate the values in the faceplate in the the familiar way.

8 Appendix

8.1 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.

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

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

Technical Support

Siemens Industry Technical Support provides you with fast and competent support for all your technical queries with a wide range of tailor-made offerings – ranging from basic support to individual support contracts.

Please send queries to Technical Support via Web form:
www.siemens.de/industry/supportrequest

Service offer

Our scope of services includes, inter alia, the following:

- Product trainings
- 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:
https://support.industry.siemens.com/cs/sc

Industry Online Support App

The "Siemens Industry Online Support" app provides you with optimum support, including while on the road. The app is available for Apple iOS, Android and Windows Phone:
https://support.industry.siemens.com/cs/ww/en/sc/2067

8.2 Links and Literature

Table 8-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the entry page of the application example https://support.industry.siemens.com/cs/ww/en/view/109747401
\3\	Software für Integration der Produktfamilie SITRANS in SIMATIC https://support.industry.siemens.com/cs/ww/en/view/65741624
\4\	Which SIMATIC PCS 7 Versions are supported by the SITRANS Library? https://support.industry.siemens.com/cs/ww/en/view/85285872
\5\	Devices in the SITRANS LibraryV6.0 https://support.industry.siemens.com/cs/ww/en/view/109738509
\6\	EDD: SITRANS TH300 HART - HART - SIMATIC PDM https://support.industry.siemens.com/cs/ww/en/view/103656120
\7\	Manual "SITRANS TH300" https://support.industry.siemens.com/cs/ww/en/view/109480744
\8\	Manual "Help for SIMATIC PDM (V9.0 SP1) https://support.industry.siemens.com/cs/ww/en/view/109482406
\9\	Manual "SITRANS Library" https://support.industry.siemens.com/cs/ww/en/view/109737969

8.3 Documentation of changes

Table 8-2

Version	Date	Change
V1.0	09/2017	First version