

A man in a light blue shirt is shown from the side, holding a tablet computer. He is looking at the screen, which displays a complex interface with various charts and data. The background is a blurred industrial factory setting with white machinery and equipment.

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Application Example • 10/2015

# Expanding an existing SINAUT Plant by S7-1200 Stations with CP 1243-8 IRC

CP 1243-8 IRC / Dedicated Line

<https://support.industry.siemens.com/cs/ww/en/view/109479747>

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# 1 Task

## Introduction

In existing SINAUT plants with SIMATIC S7-300/400 and the respective TIM modules for remote transmission, S7-1200 stations can now also be integrated using CP 1243-8 IRC (Industrial Remote Communication).

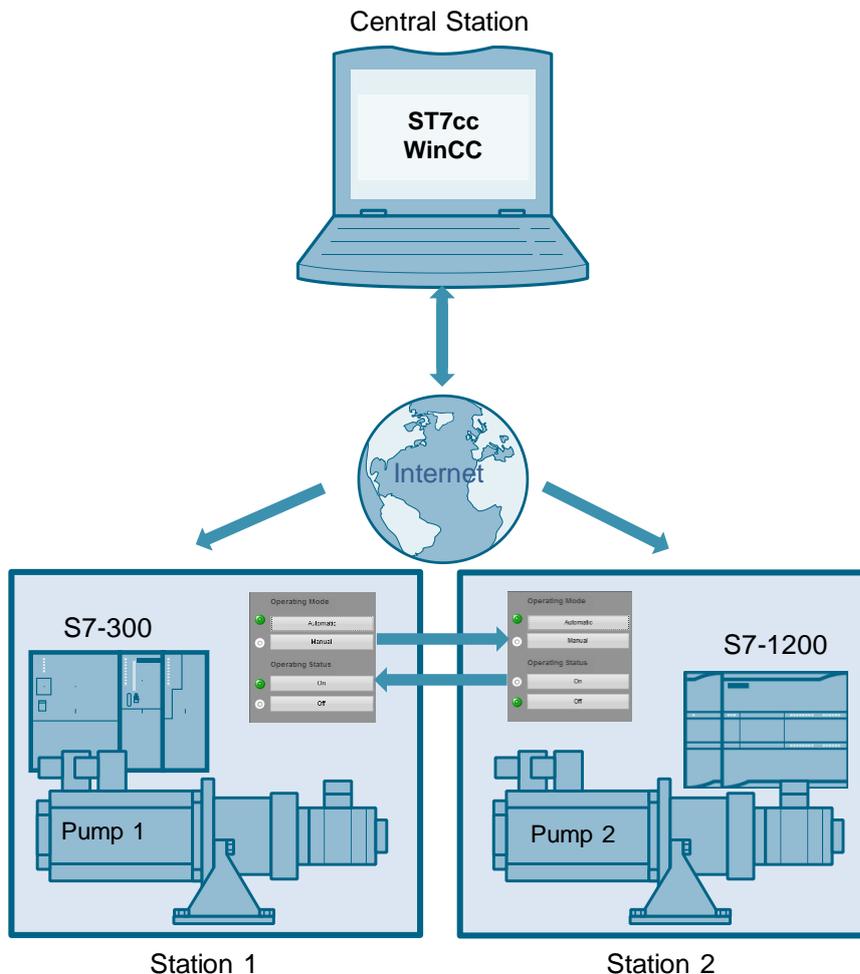
In this example, a waste water treatment plant consists of two substations, one S7-1200 station and one S7-300 station. Both stations shall communicate with each other as well as with a central station. On the central station PC, the SIMATIC NET PC software, the SINAUT ST7cc software, and the WinCC software has been installed.

For telecontrol communication, the ST7 protocol is used.

## Overview of the automation task

The figure below provides an overview of the automation task.

Figure 1-1



### Problem description

This application example should cover the following requirements:

- An S7-1200 station shall be integrated into existing SINAUT plants with SIMATIC S7-300:
  - configuring a CP proxy in STEP 7 V5.5
  - configuring the CP 1243-8 IRC in STEP 7 V13
  - ST7cc configuration
- The two remote stations (S7-300 and S7-1200) can send process tags to each other (cross-communication).
- The two remote stations (S7-300 and S7-1200) send important process tags “event-triggered” to the central station.
- The process tags are stored event triggered in an archive of the central station.
- The central station monitors the status of the connected remote stations.

The SINAUT central station and station 1 (S7-300) are interconnected via a cable-based Ethernet network.

Station 2 (S7-1200 with CP 1243-8 IRC) is connected with the central station via redundant paths:

- one path via cable based Ethernet network
- one path via dedicated line.

The simulated process shall be operated and controlled in the remote stations via WinCC.

### Note

For the dedicated line, data transmission is performed at a speed of 19200 bit/sec. This is much slower than the speed of Ethernet connections.

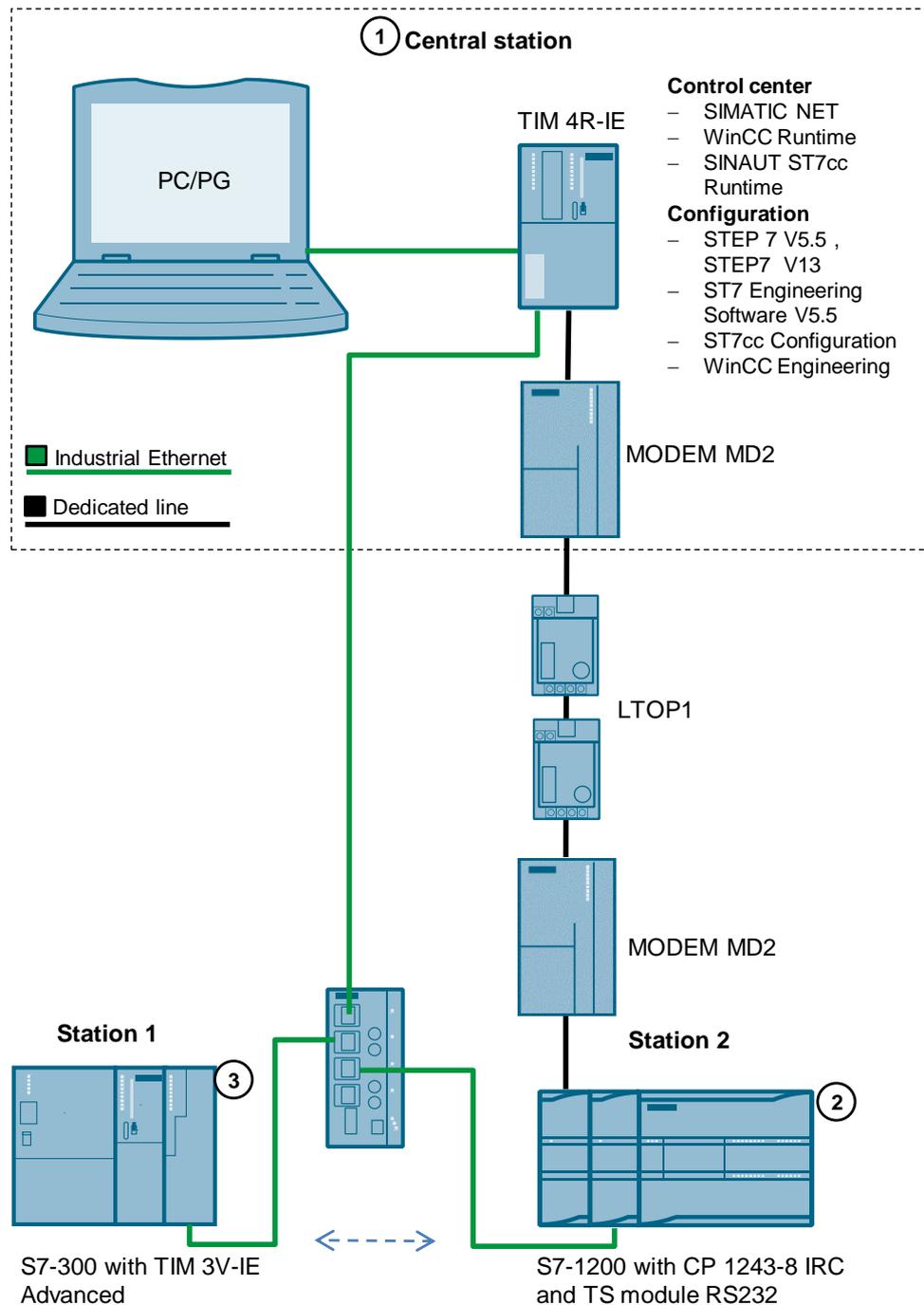
# 2 Solution

## 2.1 Overview

### Schematic layout

The figure below shows a schematic overview of the most important components of the solution:

Figure 2-1



## 2 Solution

### 2.1 Overview

Table 2-1

No.	Module	Explanation
1.	Central station	The central station consists of a PC/PG with integrated Ethernet interfaces. The PC is connected to the master TIM 4R-IE via one of the Ethernet interfaces. TIM 4R-IE uses the serial interface for the connection with dedicated line modem MD2.
2.	Remote station 2	Remote station 2 consists of an S7-1200 station (CPU 1217C) and a CP 1243-8 IRC. The CP uses the serial interface with TS module RS232 for the connection to dedicated line.
3.	Remote station 1	Remote station 1 consists of an S7-300 station (CPU 315-2 PN/DP) and a TIM 3V-IE Advanced.

#### Note

The PC in this example is engineering platform and control center in one. Apart from the STEP 7 and WinCC development environment, the WinCC and ST7cc Runtime environment with the ST7 connection to the S7 station hence also runs here simultaneously.

#### Advantages

The solution presented here offers the following advantages:

- Expansion of existing S7-300/400 SINAUT plants with S7-1200 stations via CP 1243-8 IRC.
- Integration of local automation and data transfer.  
Change-controlled process data transfer with the control center and between the individual stations.
- Supplying the archives in the control center system using the provided time stamps.
- Network wide clock synchronization (via the SINAUT networks).

#### Advantages of redundancy

- Increases operational safety.
- In the event of a failed Ethernet connection (primarily communication path) the data transmission is ensured via the dedicated line.

#### Delimitation

This application example does not contain a description of:

- SIMATIC NET Industrial Remote Communication (see [\3\](#))
- SIMATIC NET SINAUT ST7 (see [\4\](#))
- WinCC V7.3 (see [\5\](#))
- TeleControl CP 1243-8 IRC (see [\6\](#))
- SIMATIC NET TeleControl SINAUT ST7cc (see [\7\](#))

Basic knowledge of these topics is assumed.

## 2.2 Description of the core functionality

### Realized functions

Two parallel pumps that feed into a common pipeline shall be controlled and monitored from a central station. In addition, the stations shall exchange process data with each other:

- Cyclic switching of the operating state of the pumps in automatic mode.
- Automatic switching of a pump (automatic mode), when changing the operating state of the second pump (manual mode).

For cyclic switching, station 2 (S7-1200) becomes the master.

**Note** For a more detailed description of these functions, please refer to [chapter 3](#) and the following chapters.

## 2.3 Overview and description of the WinCC user interface

The visualization of the application example is performed with WinCC via the four configured screens “Overview”, “Communication”, “Archives”, and “Alarm”.

### “Overview” screen

The “Overview” screen displays the hardware setup of the application example and the connection status of both substations.

Figure 2-2

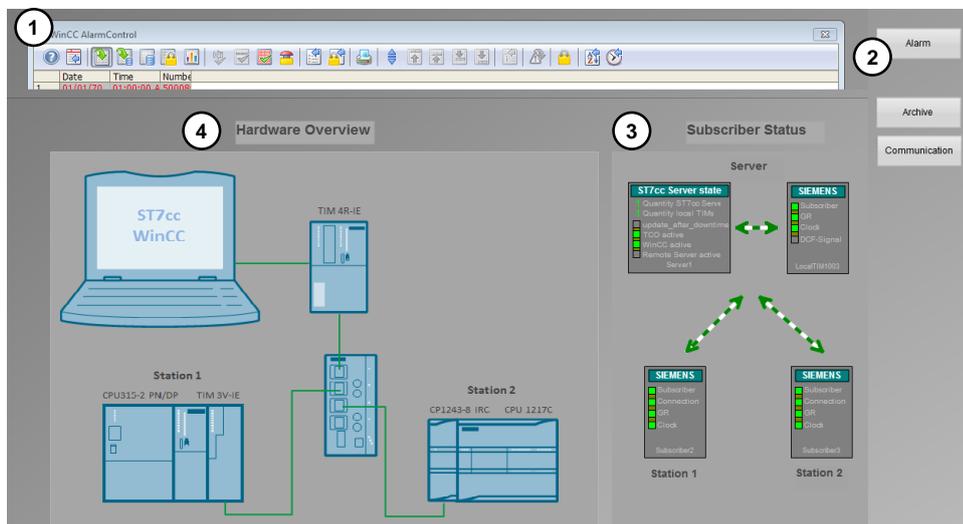


Table 2-2

No.	Element	Note
1.	“WinCC Alarm Control”	Display of the relevant messages
2.	Screen change	Clicking the buttons navigates to the respective screens.
3.	“Subscribers Status”	Connection status of both substations

## 2 Solution

### 2.3 Overview and description of the WinCC user interface

No.	Element	Note
4.	“Hardware Overview”	Hardware setup of the application example

#### “Communication” screen

The “Communication” screen shows the connection status of both substations. With this screen, two stations can be controlled and monitored.

Figure 2-3

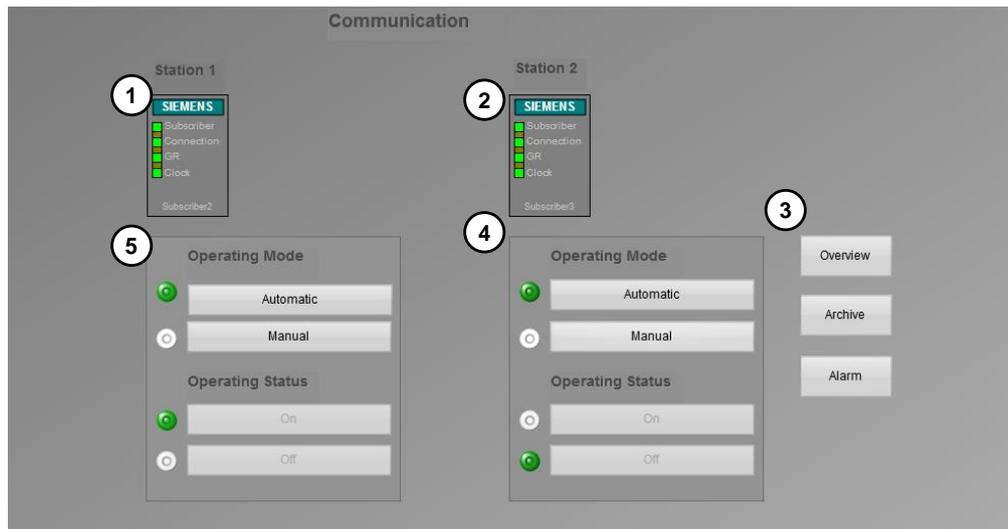


Table 2-3

No.	Element	Note
1.	“Station 1”	Connection status of station 1 (S7-300)
2.	“Station 2”	Connection status of station 2 (S7-1200)
3.	Screen change	Clicking the buttons navigates to the respective screens.
4.	“Operating Mode /Operating Status”	Operating mode and operating status of station 2
5.	“Operating Mode /Operating Status”	Operating mode and operating status of station 1

“Archive” screen

The process tags are stored in an archive. The “Archives” screen displays stored tags of the individual substations.

Figure 2-4

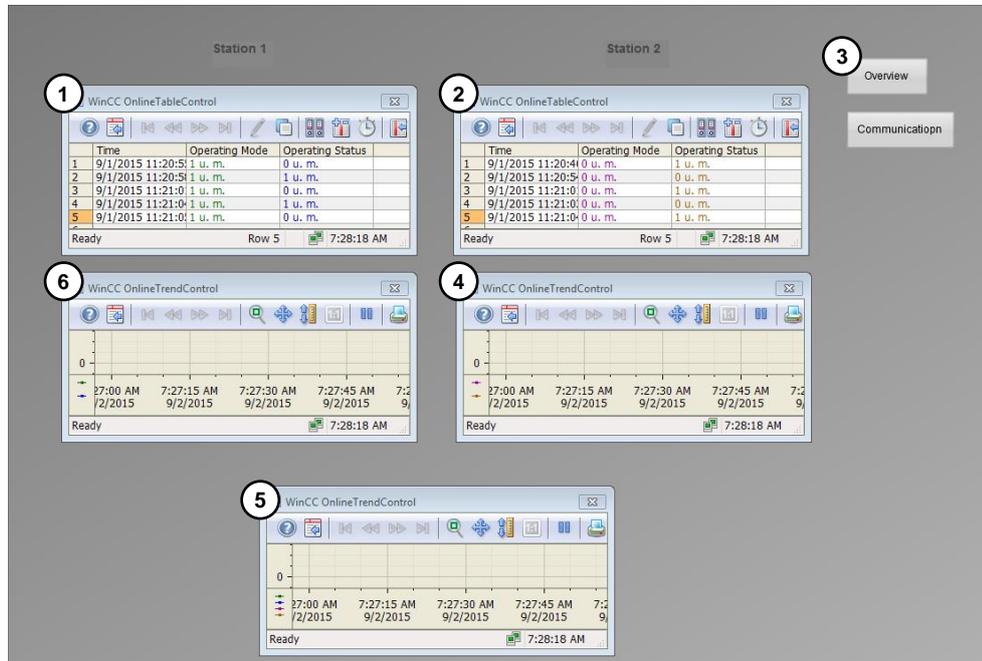


Table 2-4

No.	Element	Note
1.	“WinCC OnlineTableControl”	Table with the stored values “OperatingMode” and “OperatingStatus” of station 1 (S7-300)
2.	“WinCC OnlineTableControl”	Table with the stored values “OperatingMode” and “OperatingStatus” of station 2 (S7-1200)
3.	Screen change	Clicking the buttons navigates to the respective screens.
4.	“WinCC OnlineTrendControl”	Display of the trends of the stored values “OperatingMode” and “OperatingStatus” of station 1 (S7-300)
5.	“WinCC OnlineTrendControl”	Joint display of the trends of station 1 and station 2 (S7-1200)
6.	“WinCC OnlineTrendControl”	Display of the trends of the stored values “OperatingMode” and “OperatingStatus” of station 2 (S7-1200)

## 2 Solution

### 2.3 Overview and description of the WinCC user interface

#### “Alarm” screen

The “Alarm” screen displays all relevant messages.

Figure 2-5

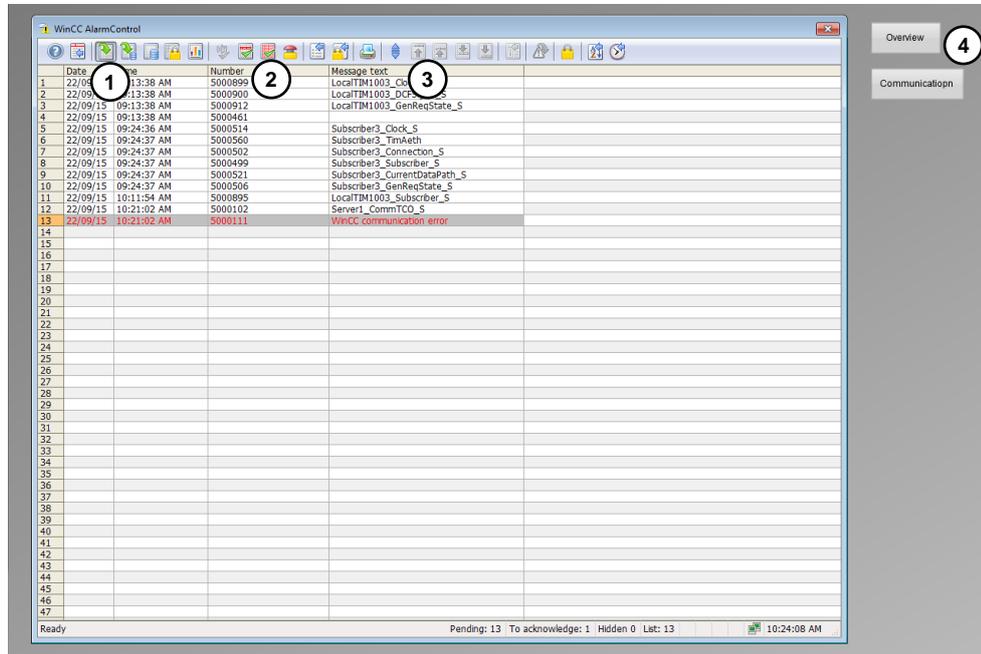


Table 2-5

No.	Element	Description
1.	“Date&Time”	Time stamp of the message
2.	Number	Message number (for more information, please refer to the WinCC Explorer Alarm Logging)
3.	Message text	Message description (for more information, please refer to the WinCC Explorer Alarm Logging)
4.	Screen change	Clicking the buttons navigates to the respective screens.

## 2.4 Hardware and software components

### 2.4.1 Validity

This application is valid for

- STEP 7 V5.5 SP4
- STEP 7 V13 SP1 Update 4
- STEP7 V13 SP1 Support Package 0111 for CP 1243-8 IRC
- SINAUT ENGINEERING SOFTWARE V5.5
- SINAUT ST7cc V3.1 + SP2 S
- SIMATIC WinCC 7.3
- S7-1200 as of V4.1

### 2.4.2 Components used

The application was created with the following components:

#### Hardware components

Table 2-6

Component	Qty	Article number	Note
CPU 1217C DC/DC/DC	1	6ES7217-1AG40-0XB0	Any S7-1200 CPU as of V4.1 can be used
CP 1243-8 IRC	1	6GK7243-8RX30-0XE0	
TS MODULE RS232	1	6ES7972-0MS00-0XA0	
CPU315-2 PN/DP	1	6ES7315-2EH14-0AB0	Any S7-300 CPU can be used
TIM 3V-IE Advanced	1	6NH7800-3CA00	A TIM 3V-IE can also be used
TIM 4R-IE	1	6NH7800-4BA00	
SCALANCE X204IRT	1	6GK5204-0BA00-2BA3	Any module can be used.
MODEM MD2	2	6NH7810-0AA20	Incl. connecting cable 6NH7700-2AR60
LTOP1	2	6NH9821-0BB00	Optional Only for protection against overvoltage in real setup.
Connecting cable	2	6NH7701-4AL	Connection TIM...Modem
PS307 5A	1	6ES7307-1EA00-0AA0	Power supply
Micro Memory Card	1	6ES7953-8LF11-0AA0	Memory card for the S7-300 CPU
SIMATIC memory card	1	6ES7954-8LF01-0AA0	Memory card for the S7-1200 CPU

**Software components**

Table 2-7

Component	Qty	Article number	Note
SINAUT ENGINEERING SOFTWARE V5.5	1	6NH7997-0CA55-0AA0	
SINAUT ST7cc V3.1 + SP2 S	1	6NH7997-7CA31-0AA1	License for max. 6 SINAUT stations
STEP 7 V5.5 SP4	1	6ES7810-4C.10-...	
SIMATIC WinCC 7.3	1	6AV63.1-....7-0...	
STEP 7 V13 SP1	1	6ES7822-1AA03-0YA5	
CP 1243-8 IRC: STEP7 V13 SP1 Support Package 0111	1	<a href="https://support.industry.siemens.com/cs/ww/en/view/72341852">https://support.industry.siemens.com/cs/ww/en/view/72341852</a>	

**Example files and projects**

The following list includes all files and projects that are used in this example.

Table 2-8

Component	Note
109479747_CP1243-8_DedicatedLine_CODE_V10.zip	This zip file includes: <ul style="list-style-type: none"> <li>STEP 7 V5.5 project and SINAUT ST7 project</li> <li>STEP 7 V13 project</li> <li>ST7cc project</li> <li>WinCC project</li> </ul>
109479747_CP1243-8_DedicatedLine_DOC_V10_en.pdf	This document.

## 3 Mode of Operation

Key points of this application example:

- Configuring an S7-1200 station for expanding the existing S7-300/400 SINAUT plants (see [chapter 4](#))
- Data exchange between an S7-1200 station and an S7-300 station (cross-communication) and between the stations and the central station.

### 3.1 General overview of the program for pump control

In the application example, the following functions are realized for simulating the pump control:

Table 3-1

Function	Description	Note										
<b>Station 1:</b> automatic mode  <b>Station 2:</b> automatic mode	<ul style="list-style-type: none"> <li>• As long as the operating modes of the two stations remain unchanged, the pumps will switch over automatically at 30-second intervals.</li> <li>• Always one pump at a time is in operating state "ON". The other pump is set to "OFF".</li> </ul> For cyclic switching, station 2 (S7-1200) becomes the master.	In automatic mode, the pumps cannot be operated manually.										
<b>Station 1:</b> manual mode  <b>Station 2:</b> automatic mode  or  <b>Station 1:</b> automatic mode  <b>Station 2:</b> manual mode	The pump of one station needs to first be manually switched "ON" / "OFF" in order for the pump of the other station to be automatically switched "OFF" / "ON".	When one pump is set to "manual" mode, automatic switchover at 30-second intervals is not possible.										
<b>Station 1:</b> manual mode  <b>Station 2:</b> manual mode	For the pumps in station 1 and 2 any "ON" and "OFF" combination is possible: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Pump of station 1</th> <th>Pump of station 2</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>ON</td> </tr> <tr> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>ON</td> <td>OFF</td> </tr> <tr> <td>OFF</td> <td>ON</td> </tr> </tbody> </table>	Pump of station 1	Pump of station 2	ON	ON	OFF	OFF	ON	OFF	OFF	ON	
Pump of station 1	Pump of station 2											
ON	ON											
OFF	OFF											
ON	OFF											
OFF	ON											

Both stations exchange this information permanently via cross-communication.

### 3 Mode of Operation

#### 3.1 General overview of the program for pump control

Figure 3-1 Simulation of the pump control

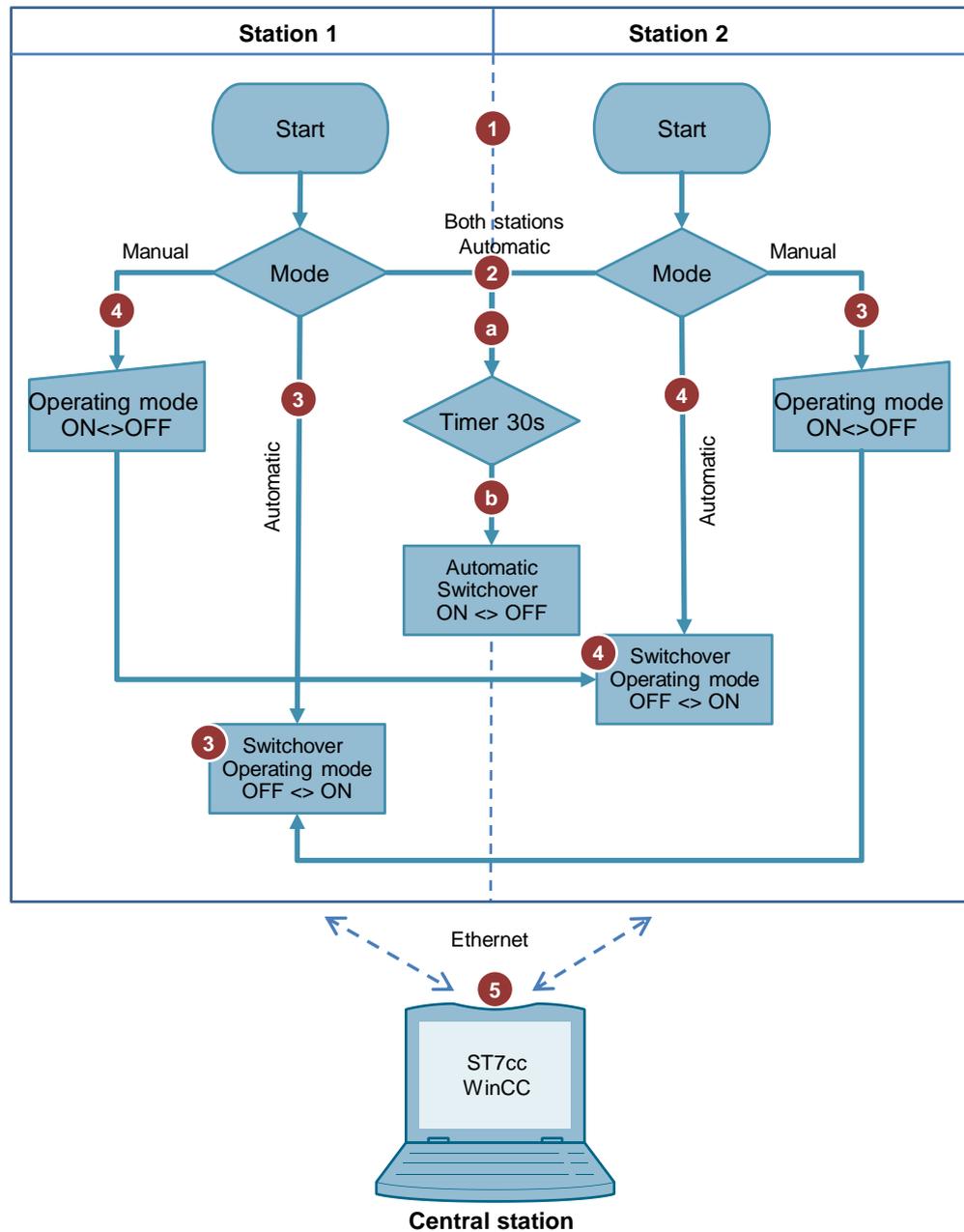


Table 3-2

No.	Station 1	Station 2
1.	ST7cc Runtime and WinCC have been started. The controller of the stations can be started.	
2.	When starting the example system for the first time, the two stations are in "automatic" mode, and the pump in station 2 (S7-1200) is set to "ON". <ul style="list-style-type: none"> <li>As long as the operating modes of the two stations remain unchanged, the pumps will switchover automatically at 30-second intervals.</li> <li>The pump in station 2 (S7-1200) will be set to "OFF" and the pump in station 1 (S7-300) will be set to "ON".</li> </ul> In automatic mode, the pumps cannot be operated manually.	

### 3 Mode of Operation

#### 3.1 General overview of the program for pump control

No.	Station 1	Station 2
3.	If the pump of station 1 (S7-300) is active and the pump of station 2 (S7-1200) turned "ON" / "OFF" manually, the pump of station 1 (S7-300) will be automatically switched "OFF" / "ON".	
4.	If the pump of station 2 (S7-1200) is active and the pump of station 1 (S7-300) turned "ON" / "OFF" manually, the pump of station 2 (S7-1200) will be switched "OFF" / "ON" automatically.	
5.	Any data is stored in the central station and displayed in WinCC.	

#### Program overview station 1/ station 2

The program structure for both stations is identical. The figure below shows the most important elements.

Figure 3-2

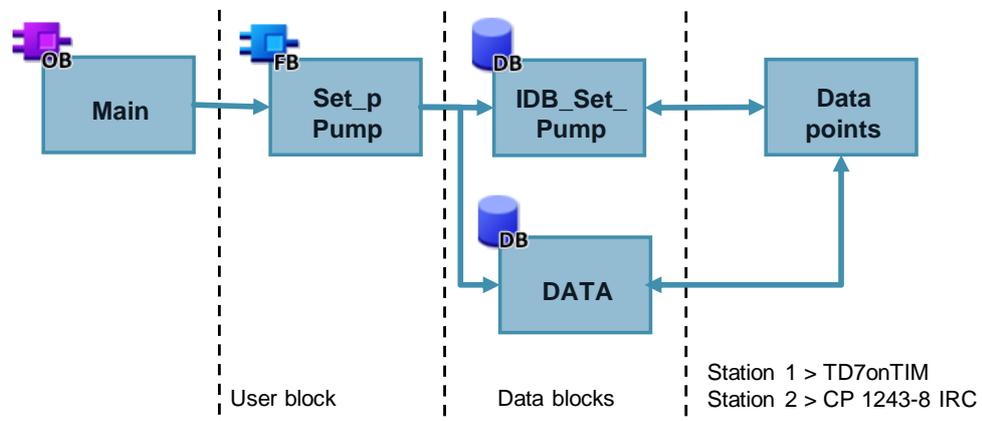


Table 3-3

Element	Symbolic name	Description
OB1	Main	Cyclic OB: Calling the user program
FB2 / FB1	Set_Pump	FB "Set_Pump" contains the described functions (chapter 3.1) fully implemented already.
DB2	IDB_Set_Pump	Instance data block of the user block
DB1	Data	Global data block for saving the data
Data points		Configured data points for the data exchange between both stations or between a station and the central station (see <a href="#">Table 4-5</a> and <a href="#">Table 4-9</a> )

### 3 Mode of Operation

#### 3.1 General overview of the program for pump control

##### Global data block "Data" (DB1)

DB "Data" contains send data and receive data to/from the partner station. The structure of the global data block is identical for both stations.

Figure 3-3 Station 1\_Global\_data\_block

Address	Name	Type	Initial value
0.0		STRUCT	
+0.0	OperatingStatus	INT	0
+2.0	OperatingMode	BOOL	FALSE
+4.0	PartnerOpStatus	INT	0
+6.0	PartnerOpMode	BOOL	FALSE
+6.1	OperatingModeOB1	BOOL	FALSE
+6.2	OperatingStatusOB1	BOOL	FALSE
+6.3	DoneOB1	BOOL	FALSE
+6.4	BusyOB1	BOOL	FALSE
+6.5	ErrorOB1	BOOL	FALSE
+8.0	StatusOB1	DWORD	DW#16#0
=12.0		END_STRUCT	

Figure 3-4 Station 2\_Global\_data\_block

Data				
		Name	Data type	Start val...
1		▼ Static		
2		■ OperatingStatus	Int	0
3		■ OperatingMode	Bool	false
4		■ PartnerOpStatus	Int	0
5		■ PartnerOpMode	Bool	false
6		■ partnerStatus	Bool	false
7		■ TimerOB1	Time	T#30s
8		■ OperatingModeOB1	Bool	false
9		■ OperatingStatusOB1	Bool	false
10		■ DoneOB1	Bool	false
11		■ BusyOB1	Bool	false
12		■ ErrorOB1	Bool	false
13		■ StatusOB1	DWord	16#0

### 3 Mode of Operation

#### 3.1 General overview of the program for pump control

Table 3-4

Name	Data type	Description
OperatingStatus	INT	Operating state of the station "1": switched off "2": switched on This tag is not a monitoring tag. It is only used by FB "Set_Pump".
OperatingMode	BOOL	Operating mode of the station False: automatic True : manual
PartnerOpStatus	INT	Operating state of the partner station "1": switched off "2": switched on This tag is not a monitoring tag. It is only used by user block FB "Set_Pump".
PartnerOpMode	BOOL	Operating mode of the partner station False: automatic True : manual
partnerStatus	BOOL	Operating state of the partner station False: automatic True : manual This tag is only relevant for station 2; it is not a monitoring tag. It is only used by FB "Set_Pump".
TimerOB1	TIME	These tags are used for calling FB "Set_Pump" in OB1
OperatingModeOB1	BOOL	
OperatingStatusOB1	BOOL	
DoneOB1	BOOL	
BusyOB1	BOOL	
ErrorOB1	BOOL	
StatusOB1	DWORD	

### 3.2 Functionality of station 1 (S7-300)

#### 3.2.1 Program details for FB "Set\_Pump" (FB2)

The following figure and table show the call interface of user block FB "Set\_Pump" (FB2).

Figure 3-5

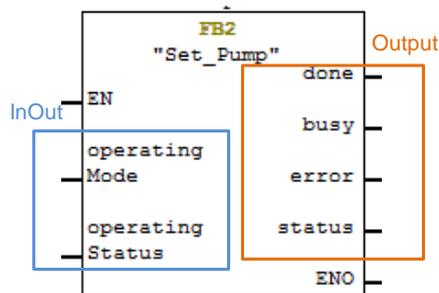


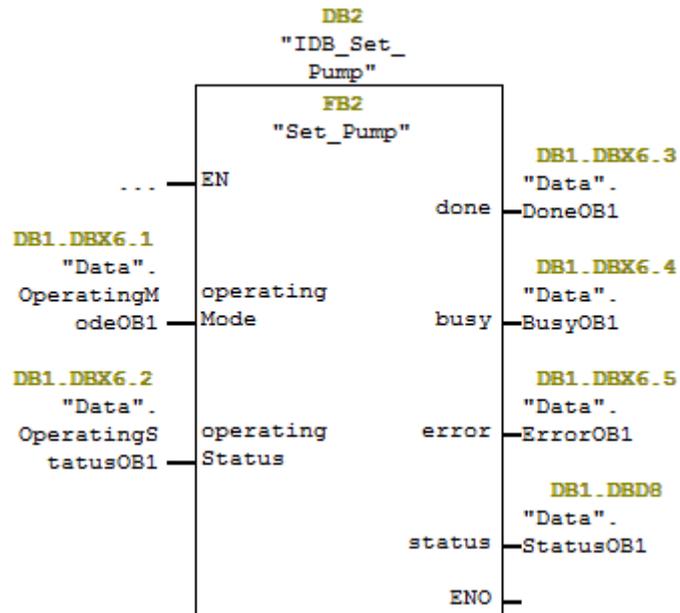
Table 3-5

Name	Data type	Description
operatingMode	BOOL	Operating mode of the station False: automatic True : manual
operatingStatus	BOOL	Operating state of the station False: off True : on
done	BOOL	Indicates whether job processing was performed without any errors. Only pending for one CPU cycle.
busy	BOOL	Displayed job processing for the block True: block active False: block passive
error	BOOL	An error has occurred while processing the block. Only pending for one CPU cycle.
status	DWORD	Display of error number. Only pending for one CPU cycle.

3.2.2 Calling FB "Set\_Pump" (FB2) in OB1

FB "Set\_Pump" (FB2) is called cyclically in OB1. The figure below shows the call. The input and output parameters are stored in global data block "Data".

Figure 3-6



### 3.3 Functionality of station 2 (S7-1200)

#### 3.2.1 Program details for FB "Set\_Pump" (FB1)

The following figure and table show the call interface of user block FB "Set\_Pump" (FB1).

Figure 3-7

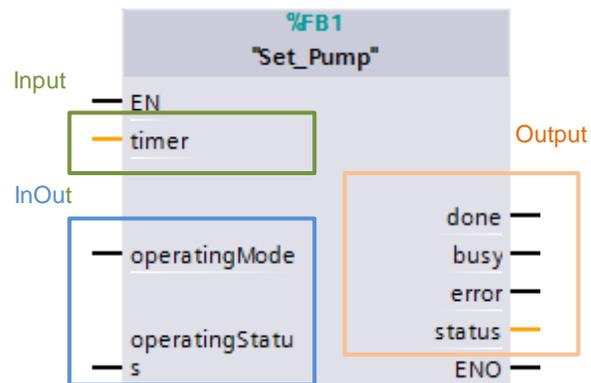


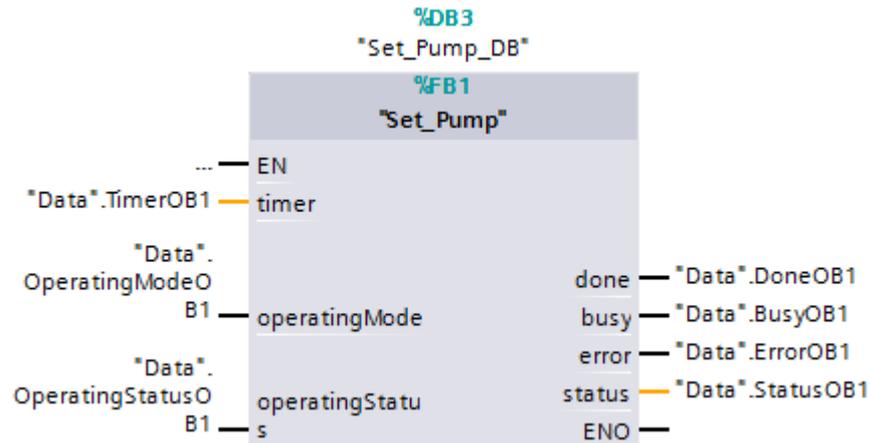
Table 3-6

Name	Data type	Description
timer	TIME	Time interval for automatic switchover of the operating status of the stations
operatingMode	BOOL	Operating mode of the station False: automatic True : manual
operatingStatus	BOOL	Operating state of the station False: off True : on
done	BOOL	Indicates whether job processing was performed without any errors. Only pending for one CPU cycle.
busy	BOOL	Displayed job processing for the block True: block active False: block passive
error	BOOL	An error has occurred while processing the block. Only pending for one CPU cycle.
status	DWORD	Display of error number. Only pending for one CPU cycle.

### 3.3.1 Calling FB “Set\_Pump” (FB1) in OB1

FB “Set\_Pump” (FB1) is called cyclically in OB1. The figure below shows the call. The input and output parameters are stored in global data block “Data”.

Figure 3-8



## 3.4 Error and status display

For error diagnostics, the FB “Set\_Pump” function block has a STATUS output. The following table shows the error messages of the function block.

Table 3-7

STATUS	Description	Remedy
16#00008101	There is no connection to the partner station.	Check the connection between both stations.
16#00008102	There is no connection to the central station.	<ul style="list-style-type: none"> <li>Check the connection between the station and the central station.</li> <li>Start ST7cc Runtime.</li> </ul>
16#00008103	There is no connection to partner station and central station.	<ul style="list-style-type: none"> <li>Check the connection between both stations and between the stations and the central station.</li> <li>Start ST7cc Runtime.</li> </ul>

# 4 Configuration and Settings

## 4.1 Overview

**Note** The configuration and settings are ready implemented in the project. This chapter is for information purposes only.

Since SINAUT ST7 is currently not yet completely supported in TIA Portal, the following two engineering tools are required for configuring CP 1243-8 IRC:

- STEP 7 V5.5 and SINAUT engineering software V5.5 and
- STEP7 V13 SP1 Support Package 0111.

Perform the configuration successively in the following configuration tools.

**Note** Handling the configuration tools is not discussed in this documentation. Basic knowledge of these tools is assumed.

Figure 4-1

### STEP 7 V5.5

- Configuring the S7-300 station
- Configuring a CP proxy (PROXY CP 1243-8 IRC) for the S7-1200 station
- Configuring the central station (St7cc)
- Configuring the dedicated line

### SINAUT ST7 Engineering Tool

- Configuring the SINAUT connections
- Configuring the subscriber administration
- Exporting the configuration data for CP 1243-8 IRC

### STEP 7 V13

- Configuring the S7-1200 station
- Importing the configuration data (of SINAUT ST7) for CP 1243-8 IRC
- Create data points

### SINAUT ST7cc

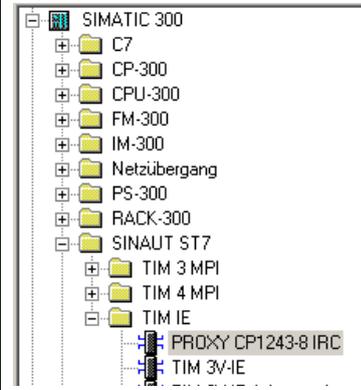
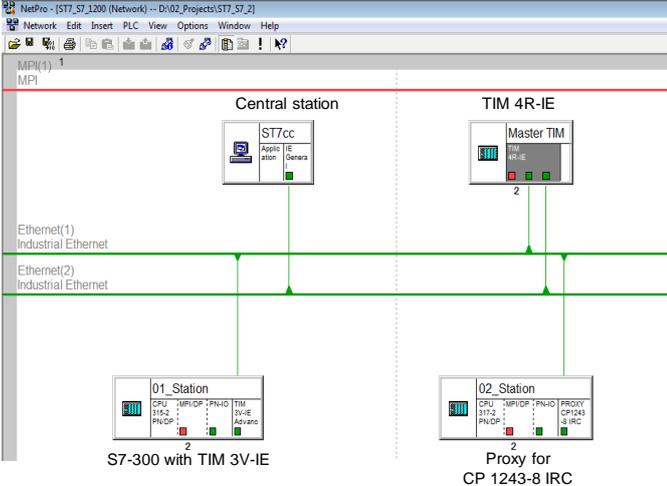
- Integrating ST7cc into SINAUT network
- Create ST7cc project
- Configuring the data with ST7cc Config
- Generating the WinCC configuration for ST7cc tags and their processing

## 4.2 Configuration in STEP 7 V5.5

In STEP 7 V5.5, all of the stations as well as the S7 connections are configured. In addition, a proxy for the CP (PROXY CP1243-8 IRC) is configured in an S7-300 station.

### 4.2.1 Configuring the stations

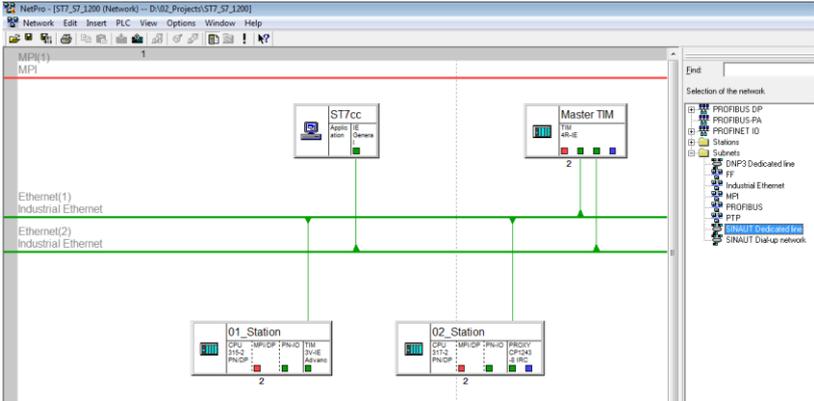
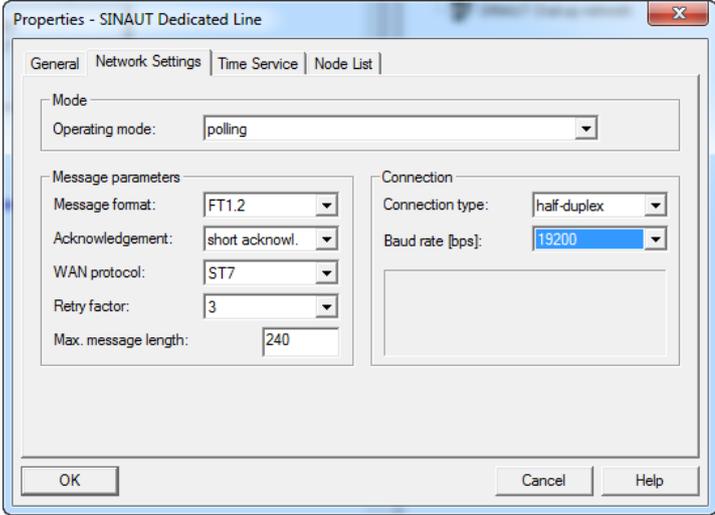
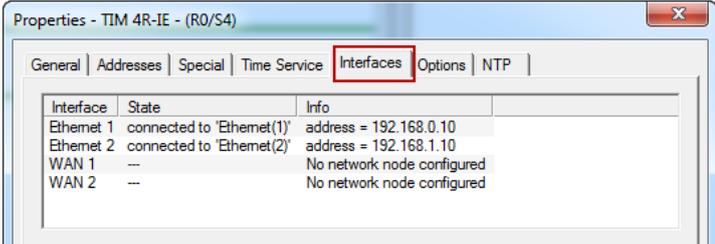
Table 4-1

No.	Action	
1.	In the SIMATIC Manager, you create a STEP 7 project and add an S7-300 station.	
2.	Open HW Config and add any S7-300 controller with TIM 3V-IE Advanced.	
3.	Add any second S7-300 station.	
4.	In the second station, you enter the "proxy" as a representative for the CP. You find the module in the catalog of HW Config under the name "PROXY CP1243-8 IRC". Configure the proxy like TIM 3V-IE Advanced.	
5.	In the SIMATIC Manager you enter a SIMATIC PC station.	
6.	Specify the hardware configuration of the PC station: Slot 1: Application Slot 4: CP Industrial Ethernet (IE General).	
7.	Add a master TIM 4R-IE to your network configuration.	
8.	Open NetPro. Add two new Ethernet networks and assign the desired IP addresses to the modules.	

**4.2.2 Configuring of the dedicated line**

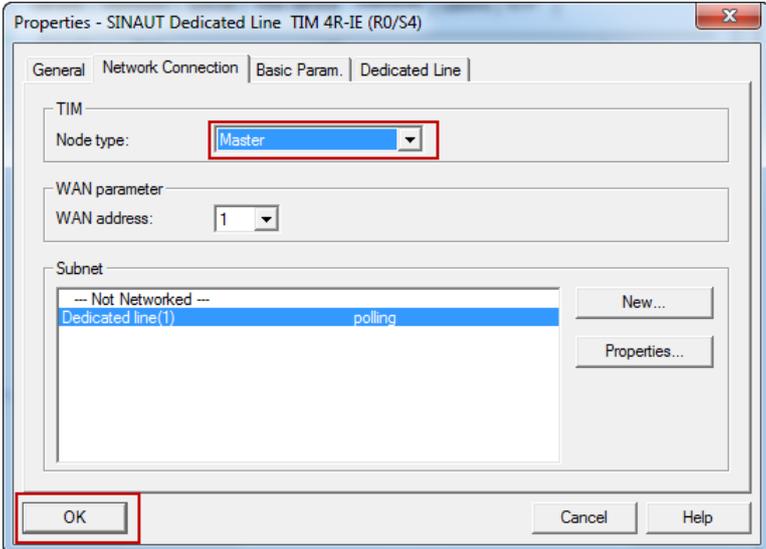
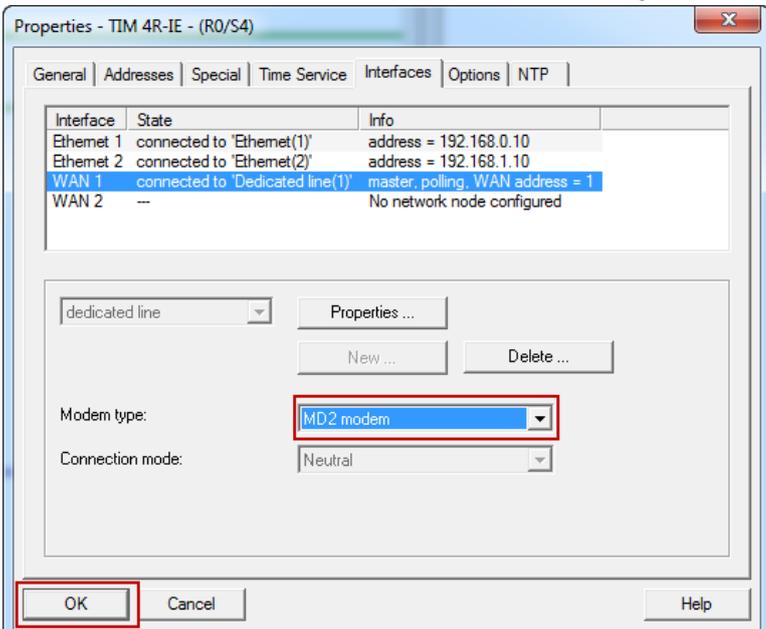
To prevent data loss in the event of a failed Ethernet connection (primary communication) between the stations, the dedicated line is configured as secondary communication.

Table 4-2

No.	Action
1.	<p>Open NetPro and add a new dedicated line by double clicking on “SINAUT Dedicated line” in Subnets.</p> 
2.	<p>Double click on the newly created dedicated line to open the Properties dialog for this dedicated line.</p>
3.	<p>Set the baud rate to 19200 bps for this application example.</p> 
4.	<p>Click OK to confirm your settings.</p>
5.	<p>Open the Properties of TIM 4R-IE by double clicking on the TIM, and go to the Interfaces tab.</p> 

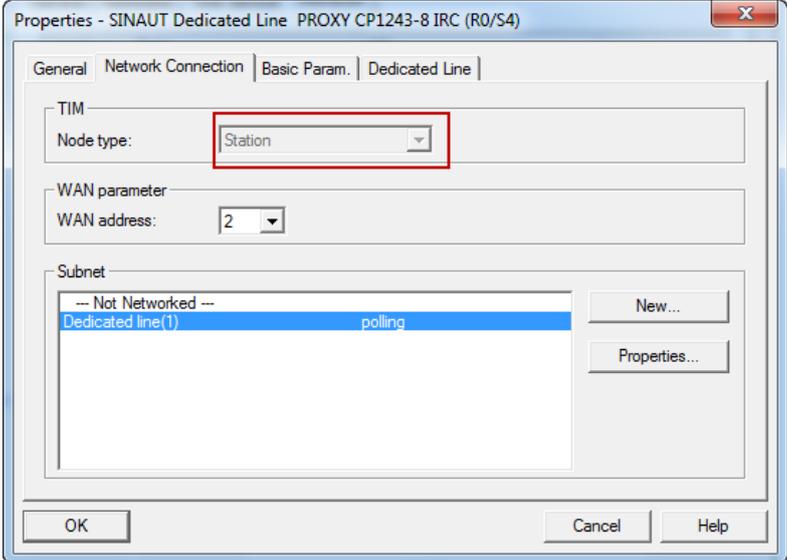
## 4 Configuration and Settings

### 4.2 Configuration in STEP 7 V5.5

No.	Action
6.	Select the interface WAN 1.
7.	Click on "New" to create the network node, then click on the "Properties" button to specify the parameters.
8.	Select the dedicated line you have created beforehand.
9.	<p>Select "Master" in the node type field and click on OK to confirm your settings.</p> 
10.	<p>Select the MD2 modem, then click on OK to close this dialog.</p> 

## 4 Configuration and Settings

### 4.2 Configuration in STEP 7 V5.5

No.	Action
11.	<p>Repeat this procedure for PROXY CP1243-8 IRC (as of step 5). In step 9, you define station 2 as Station.</p> 
12.	<p>Subsequently, you save and compile the project in NetPro to enable access to the configured data from the other STEP 7 and SINAUT applications.</p>

**Note** The time of day synchronization for each station must be configured in STEP 7 V5.5.

**Note** The physical settings of the modem are set via DIL switch at the module (see [chapter 5.1.1](#)). These settings need to match the configuration in NETPRO. A detailed description of the DIL switch is available in [/9/](#).

## 4.3 Configuration with the SINAUT ST7 configuration tool

The SINAUT ST7 configuration software represents the user interface for the configuration of SINAUT telecontrol systems. Using this software helps the user install and configure the telecontrol components into a STEP 7 project.

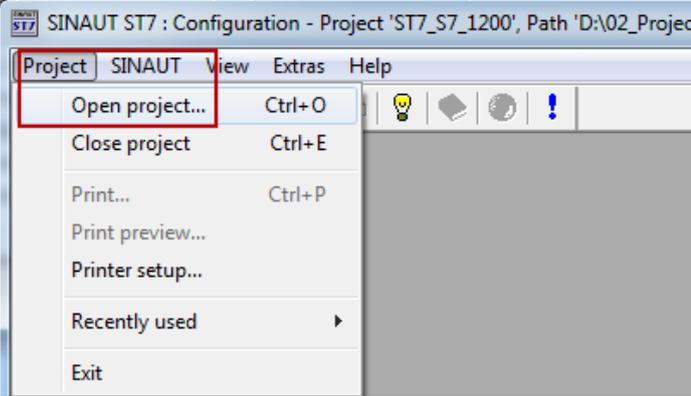
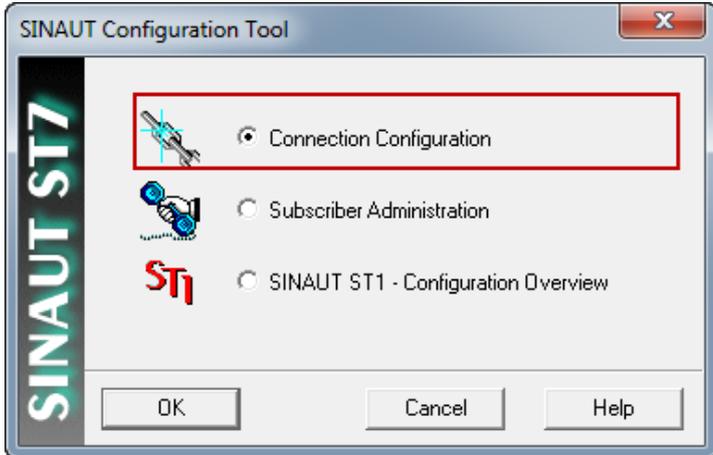
Apart from this, the SINAUT ST7 software makes the following configuration possible

- SINAUT networks and WAN network nodes,
- SINAUT TIM modules and
- SINAUT connections.

Before starting with the configuration, you need to import the PC station (see [chapter 5.4.1](#)).

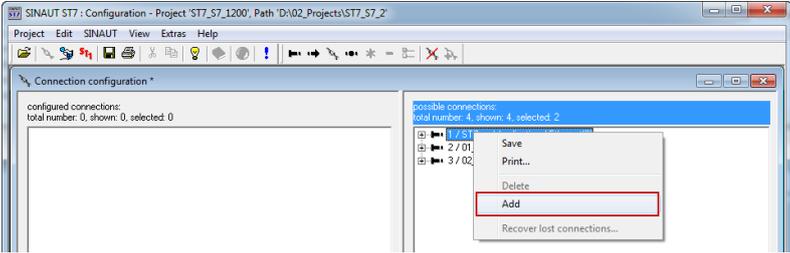
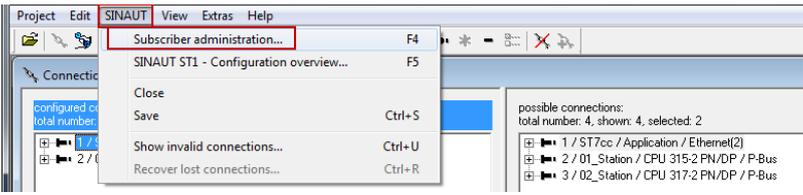
### 4.3.1 Configuration of the SINAUT connections

Table 4-3

No.	Action
13.	Start the SINAUT ST7 configuration tool. "Start > Siemens automation > SIMATIC > SINAUT ST7 > Configuration"
14.	Open the STEP 7 project created in <a href="#">chapter 4.2</a> . 
15.	Select Connection Configuration and click on the OK button to start. 

## 4 Configuration and Settings

### 4.3 Configuration with the SINAUT ST7 configuration tool

No.	Action
16.	<p>All possible connections are listed in the right-hand window pane. Select the desired connections via right mouse button -&gt; "Add":</p>  <ul style="list-style-type: none"><li>• Connection to the SINAUT ST7cc control center (Ethernet and dedicated line).</li><li>• Connection between both stations (Ethernet and dedicated line).</li></ul> <p>Adopt only the desired connections.</p>
17.	<p>Save the configuration. Save the configuration in NetPro again.</p>
18.	<p>Go to "Subscriber Administration".</p> 

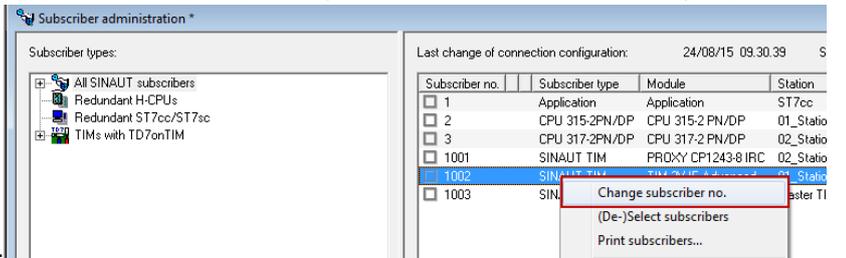
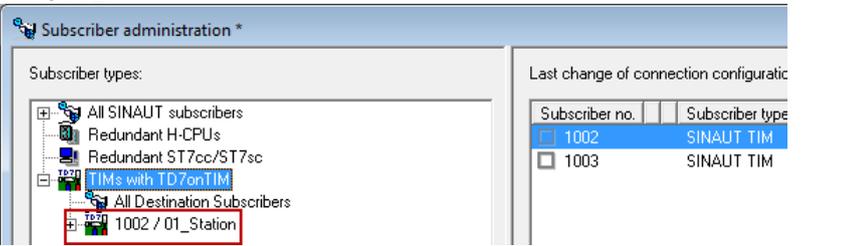
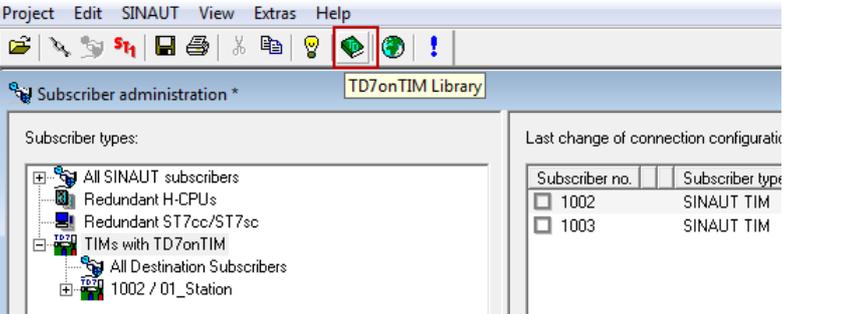
**4.3.2 Configuration of the TIMs with TD7onTIM**

The SINAUT communication of CPU modules with each other, or of CPU modules with a control center is realized with the help of TIM modules. The organization of the SINAUT communication is handled by the SINAUT TD7 software package. In SINAUT station S7-300, the TD7 software is configured on the TIM.

**Note**

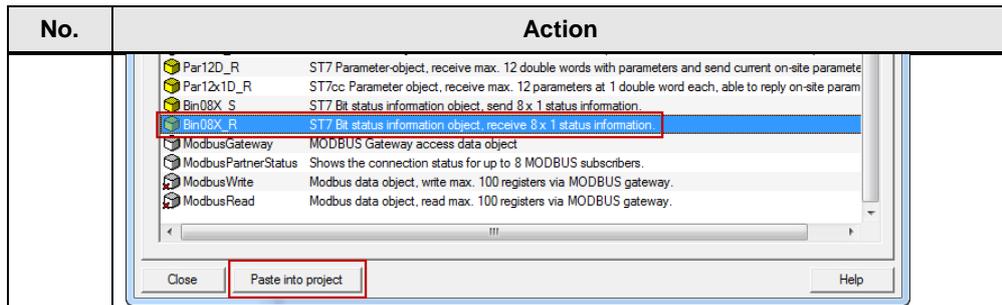
This configuration is not required for the proxy module of CP 1243-8 IRC. The configuration data for CP 1243-8 IRC is imported into STEP 7 V13 via a text file (see [chapter 4.4](#)).

Table 4-4

No.	Action
1.	<p>All SINAUT subscribers (CPUs, TIMs, CP 1243-8 IRC, SINAUT ST7cc PC) are listed. You can enter any not yet assigned subscriber number according to your desires.</p> 
2.	<p>In Subscriber Administration, the TD7onTIM stations are configured. Select the TIM 3V-IE.</p> 
3.	<p>Click on the TD7onTIM library icon.</p>  <p>A window with the TD7onTIM Library opens. Select the object you wish to configure (Bin08X_R) and click on "Paste into Project".</p>

## 4 Configuration and Settings

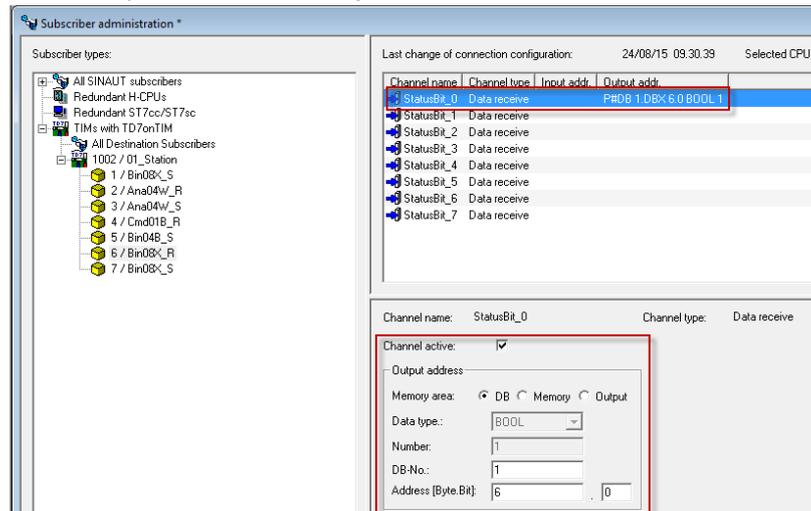
### 4.3 Configuration with the SINAUT ST7 configuration tool



Click the Close button to close the library.

4.

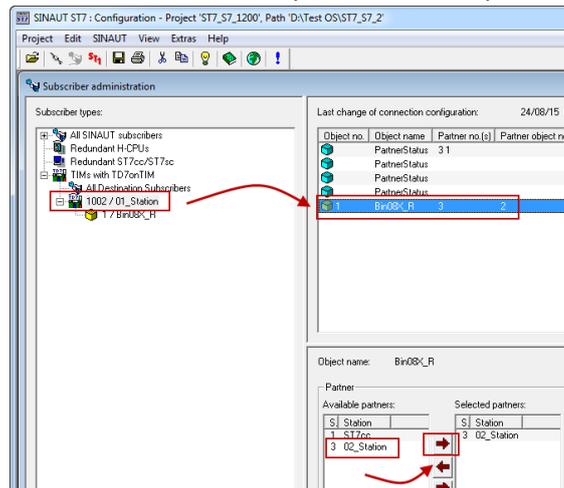
Define the parameters for the objects.



If you select the DB as memory area, you need to create a data block with the required tags in the S7-300 CPU.

5.

Select the communication partner for the respective data object.

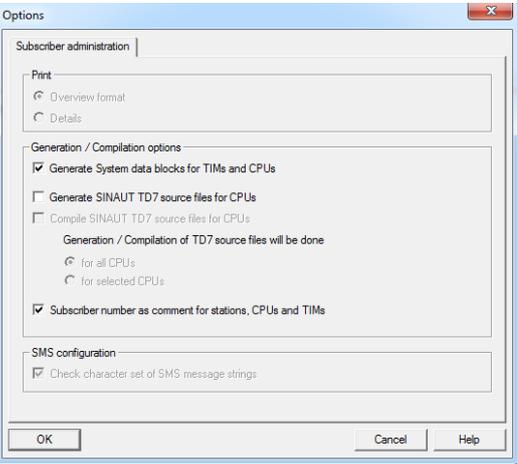
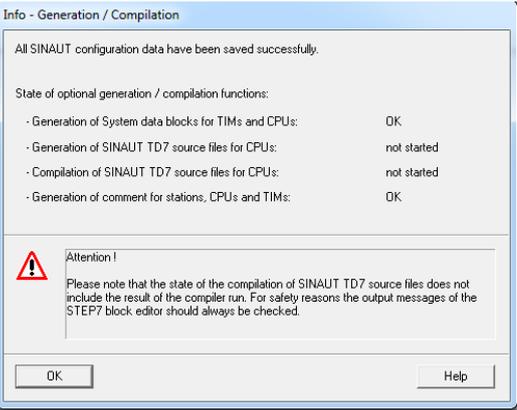


Note:

All partners must be added to the “Selected partners” list from which the data of the object shall be received or sent to. If no partner is adopted in the “Selected partners” list, the object will not be processed.

## 4 Configuration and Settings

### 4.3 Configuration with the SINAUT ST7 configuration tool

No.	Action
6.	<p>Enter your own source object number and the partner object number.</p>  <p>The configuration tool specifies a value with continuous numbering that can be changed. Inconsistent double assignment of numbers is blocked.</p> <p><b>Note:</b> In these input fields, the data object is assigned to the respective partner object of the selected communication partner. For objects from/to ST7CC/SC, the partner object number is always 0.</p>
7.	<p>Then save and compile your project.</p>
8.	<p>Confirm the security prompt with OK, leave the options settings unchanged and click the OK button.</p> 
9.	<p>The SDBs are generated anew and saved in the STEP 7 project.</p>  <p>If no errors have occurred, close the program again.</p>
10.	<p>Load the configuration into the TIM 3V-IE:</p> <ul style="list-style-type: none"> <li>• Open the SIMATIC Manager</li> <li>• Select the “Blocks” folder TIM-3V-IE of the S7-300 station</li> <li>• Load the system data into the TIM 3V-IE.</li> </ul> <p>Then load the S7-300 station.</p>

## 4 Configuration and Settings

### 4.3 Configuration with the SINAUT ST7 configuration tool

#### Configured SINAUT objects

The transmission and receipt of process data is configured with the help of standardized data objects. The following table describes the SINAUT objects configured for this example.

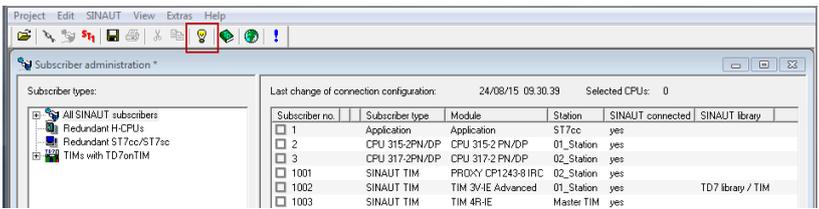
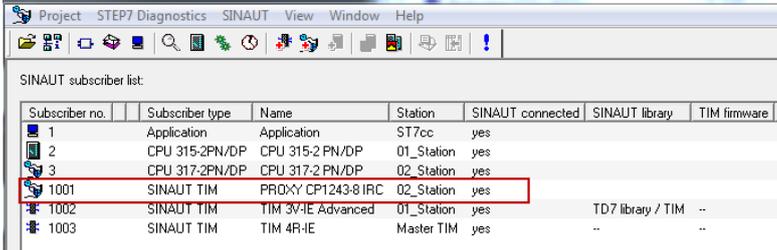
Table 4-5

Object	object number	Partner Object	Explanation
Bin08X_S	1	1_ Bin08X_R	Sending the operating mode to S7-1200
Ana04W_R	2	3_ Ana04W_S	Receiving partner operating status
Ana04W_S	3	4_ Ana04W_R	Sending operating status to S7-1200
Cmd01B_R	4	0_Cmd01B_R	Receiving command from the ST7cc
Bin04B_S	5	0_ Bin04B_S	Sending the operating mode to St7cc
Bin08X_R	6	2_ Bin08X_S	Receiving partner operating mode
Bin08X_S	7	7_ Bin08X_R	Sending operating status to S7-1200

#### 4.3.3 Exporting configuration data

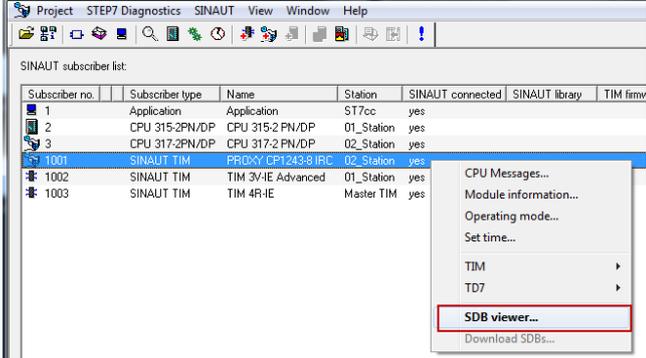
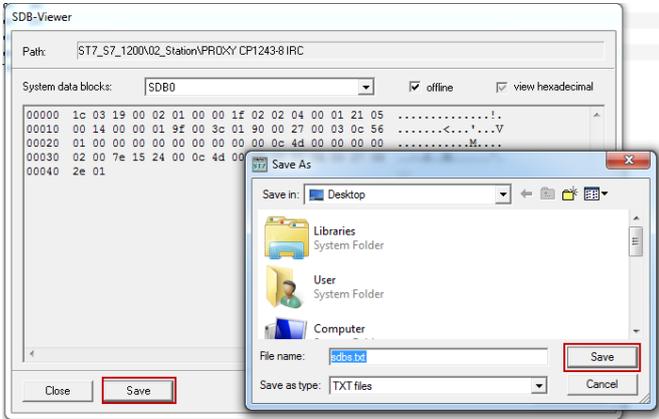
After completing the configuration of the proxy in STEP 7 V5.5 and in the SINAUT configuration tool, the specific configuration data for the telecontrol communication of the proxy as well as for the TIM modules is stored in the system blocks (SDBs).

Table 4-6

No.	Action
1.	<p>In the SINAUT ST7 configuration tool you open the SINAUT diagnostics and service tool.</p> 
2.	<p>Select the proxy.</p> 

## 4 Configuration and Settings

### 4.3 Configuration with the SINAUT ST7 configuration tool

No.	Action																																																	
3.	<p>Right click to open the “SINAUT &gt; SDB viewer” menu.</p>  <p>The screenshot shows the 'SINAUT subscriber list' window with a table of subscribers. A right-click context menu is open over the selected subscriber '1001'. The 'SDB viewer...' option is highlighted with a red box.</p> <table border="1"><thead><tr><th>Subscriber no.</th><th>Subscriber type</th><th>Name</th><th>Station</th><th>SINAUT connected</th><th>SINAUT library</th><th>TIM firmw</th></tr></thead><tbody><tr><td>1</td><td>Application</td><td>Application</td><td>ST7cc</td><td>yes</td><td></td><td></td></tr><tr><td>2</td><td>CPU 315-2PN/DP</td><td>CPU 315-2 PN/DP</td><td>01_Station</td><td>yes</td><td></td><td></td></tr><tr><td>3</td><td>CPU 317-2PN/DP</td><td>CPU 317-2 PN/DP</td><td>02_Station</td><td>yes</td><td></td><td></td></tr><tr><td>1001</td><td>SINAUT TIM</td><td>PROXY CP1243-8 IRC</td><td>02_Station</td><td>yes</td><td></td><td></td></tr><tr><td>1002</td><td>SINAUT TIM</td><td>TIM 3V-IE Advanced</td><td>01_Station</td><td>yes</td><td></td><td></td></tr><tr><td>1003</td><td>SINAUT TIM</td><td>TIM 4R-IE</td><td>Master TIM</td><td>yes</td><td></td><td></td></tr></tbody></table>	Subscriber no.	Subscriber type	Name	Station	SINAUT connected	SINAUT library	TIM firmw	1	Application	Application	ST7cc	yes			2	CPU 315-2PN/DP	CPU 315-2 PN/DP	01_Station	yes			3	CPU 317-2PN/DP	CPU 317-2 PN/DP	02_Station	yes			1001	SINAUT TIM	PROXY CP1243-8 IRC	02_Station	yes			1002	SINAUT TIM	TIM 3V-IE Advanced	01_Station	yes			1003	SINAUT TIM	TIM 4R-IE	Master TIM	yes		
Subscriber no.	Subscriber type	Name	Station	SINAUT connected	SINAUT library	TIM firmw																																												
1	Application	Application	ST7cc	yes																																														
2	CPU 315-2PN/DP	CPU 315-2 PN/DP	01_Station	yes																																														
3	CPU 317-2PN/DP	CPU 317-2 PN/DP	02_Station	yes																																														
1001	SINAUT TIM	PROXY CP1243-8 IRC	02_Station	yes																																														
1002	SINAUT TIM	TIM 3V-IE Advanced	01_Station	yes																																														
1003	SINAUT TIM	TIM 4R-IE	Master TIM	yes																																														
4.	<p>Save the file.</p>  <p>The screenshot shows the 'SDB-Viewer' window displaying system data blocks. A 'Save As' dialog box is open, showing the file name 'sdb.txt' and the 'Save' button highlighted with a red box.</p> <p>Close the dialog.</p>																																																	

## 4.4 Configuring in STEP 7 V13

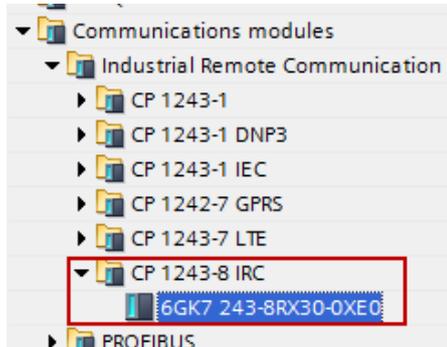
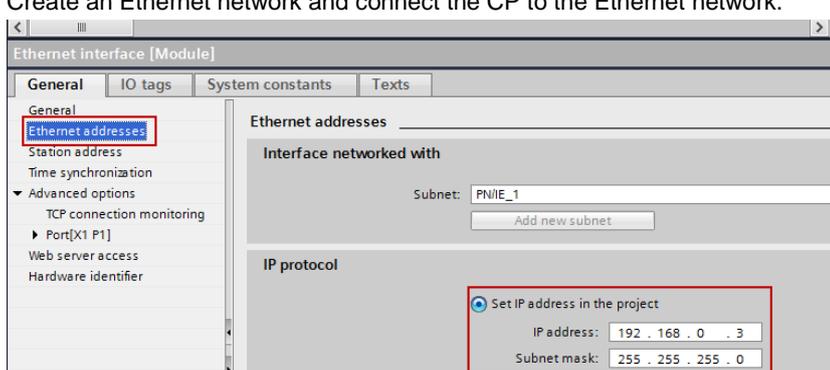
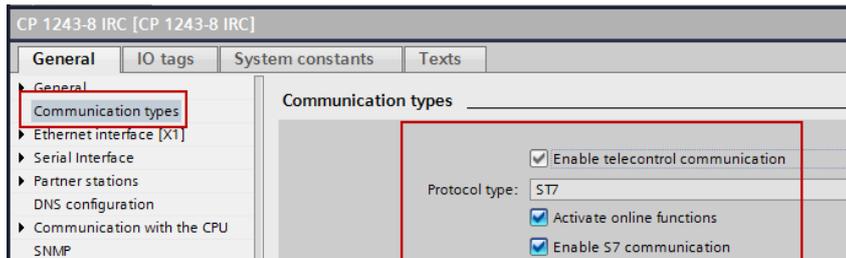
In STEP 7 V13, the S7-1200 station is configured:

- import the configuration data
- configuring the data points of the CP 1243-8 IRC.

Prerequisite for the complete configuration of the CP in STEP 7 V13 is the configuration in STEP 7 V5.5 (see [chapter 4.2](#)) and the configuration with the SINAUT ST7 configuration tool (see [chapter 4.3](#))

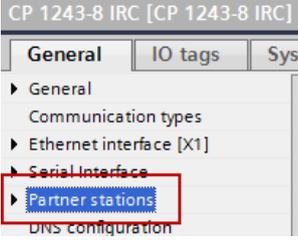
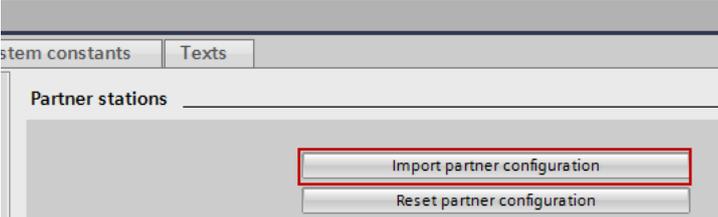
### 4.4.1 Configuring the parameters of CP 1243-8 IRC

Table 4-7

No.	Action
1.	Create a STEP 7 V13 project.
2.	Add the S7-1200 CPU (as of V4.1) for the SIMATIC station.
3.	Add the CP 1243-8 into the station. 
4.	Create an Ethernet network and connect the CP to the Ethernet network. 
5.	Enable the telecontrol and S7 communication: “Properties > Communication types” 

## 4 Configuration and Settings

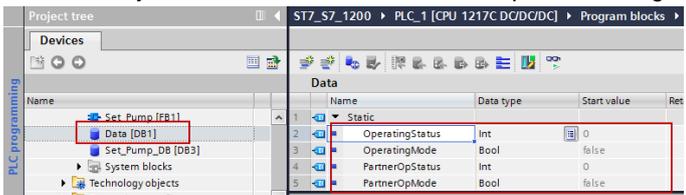
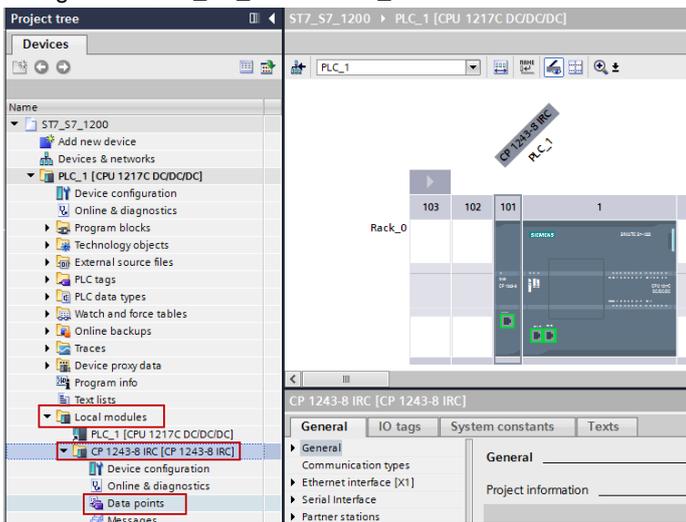
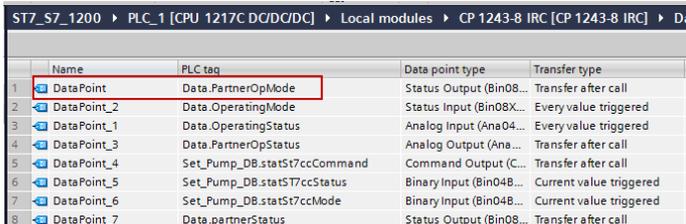
### 4.4 Configuring in STEP 7 V13

No.	Action
6.	<p>For the CP, you import the configuration data from the STEP 7 V5 project via the text file:</p> <ul style="list-style-type: none"><li>• In your STEP 7 V13 project you select CP 1243-8 IRC.</li><li>• Select the parameter group “Partner stations”.</li></ul>  <ul style="list-style-type: none"><li>• Click on the “Import partner configuration” button.</li></ul>  <ul style="list-style-type: none"><li>• From the file system of the engineering station, you select the text file you exported from the CP proxy of the SINAUT ST7 project (see <a href="#">chapter 4.3.3</a>).</li></ul>
7.	<p>Enable the security functions.</p> <p>Create a user for the security functions. “Properties &gt; Security &gt; Security properties”</p>
8.	<p>Load the project data into the station.</p> <p>Note: When loading the station, the project data of the station is stored on the CPU, including the configuration data of the CP.</p>

4.4.2 Configuring the data points of CP 1243-8 IRC

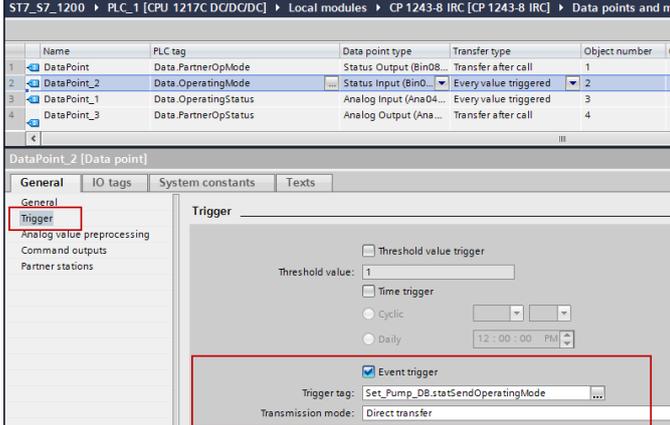
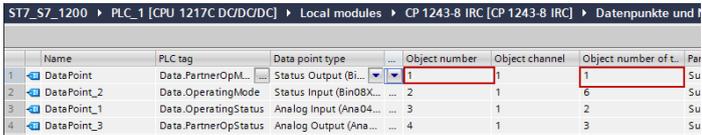
The transmission of user data between the S7-1200 CPU and your communication partner does not require the programming of program blocks for the CP. The data areas in the memory of the CPU intended for the communication with the partner, are configured data-point-related in the CP. Any data point is linked to a PLC tag or a data block in the CPU here.

Table 4-8

No.	Action
1.	<p>In the CPU, you create a data block with the required PLC tags for the data points.</p> 
2.	<p>In STEP 7 you open the editor for data point configuration and message configuration ST7_S7_1200 &gt; PLC_1 &gt; Local modules &gt; CP 1243-8 IRC.</p> 
3.	<p>Create the data points of the CP.</p> 
4.	<p>For each data type you select the transmission type.</p> <p><b>“Transfer after call”</b></p> <p>The respective most current value of the data point is only entered into the picture memory of the CP. New values of a data point overwrite the last saved value in the picture memory.</p>

## 4 Configuration and Settings

### 4.4 Configuring in STEP 7 V13

No.	Action
	<p><b>“Every value triggered”</b> The data point is configured as event. Each value change is entered into the send buffer in chronological order.</p> <p><b>“Current value triggered”:</b> The data point is configured as event. Only the respectively last current value is entered into the send buffer. There, it overwrites the previously stored value.</p>
5.	<p>For each data type you configure the trigger conditions.</p> 
6.	<p>Assign the data object to the respective partner object.</p> 
7.	<p>Select the communication partner for the respective data object.</p> 
8.	Save and load the changes.

## Configured data types

Table 4-9

Object	object number	Partner Object	Explanation
Bin08X_R	1	1_Bin08X_S	Receiving the partner operating mode
Bin08X_S	2	6_Bin08X_R	Sending the operating mode to S7-300
Ana04W_S	3	2_Ana04W_R	Sending the operating status to S7-300
Ana04W_R	4	3_Ana04W_S	Receiving partner operating status
Cmd01B_R	5	0_Cmd01B_R	Receiving a command from the ST7cc
Bin04B_S	6	6_Bin04B_S	Sending the operating status to St7cc
Bin04B_S	6	6_Bin04B_S	Sending the operating mode to St7cc
Bin08X_R	7	7_Bin08X_S	Receiving the status of the S7-1200 station

## 4.5 Configuration of ST7cc

SINAUT ST7cc is the ideal control center system for SINAUT ST7 based on SIMATIC WinCC. It is specifically adjusted to the event-controlled and time-stamped data transmission of the SINAUT system.

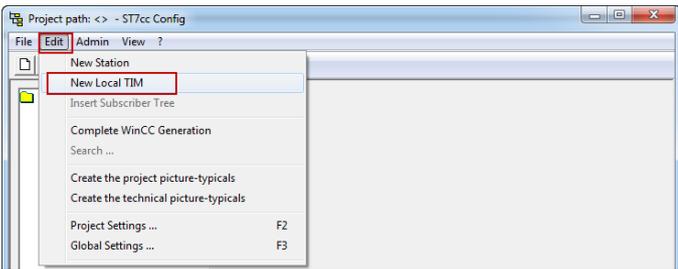
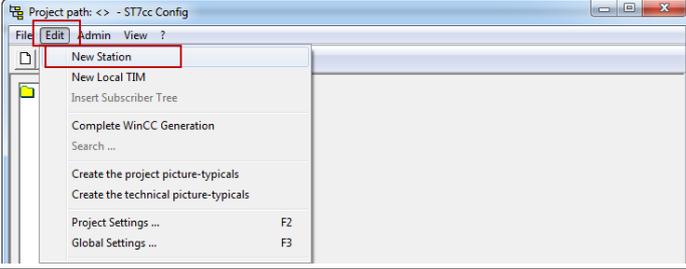
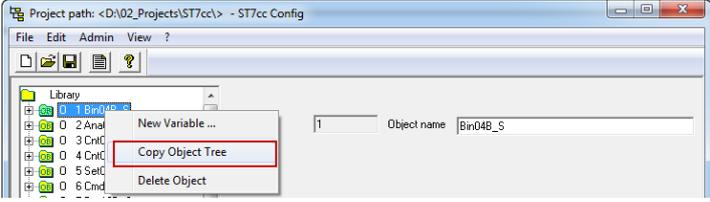
In combination with the WinCC redundancy package, a highly available ST7cc control center can be realized.

SINAUT ST7cc provides the following benefits to the user:

- Connecting SINAUT stations to SIMATIC WinCC via classic, serial WAN or via Ethernet-based WAN
- Entering messages, analog values, and count values into WinCC archives using the event times supplied by the SINAUT stations
- Time saving and cost reduction due to simple configuration without detailed knowledge of SINAUT

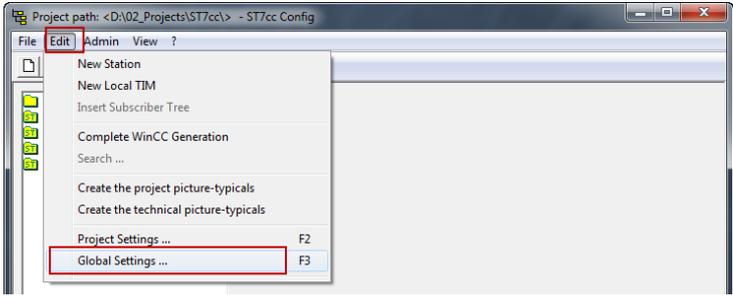
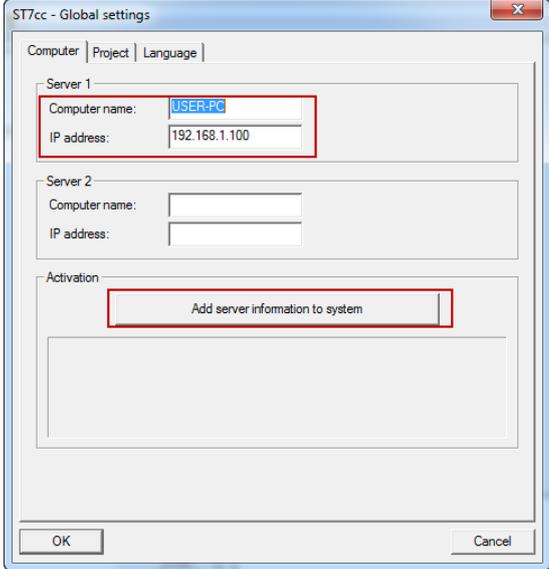
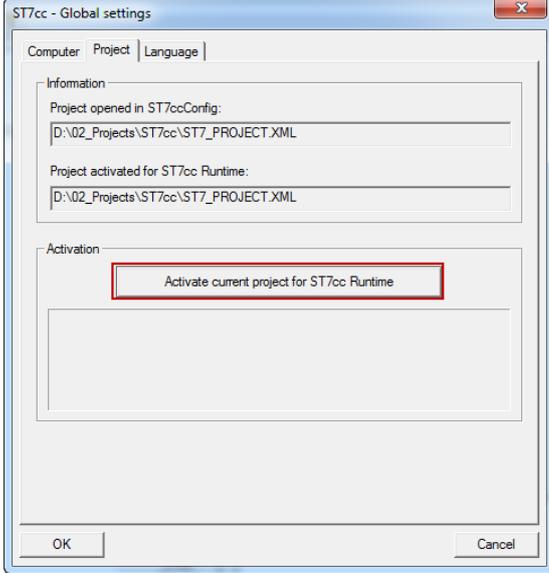
The table below lists the steps necessary for configuring the St7cc.

Table 4-10

No.	Action
1.	Open the SINAUT ST7cc Config.
2.	Add a local TIM for the St7cc PC. “Edit > New local TIM”  Enter the SINAUT subscriber number of the TIM.
3.	Add the stations with their subscriber number. “Edit > New Station” 
4.	Add the desired objects by copying them from the library. Configure the objects as desired. 
5.	Open the global settings.

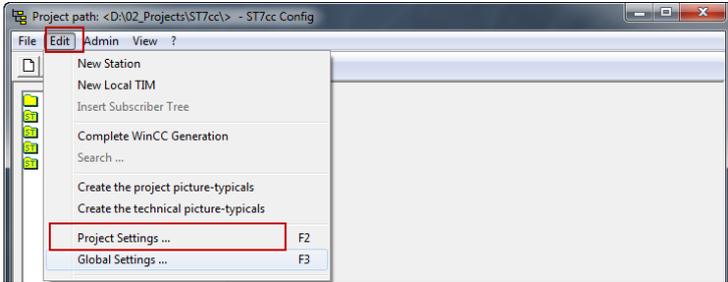
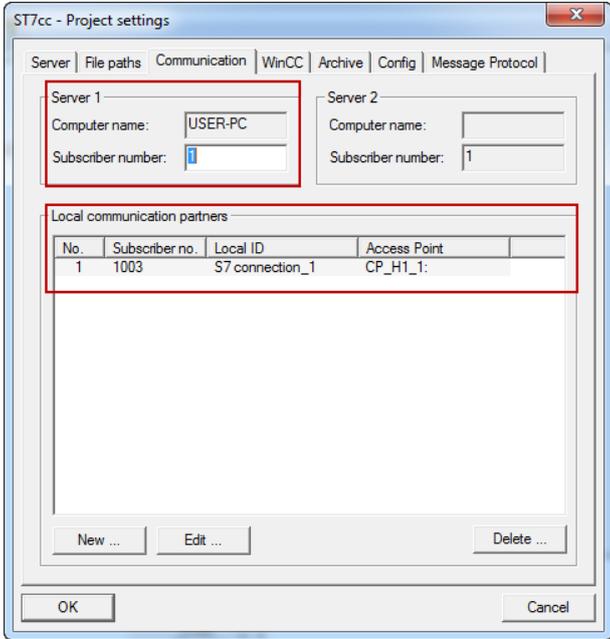
## 4 Configuration and Settings

### 4.5 Configuration of ST7cc

No.	Action
	<p data-bbox="507 309 762 338">"Edit &gt; Global Settings".</p>  <p data-bbox="497 667 1358 723">In the "Computer" tab, you enter the name and IP address of the ST7cc PC, and enter the server settings in System.</p> 
6.	<p data-bbox="497 1312 1134 1346">Go to the "Project" tab and activate it for the St7cc Runtime.</p> 

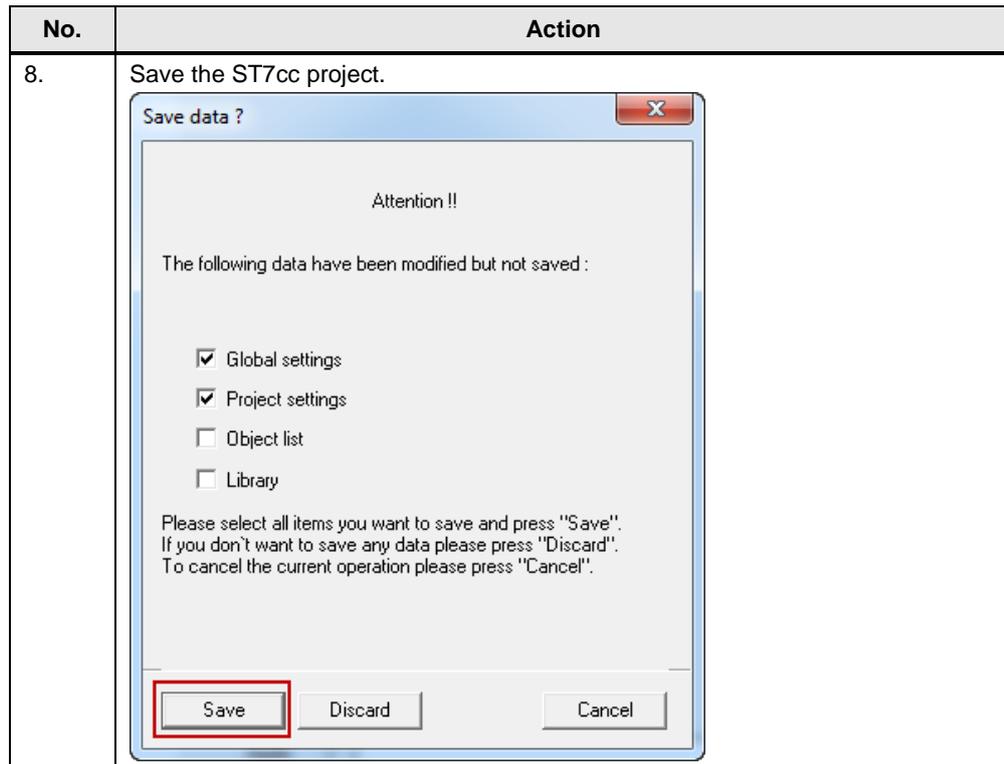
## 4 Configuration and Settings

### 4.5 Configuration of ST7cc

No.	Action																								
7.	<p>Open the project settings mask.            “Edit &gt; Project Settings”.</p>  <p>Go to the “Communication” tab.</p> <p>Enter the subscriber number of the ST7cc PC.            Then, click on “New” and enter the subscriber number of the local TIM and the local ID for the connection between TIM and ST7cc PC.</p>  <p>Click on OK to confirm the settings.</p> <p><b>Note:</b>            The local ID is available in NetPro. Click on the PC-Station and then on Application. The ID is displayed in the bottom window.</p> <table border="1" data-bbox="497 1684 1353 1765"> <thead> <tr> <th>Local ID</th> <th>Partner ID</th> <th>Partner</th> <th>Type</th> <th>Active connection</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>01_Station / TIM 3V-IE Advanced</td> <td>S7 connection</td> <td>Yes</td> <td>Ethernet(1) [IE]</td> </tr> <tr> <td>2</td> <td>2</td> <td>02_Station / PROXY CP1243-8 IRC</td> <td>S7 connection</td> <td>Yes</td> <td>Ethernet(1) [IE]</td> </tr> <tr> <td>3</td> <td>S7 connection_1</td> <td>ST7cc / Application</td> <td>S7 connection</td> <td>No</td> <td>Ethernet(2) [IE]</td> </tr> </tbody> </table> <p>The access point must be created in the PG/PG station settings and assigned to the Ethernet adapter used:            &gt; "Adaptername".TCP.</p>	Local ID	Partner ID	Partner	Type	Active connection	Subnet	1	2	01_Station / TIM 3V-IE Advanced	S7 connection	Yes	Ethernet(1) [IE]	2	2	02_Station / PROXY CP1243-8 IRC	S7 connection	Yes	Ethernet(1) [IE]	3	S7 connection_1	ST7cc / Application	S7 connection	No	Ethernet(2) [IE]
Local ID	Partner ID	Partner	Type	Active connection	Subnet																				
1	2	01_Station / TIM 3V-IE Advanced	S7 connection	Yes	Ethernet(1) [IE]																				
2	2	02_Station / PROXY CP1243-8 IRC	S7 connection	Yes	Ethernet(1) [IE]																				
3	S7 connection_1	ST7cc / Application	S7 connection	No	Ethernet(2) [IE]																				

## 4 Configuration and Settings

### 4.5 Configuration of ST7cc



### Configured ST7cc objects

Table 4-11

Object	object number	Partner	Explanation
Cmd01B_R	4	Station 1 (subscriber 2)	Setting/ resetting OperatingMode and OperatingStatus of station 1
Bin04B_S	5	Station 1 (Subscriber 2)	Receiving OperatingMode and OperatingStatus of station 1
Cmd01B_R	5	Station 2 (Subscriber 3)	Setting/ resetting OperatingMode and OperatingStatus of station 2
Bin04B_S	6	Station 2 (Subscriber 3)	Receiving OperatingMode and OperatingStatus of station 2

## 4.6 WinCC generation

The parameters of processes executed in WinCC are transferred to the WinCC target component via the ODK interface. St7cc Config supports the following generation options:

- WinCC generation:
  - WinCC tag management
  - WinCC messages
  - WinCC archive tags
- Generating the subscriber picture typicals.

### Requirements for the generation

Prior to generating tags, messages, or archives, please ensure that the following requirements have been met:

- The project in which you wish to generate is set as current WinCC project in configuration mode (must not be in runtime mode).
- The standard language of the project is activated.
- The channel DLL for the ST7 server (ST7.DLL) is declared in the project.
- The messages classes and messages types for system tags and user tags are created in WinCC.
- The user archives are created in WinCC.

At the first generation sequence, St7cc Config logs in at all WinCC components. Logout is only performed when closing the generation dialog.

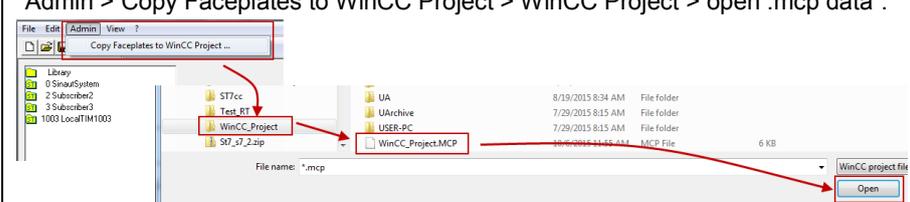
### Note

More information on working with WinCC is available in manual “WinCC 7.3: Working with WinCC” (see [8](#))

### WinCC generation

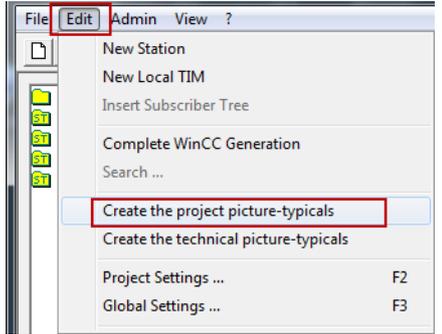
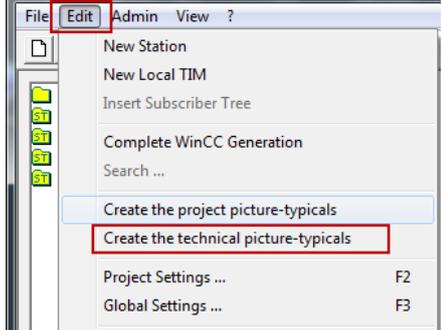
The following table shows how all of the required configuration data of ST7cc is transferred in WinCC.

Table 4-12

No.	Action
1.	Open the SINAUT ST7cc Config.
2.	Open your ST7cc project (see <a href="#">Table 4-10</a> ).
3.	Insert the picture typicals and the faceplates into process pictures: “Admin > Copy Faceplates to WinCC Project > WinCC Project > open .mcp data”. 

## 4 Configuration and Settings

### 4.6 WinCC generation

No.	Action
4.	<p>Insert the subscriber picture typicals into a process picture: "EDIT &gt; create the Project picture-typicals".</p>  <p>The screenshot shows the WinCC software interface with the 'Edit' menu item highlighted in red. The 'Edit' menu is open, and the option 'Create the project picture-typicals' is highlighted with a red box. Other menu items include 'New Station', 'New Local TIM', 'Insert Subscriber Tree', 'Complete WinCC Generation', 'Search ...', 'Project Settings ...' (F2), and 'Global Settings ...' (F3).</p>
5.	<p>Insert the technical picture typicals into a process picture: "Edit &gt; create the technical picture-typicals".</p>  <p>The screenshot shows the WinCC software interface with the 'Edit' menu item highlighted in red. The 'Edit' menu is open, and the option 'Create the technical picture-typicals' is highlighted with a red box. Other menu items include 'New Station', 'New Local TIM', 'Insert Subscriber Tree', 'Complete WinCC Generation', 'Search ...', 'Project Settings ...' (F2), and 'Global Settings ...' (F3).</p>

# 5 Installation and Commissioning

This chapter contains all steps necessary for commissioning the example with the code from the download and the hardware list.

## 5.1 Installing the hardware

For the necessary hardware components, please refer to [chapter 2.4](#).

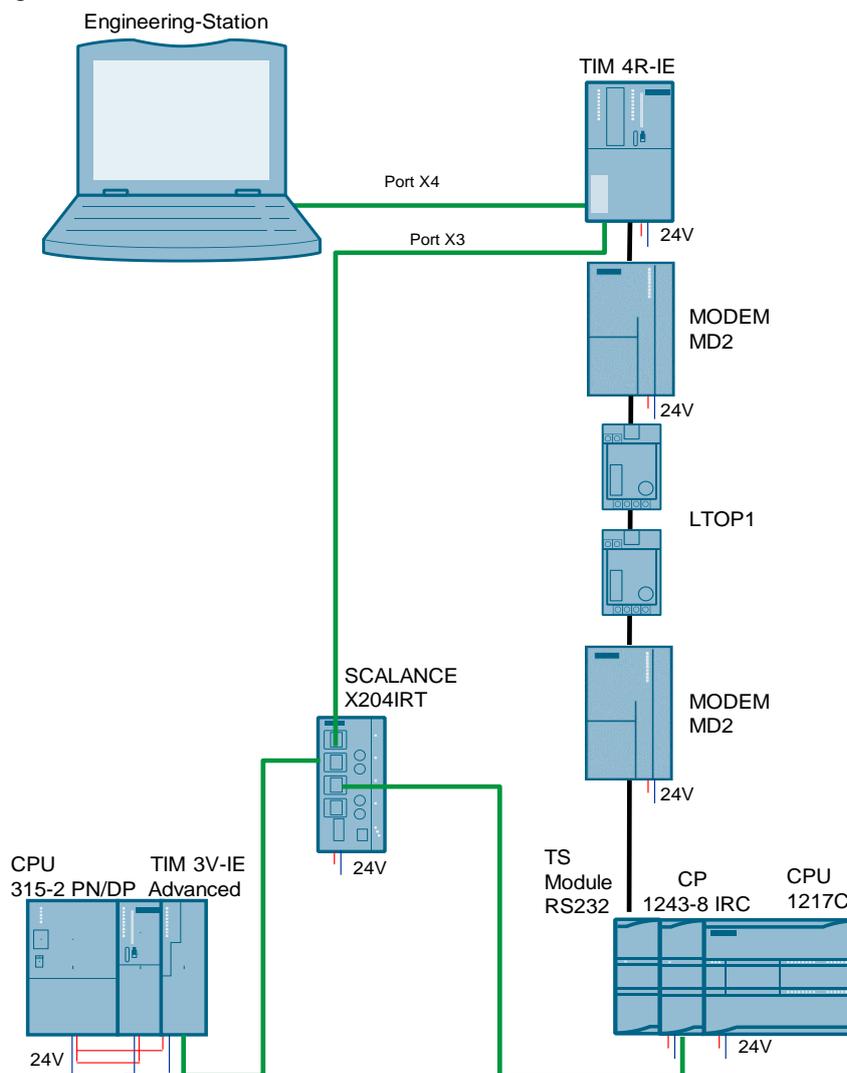
**Note** Always follow the installation guidelines for all components.

**NOTICE** Before switching on the power supply, you need to complete and check the installation!

### Hardware setup

The figure below shows the hardware configuration of the application.

Figure 5-1



## 5 Installation and Commissioning

### 5.1 Installing the hardware

The following table contains the overview of all IP addresses and SINAUT subscriber numbers used in this example. The fixed assignment of the IP addresses is assumed.

In all network components, the subnet mask is 255.255.255.0.

Table 5-1

Component	IP address	SINAUT subscriber number	Description
ST7cc computer	192.168.1.100	1	Central station
TIM 4R-IE	192.168.1.10	1003	Master TIM, Ethernet Port X4
TIM 4R-IE	192.168.0.10		Master TIM, Ethernet Port X3
TIM 3V-IE Advanced	192.168.0.4	1002	TIM in station 1
CP 1243-8 IRC	192.168.0.3	1001	CP in station 2
CPU315-2 PN/DP	192.168.0.2	2	Station 1
CPU1217C (proxy CPU317-2 PN/DP)	192.168.0.1	3	Station 2

#### Note

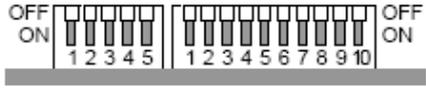
The interfaces X3/X4 of TIM4R-IE need to be located in different subnets.

#### 5.1.1 Settings for the MD2 modems

To establish a connection via dedicated line, the modem network settings need to be defined by setting the DIL switches of both modems accordingly.

##### DIL switches that can be accessed from above

Table 5-2

No.	Action	Notes
1.	Turn the DIL switches of both modems upwards to ON position (delivery state).	
2.	Then set the 5-pin DIL switch as follows: <ul style="list-style-type: none"> <li>switch 2: down (ON) = 2-wire operation</li> <li>switches 4 + 5: down (ON) = baud rate 19200 bps.</li> </ul>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>2-Draht-Modem 2-wire mode</p> </div> <div style="text-align: center;">  <p>Baudrate 19200 Bit/s Baud rate 19200bit/s</p> </div> </div> <p>The 10-pin DIL switch remains in its delivery-state position for both modems; that is, all switches are in an upward position (OFF).</p>

## 5 Installation and Commissioning

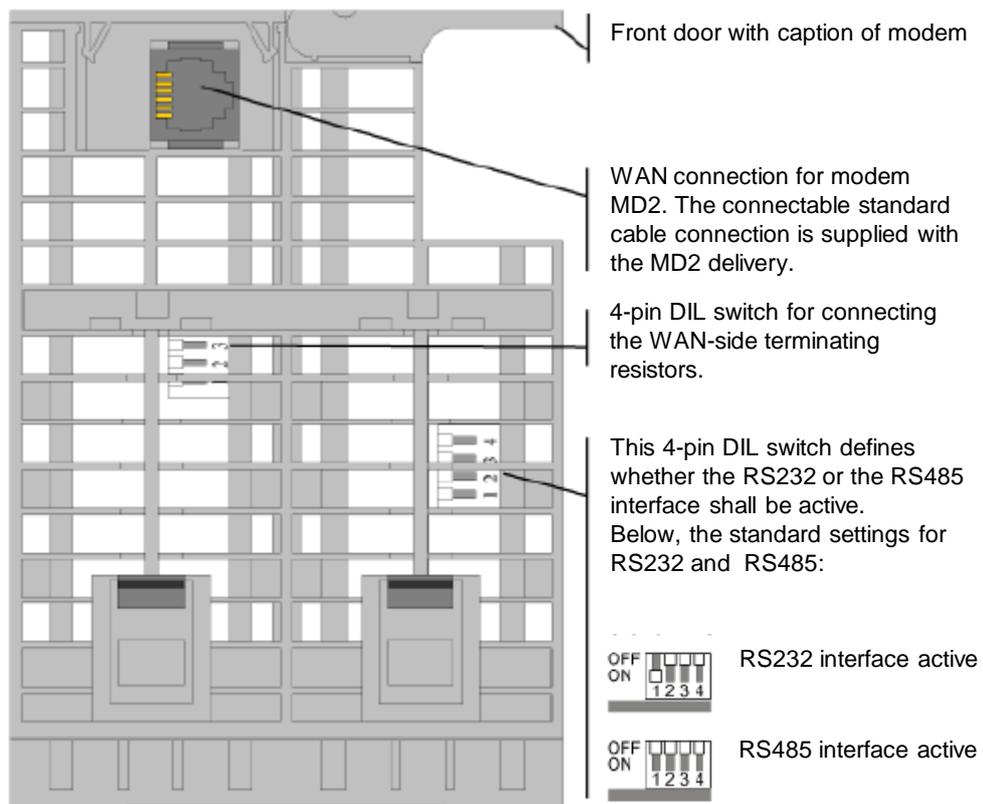
### 5.1 Installing the hardware

#### DIL switches that can be accessed from below

Table 5-3

No.	Action	Notes
1.	There are two DIL switches at the bottom of the MD2 modem. Set the 4-pin DIL switch of the modems on RS232 interface active (see Figure 5-2).	
2.	Set the 4-pin DIL switch for connection of the WAN-side terminating resistors as follows: <ul style="list-style-type: none"> <li>• Switch 1: up (OFF)</li> <li>• switch 2: down (ON)</li> <li>• Switch 3: up (OFF)</li> <li>• Switch 4: down (ON)</li> </ul>	 Terminal point for 2-wire or 2 x 2-wire operation; transmission rate: 9600 or 19200 bps

Figure 5-2 DIL switches that can be accessed from below



### 5.1.2 Installing the hardware

For setting up the hardware, please proceed according to the following table:

Table 5-4

No.	Action	Notes
1.	Connect engineering station	<ul style="list-style-type: none"> <li>Connect computer to port X4 of TIM 4R-IE</li> </ul>
2.	Mount the voltage supply	<ul style="list-style-type: none"> <li>Connect the PS307 to the power grid (220 / 230 V AC).</li> </ul> <p>The SIMATIC PS307 can supply all the modules required here.</p>
3.	Install TIM 4R-IE	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Connect computer to port X4 of TIM 4R-IE</li> </ul>
4.	Modem MD2 (first modem)	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Connect the first modem MD2 (connecting cable 6NH7701-4AL) with the TIM 4R-IE via the serial interface (WAN 1).</li> <li>Insert the RJ12 cable connector of the 6NH7700-2AR60 connecting cable into RJ socket X3 of the modem, and insert the other cable connector of the cable into the socket on the first LTOP.</li> <li>Connect the 2 cores of the dedicated line cable between the LTOPs to terminal 1+2 respectively on the LTOP.</li> </ul> <p>Each DIP switch of LTOP1 must be set to position "1".</p>
5.	Modem MD2 (second modem)	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Connect the second modem MD2 (connecting cable 6NH7701-4AL) with TS module RS232 of station 2 (S7-1200)</li> <li>Insert the RJ12 cable connector of the 6NH7700-2AR60 connecting cable into RJ socket X3 of the modem, and insert the other cable connector of the cable into the socket on the second LTOP.</li> </ul>
6.	Install CPU315-2 PN/DP	<ul style="list-style-type: none"> <li>Adjust backplane bus adapter for TIM</li> <li>Connect the power supply</li> <li>Plug the MMC</li> </ul>
7.	Install TIM 3V-IE Advanced	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Connect TIM and CPU315-2 PN/DP via backplane bus connector</li> </ul>
8.	Install CPU 1217C DC/DC/DC	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Plug in the MC</li> </ul>

## 5 Installation and Commissioning

### 5.2 Installing the software

No.	Action	Notes
9.	Install CP 1243-8 IRC	<ul style="list-style-type: none"> <li>Connect CP and CPU 1217C (links of the CPU)</li> <li>Connect the external power supply</li> </ul>
10.	Install SCALANCE X204IRT	<ul style="list-style-type: none"> <li>Connect the power supply</li> <li>Connect port 1 to port X3 of the TIM4R-IE</li> <li>Connect port 2 with the TIM3V-IE Advanced of station 1</li> <li>Connect port 3 with the CP 1243-8 IRC of station 2.</li> </ul>

**Note** For the CP, only a slot on the left, next to the CPU is permitted. Only a single CP 1243-8 IRC can be plugged.

**Note** You need to connect the external power supply of the CP 1243-8 IRC since a TS module is used at the CP.

## 5.2 Installing the software

When generating the application, one computer was used as the programming PC as well as central station. When using separate computers, then the following software must be installed on the central station:

- SINAUT ST7cc V3.1 + SP2
- SIMATIC WinCC Runtime V7.3
- SIMATIC NET PC Software Edition 2006

Table 5-5

No.	Action	Notes
1.	Install STEP 7 V5.5 + SP4	Follow the instructions of the installation program.
2.	Install STEP 7 Basic V13 + SP1, Update 4	
3.	Install HSP0111 CP 1243-8 IRC	
4.	Install SIMATIC WinCC 7.3	
5.	Install SINAUT ST7 V5.5	
6.	Install SINAUT ST7cc V3.1 + SP2	
7.	Install SIMATIC NET V13 + SP1	

## 5.3 Installation of the application software

Unzip the file “109479747\_CP1243-8\_DedicatedLine\_CODE\_V10.zip”. This folder contains:

- the archived STEP 7 V5.5 project “109479747\_CP1243-8\_DedicatedLine\_V55\_V10.zip”
- the archived STEP 7 V13 project “109479747\_CP1243-8\_DedicatedLine\_V13\_V10.zip”
- the archived ST7cc project “109479747\_CP1243-8\_ST7cc.zip”
- the archived WinCC project “109479747\_CP1243-8\_WinCC\_Project.zip”.

Unzip all of the above mentioned projects.

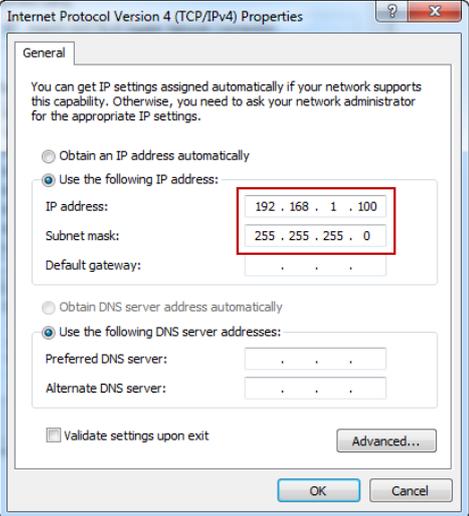
## 5.4 Commissioning

### 5.4.1 First commissioning of the engineering station

#### Assigning the IP address of the PC/PG

The table below shows the network setting to which you have to change the PC/PG:

Table 5-6

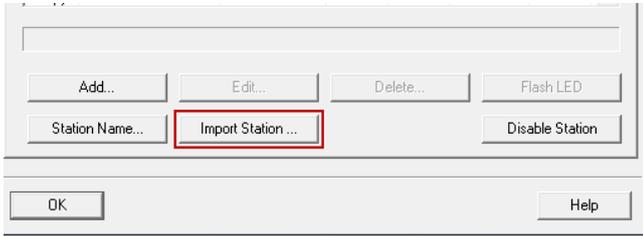
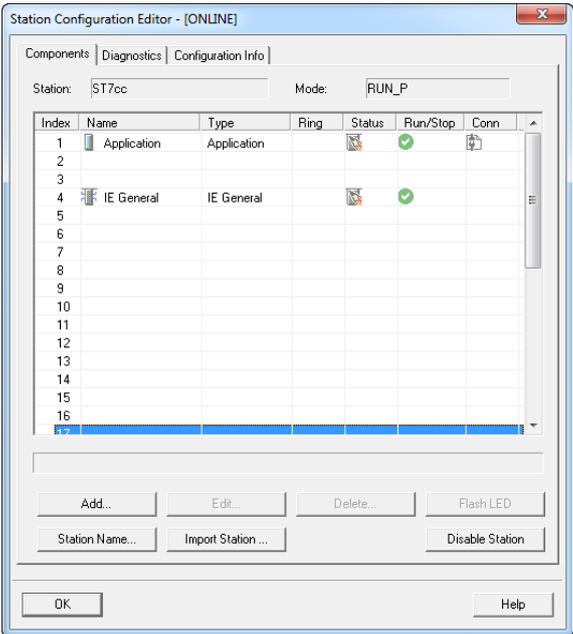
No.	Action
1.	Open the Internet Protocol (TCP/IP) Properties by selecting “Start > Settings > Network Connections > Local Connections”.
2.	In the open window, select “Internet Protocol (TCP/IP)” and open “Properties”.
3.	<div style="display: flex;"> <div style="flex: 1;"> <p>Select the option box “Use following IP address”, and fill in the box as shown in the screen shot. Close the dialog boxes with “OK”.</p> <p><b>Note:</b> This IP address must match the IP address configured in Netpro.</p> </div> <div style="flex: 1;">  </div> </div>
4.	If your PG has an IWLAN interface, switch it off.

**Importing a PC station**

A “PC station” is a PC with communication modules and software components within an automation solution with SIMATIC.

The hardware configuration of a PC station in SIMATIC is comparable with that of an S7 station. Components of a PC station such as modules or software interfaces are assigned to a virtual slot and parameterized in the same way.

Table 5-7

No.	Action
1.	Open the Component Configurator. “Start > all Programs > Siemens Automation > Station Configurator”
2.	Import the XDB file via the “Import Station” button D:\ Projects\ST7_S7_1200\ XDBs\ pcst_1.xdb. (The file is available in your V5.5 project folder) 
3.	Execute the import with “OK”. The components are restarted.  <p><b>Note</b> Should the components not be started immediately without error, please reboot the PC.</p>

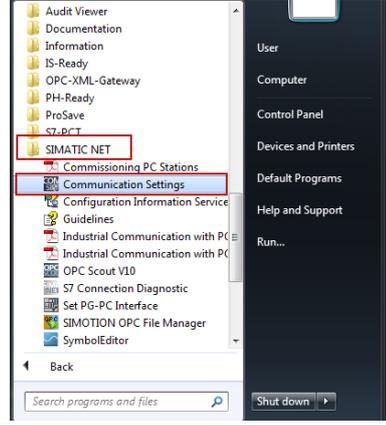
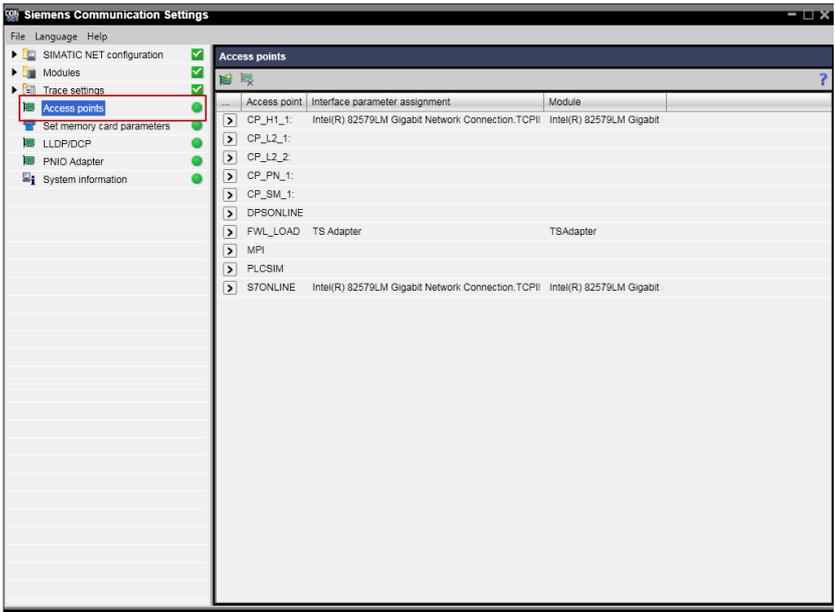
© Siemens AG Fehler! Textmarke nicht definiert. All rights reserved

**Note** The import is only possible if the imported configuration corresponds with the locally existing configuration.

**Specifying access points**

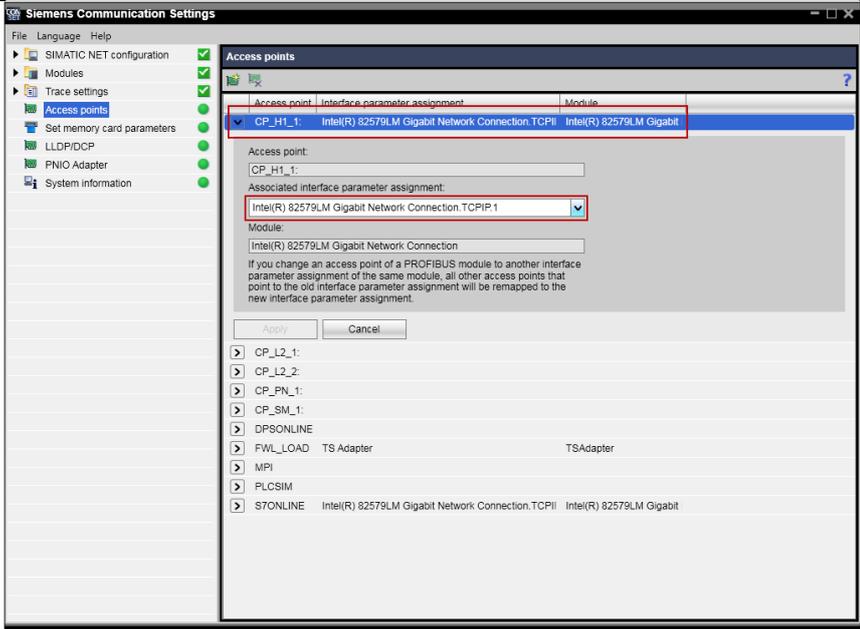
After the configuration of the PC station, the access point of the ST7cc PC in the network is defined.

Table 5-8

No.	Action																																	
1.	<p>Open the SIMATIC NET "Communication Settings".</p> 																																	
2.	<p>Click on "Access Points" in the directory tree on the left.</p>  <p>The available access points are displayed in the right-hand window pane.</p> <table border="1" data-bbox="710 1008 1332 1534"> <thead> <tr> <th>Access point</th> <th>Interface parameter assignment</th> <th>Module</th> </tr> </thead> <tbody> <tr> <td>CP_H1_1:</td> <td>Intel(R) 82579LM Gigabit Network Connection.TCPIP</td> <td>Intel(R) 82579LM Giga</td> </tr> <tr> <td>CP_L2_1:</td> <td></td> <td></td> </tr> <tr> <td>CP_L2_2:</td> <td></td> <td></td> </tr> <tr> <td>CP_PN_1:</td> <td></td> <td></td> </tr> <tr> <td>CP_SM_1:</td> <td></td> <td></td> </tr> <tr> <td>DPSONLINE</td> <td></td> <td></td> </tr> <tr> <td>FWL_LOAD</td> <td>TS Adapter</td> <td>TSAdapter</td> </tr> <tr> <td>MPI</td> <td></td> <td></td> </tr> <tr> <td>PLCSIM</td> <td></td> <td></td> </tr> <tr> <td>S7ONLINE</td> <td>Intel(R) 82579LM Gigabit Network Connection.TCPIP</td> <td>Intel(R) 82579LM Gigabit</td> </tr> </tbody> </table>	Access point	Interface parameter assignment	Module	CP_H1_1:	Intel(R) 82579LM Gigabit Network Connection.TCPIP	Intel(R) 82579LM Giga	CP_L2_1:			CP_L2_2:			CP_PN_1:			CP_SM_1:			DPSONLINE			FWL_LOAD	TS Adapter	TSAdapter	MPI			PLCSIM			S7ONLINE	Intel(R) 82579LM Gigabit Network Connection.TCPIP	Intel(R) 82579LM Gigabit
Access point	Interface parameter assignment	Module																																
CP_H1_1:	Intel(R) 82579LM Gigabit Network Connection.TCPIP	Intel(R) 82579LM Giga																																
CP_L2_1:																																		
CP_L2_2:																																		
CP_PN_1:																																		
CP_SM_1:																																		
DPSONLINE																																		
FWL_LOAD	TS Adapter	TSAdapter																																
MPI																																		
PLCSIM																																		
S7ONLINE	Intel(R) 82579LM Gigabit Network Connection.TCPIP	Intel(R) 82579LM Gigabit																																
3.	<p>Open the access point "CP_H1_1" and select the setting of the used interface from the drop-down list "Associated interface parameter assignment TCPIP".</p>																																	

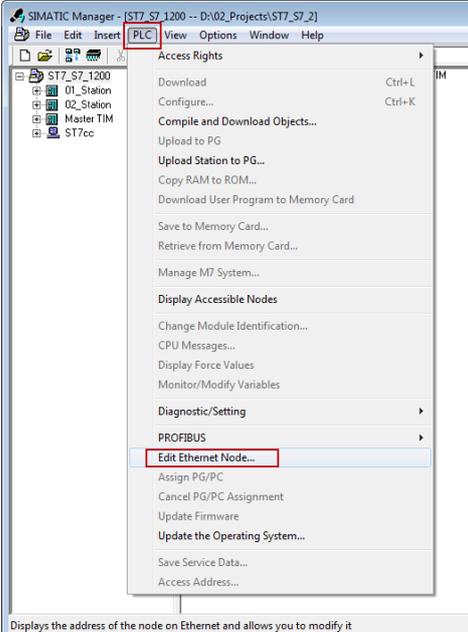
## 5 Installation and Commissioning

### 5.4 Commissioning

No.	Action
	 <p>Clicking on “Apply” and “OK” closes the dialog.</p>

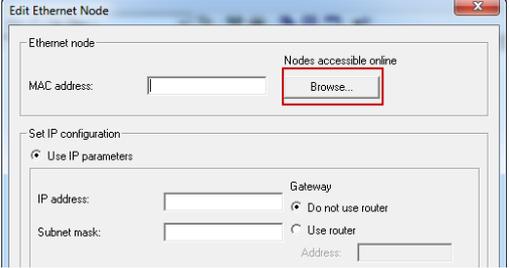
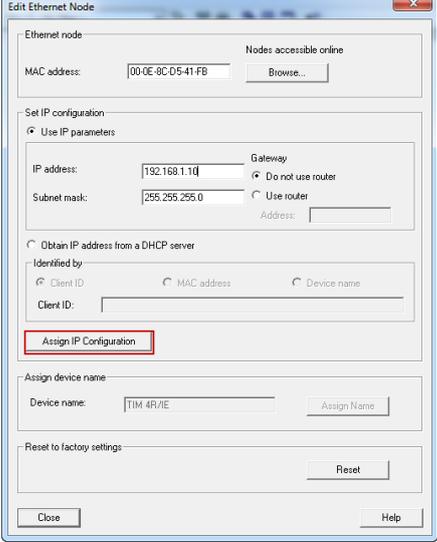
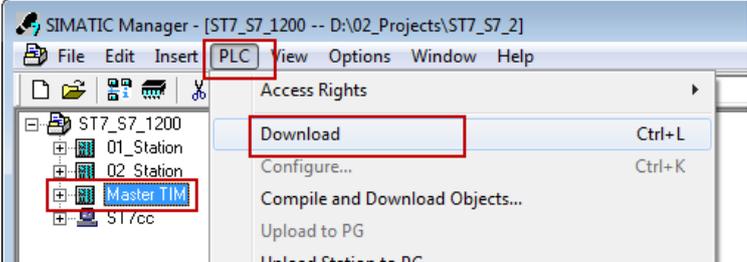
#### 5.4.2 Loading the TIM 4R-IE into the central station

Table 5-9

No.	Action
1.	Open the STEP 7 V5.5 project “ST7_S7_1200”
2.	<p>In the “PLC” menu, select the “Edit Ethernet Node” option.</p>  <p>Displays the address of the node on Ethernet and allows you to modify it</p>

## 5 Installation and Commissioning

### 5.4 Commissioning

No.	Action
3.	<p>Click on the “Browse...” button.</p> 
4.	<p>Select the TIM 4R-IE module and acknowledge the selection with the “OK” button.</p> <p>In the “Set IP configurations” window which appears you enter the following details:            IP address: 192.168.1.10            Subnet mask: 255.255.255.0</p> <p>Click on the “Assign IP Configuration” button.</p> <p>Close the dialog.</p> 
5.	<p>Mark the “Master TIM” station in the SIMATIC Manager.            In the “PLC” menu you select the “Download” option.</p> 

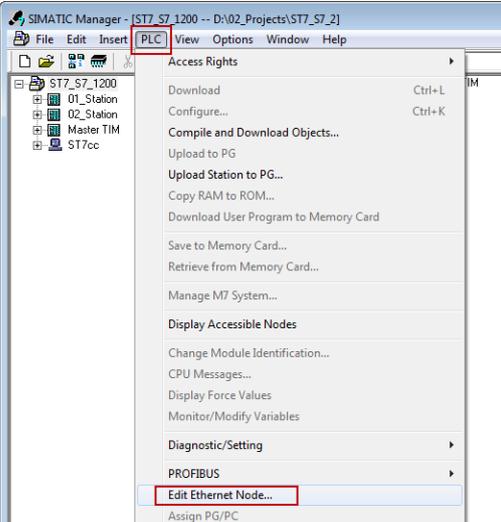
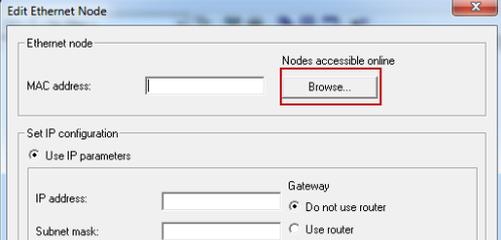
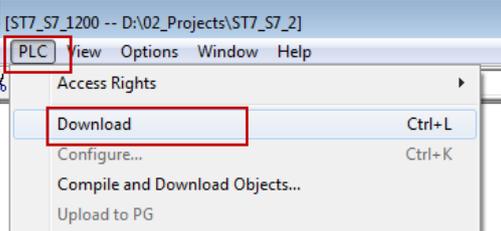
#### 5.4.3 Download of station 1 (S7-300 and TIM 3V-IE)

Table 5-10

No.	Action
1.	<p>Open the internet protocol (TCP/IP) properties            Activate the checkbox “Use following IP-address” and enter the following address:            IP address: 192.168.0.100            Subnet mask: 255.255.255.0            Close the dialog boxes with “OK”.</p>

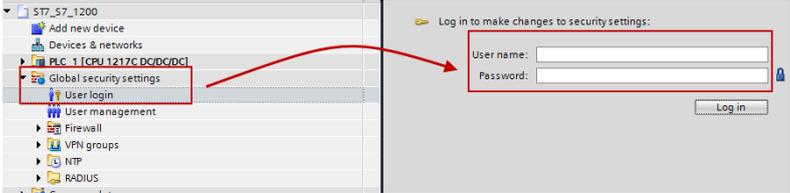
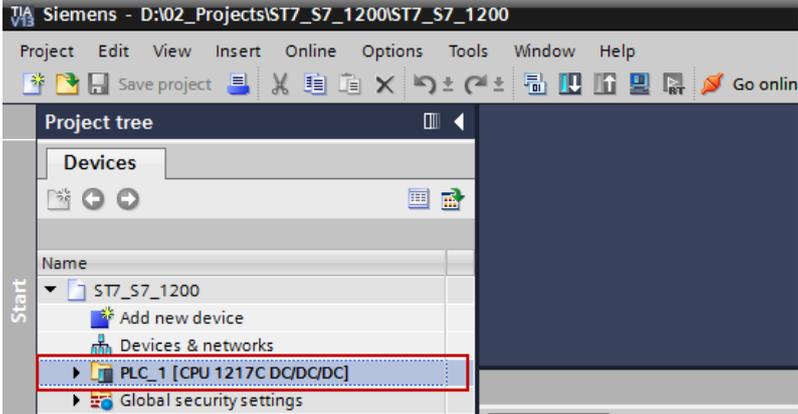
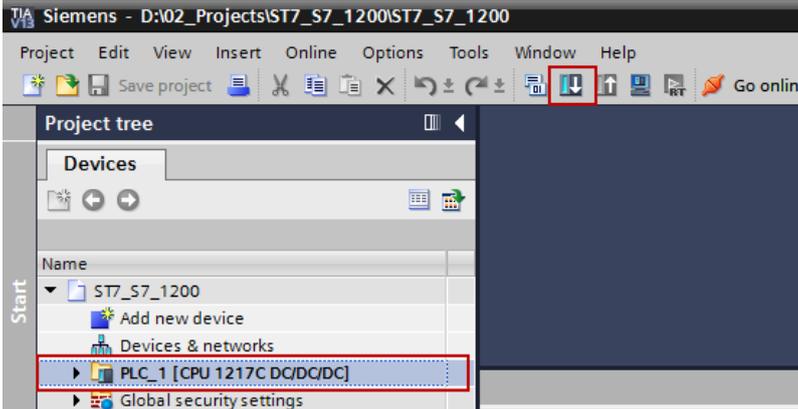
## 5 Installation and Commissioning

### 5.4 Commissioning

No.	Action	
2.	In the "PLC" menu, select the "Edit Ethernet Node" option.	
3.	Click on the "Browse..." button.	
4.	<p>Select the S7-300 CPU and acknowledge the selection with the "OK" button.</p> <p>In the "Set IP configurations" window which appears you enter the following details:</p> <p>IP address: 192.168.0.2 Subnet mask: 255.255.255.0</p> <p>Click on the "Assign IP Configuration" button.</p> <p>Close the dialog.</p>	
5.	In the SIMATIC Manager you select the station "01_Station". In the "PLC" menu you select the "Download" option.	

5.4.4 Download of station 2 (S7-1200 and CP 1243-8 IRC)

Table 5-11

No.	Action
1.	Open the STEP 7 V13 project "ST7_S7_1200".
2.	<p>Enable the security functions of the CP</p> <p>ST7_S7_1200 &gt; Global security settings &gt; user login</p>  <p>User name: administrator Password: administrator</p>
3.	<p>Select station "PLC_1 [CPU1217C DC/DC/DC]".</p> 
4.	<p>Download the project into the station.</p> 

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### 5.4.5 Display of the communication states of CP 1243-8 IRC

The LEDs show the communication status of the module according to the following scheme.

Table 5-12

DIAG	CONNECT ETH	CONNECT RS232	Meaning
			Configuration of the telecontrol communication via both interfaces without errors and activated. No connection established.
			Configuration of the telecontrol communication via both interfaces without errors and activated. At least one connection established via Ethernet. Connection to all partners established via the serial interface, or respectively, all partners accessible.
			Configuration of the telecontrol communication via both interfaces without errors and activated. Connection to all partners established via Ethernet. At least one connection established via the serial interface.
			Configuration of the telecontrol communication via both interfaces without errors and activated. All connections established or partner accessible.

**5.4.6 Activating the ST7cc and starting ST7cc and WinCC Runtime**

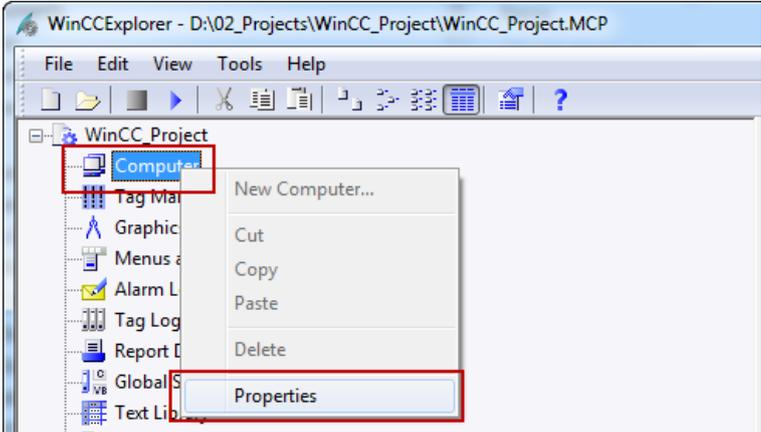
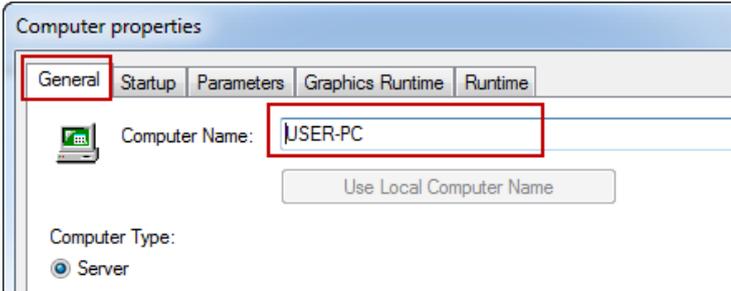
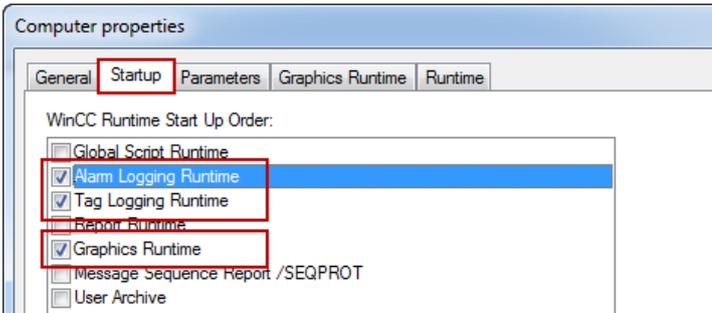
**Adjusting the computer settings in the WinCC project**

**Note**

The setting of the computer name in WinCC and in Windows must be identical. For this reason, the server name in the System Properties of the WinCC project must be adjusted.

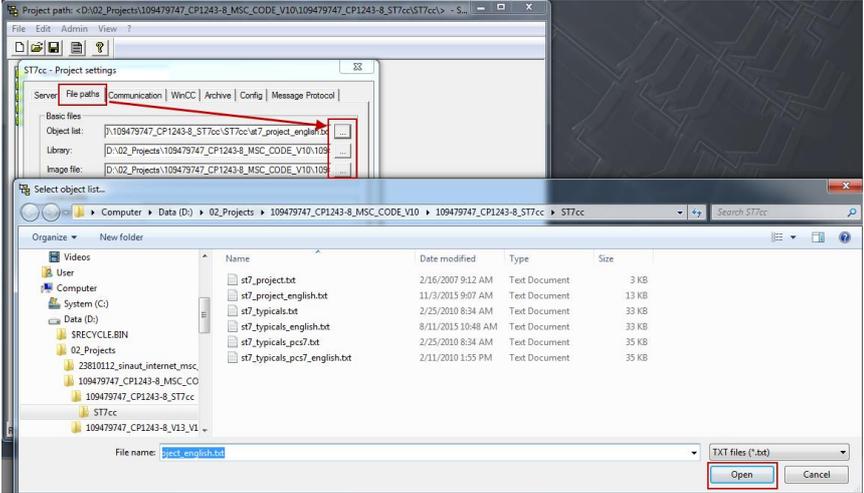
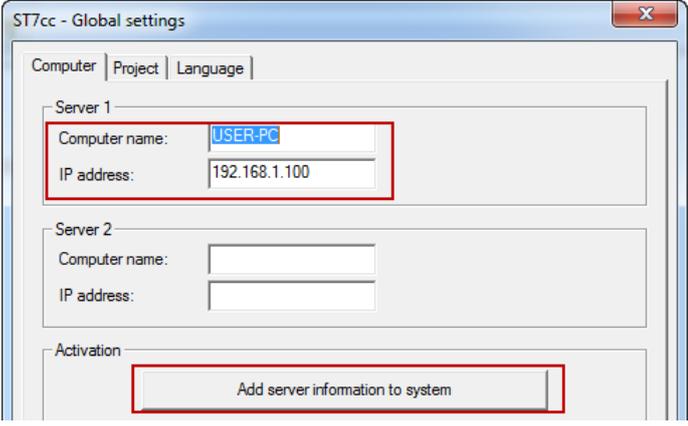
There is also the option to adjust the server name in Windows.

Table 5-13

No.	Action
1.	Start the WinCC Explorer and open the project "WinCC_Project.MCP". You find this project in folder "WinCC_Project".
2.	<p>Open the System Properties.</p> 
3.	<p>In the "General" tab, you adapt the computer name.</p> 
4.	<p>In the "Startup" tab you activate "Tag Logging Runtime", "Alarm Logging Runtime", and "Graphics Runtime".</p> 

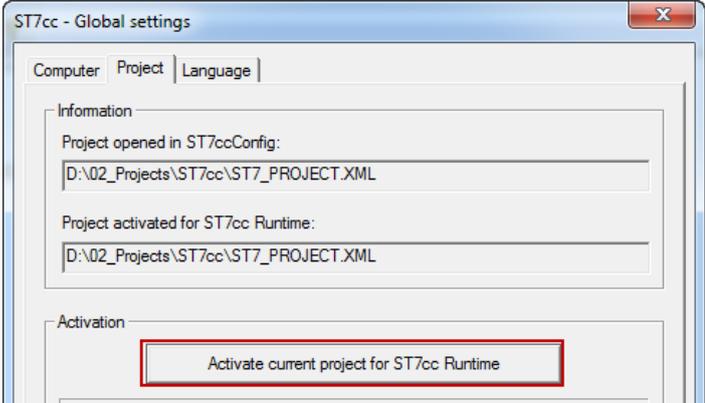
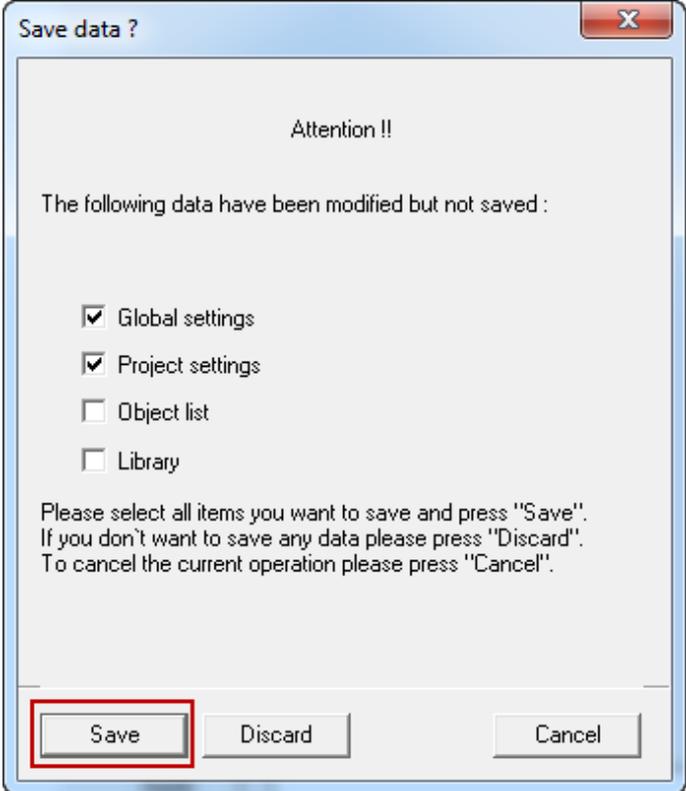
**Activate the ST7cc project**

Table 5-14

No.	Action
1.	<p>Start St7cc Config via                      “Start &gt; Siemens automation &gt; SIMATIC &gt; ST7cc &gt;ST7cc Config”                      and open the ST7_PROJECT.XML project.                      You find this project in folder “St7cc”.</p> <p><b>Note</b>                      When opening a new project, all paths need to be updated:                      “Project &gt; Edit &gt; Project settings &gt; File Paths”.</p> 
2.	<p>Open the global settings.                      In the “Computer” tab, you adjust the computer name.</p>  <p>Enter the server settings in System.</p>

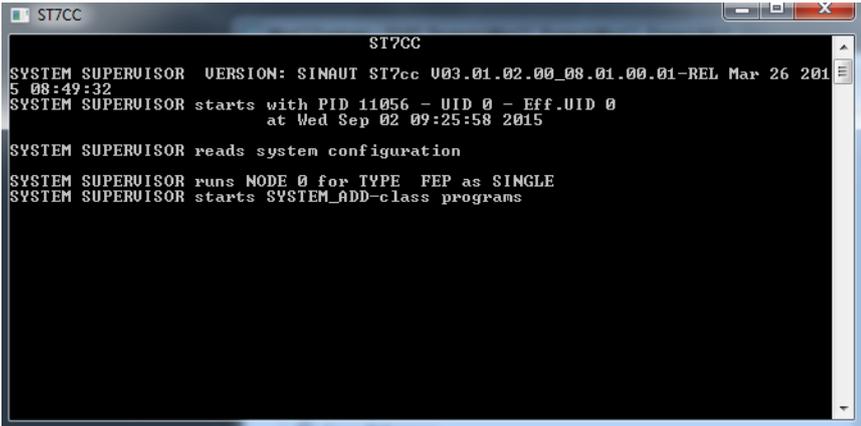
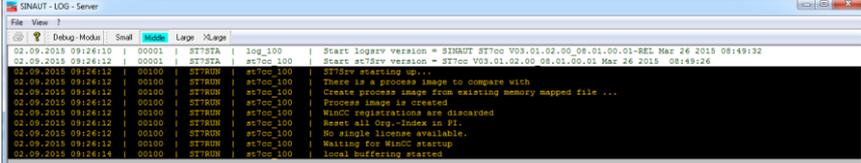
## 5 Installation and Commissioning

### 5.4 Commissioning

No.	Action
3.	<p>In the "Project" you activate the current project for ST7cc Runtime.</p>  <p>Close the dialog with "OK".</p>
4.	<p>Save the settings.</p> 

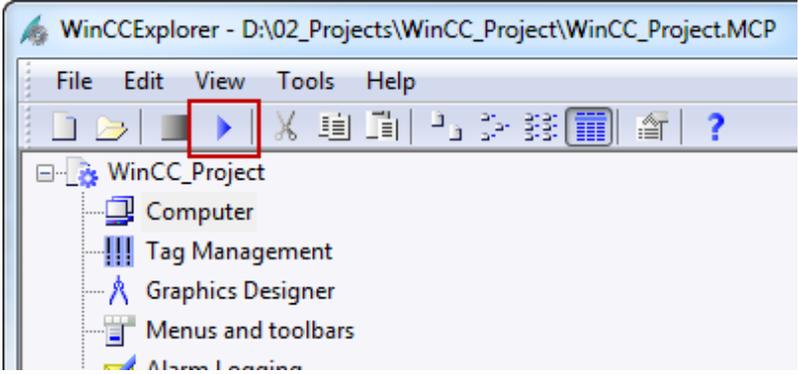
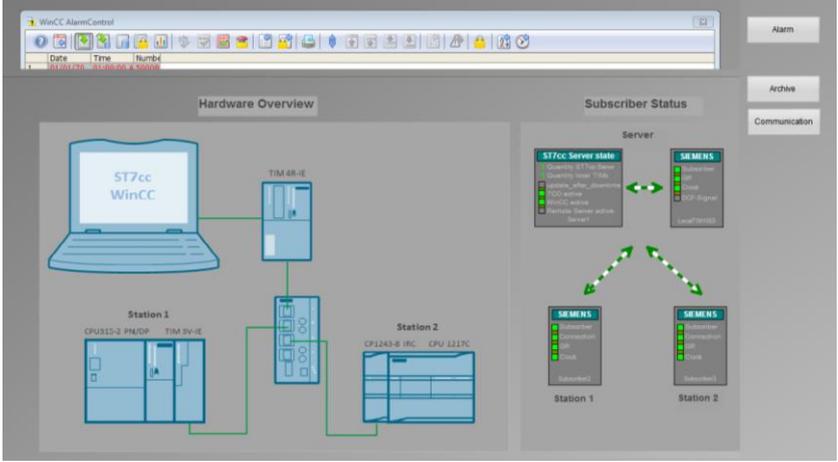
**Start ST7cc and WinCC Runtime**

Table 5-15

No.	Action
1.	Start ST7cc Runtime via "Start > Siemens automation > SIMATIC > ST7cc > ST7cc-Runtime".
2.	<p>The DOS output window opens and displays information on which programs are successively started by ST7cc.</p>  <p><b>Note:</b> The window must not be closed manually.</p>
3.	<p>The Log window of the SINAUT server opens. Amongst other things, it also shows the connections with the SINAUT subscribers and the fact that the general queries for these subscribers, automatically started at system start, were terminated without error.</p>  <p>ST7cc server running.</p> 

## 5 Installation and Commissioning

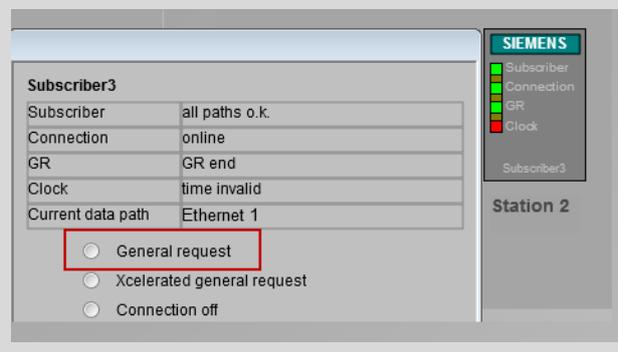
### 5.4 Commissioning

No.	Action
4.	<p>In the WinCC Explorer you start WinCC Runtime.</p> 
5.	<p>Your ST7 demo plant is now ready for operation.</p> 

#### Note

If the time in a station is not valid (Clock indicator: “red”), you need to start a general request again.

In the “Overview” screen you click on the corresponding buttons. The Details view opens. Start a new general request.

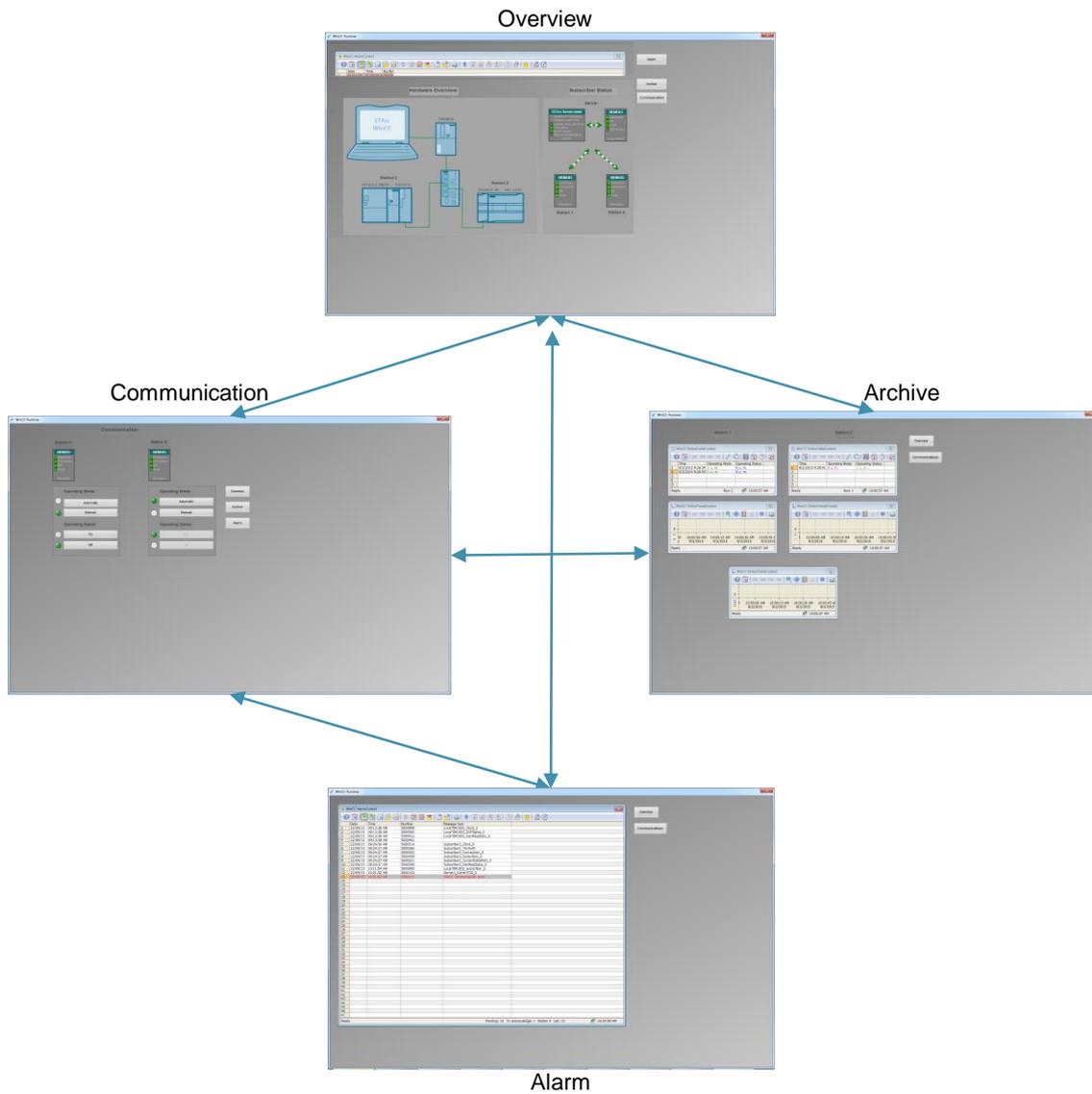


## 6 Operating the Application

In the following chapters, we will introduce the operation of the demo-project as well as the test and diagnostic functions provided by the used components:

### 6.1 Overview and description of the user interface

Figure 6-1



## 6 Operating the Application

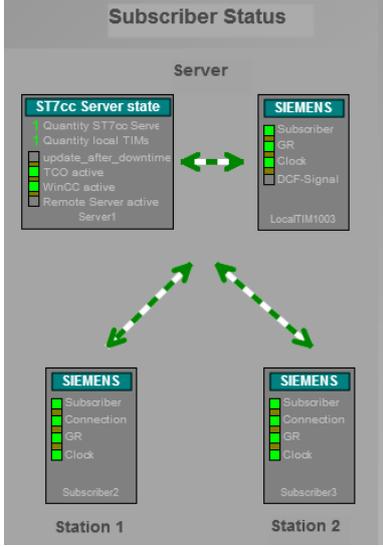
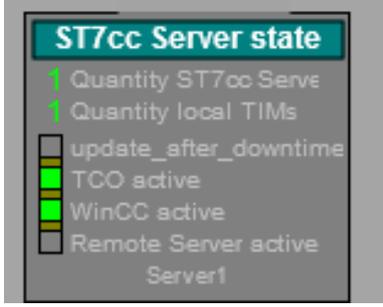
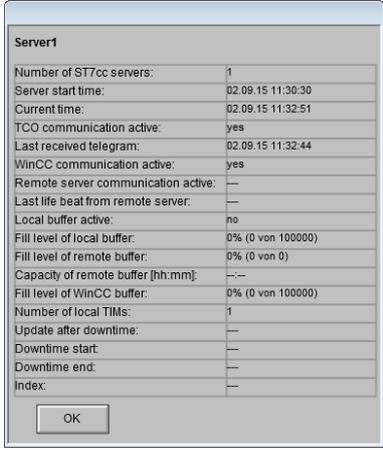
### 6.1 Overview and description of the user interface

#### 6.1.1 “Overview” screen

The “Overview” screen shows all relevant messages, the hardware setup of the application example, and the status of all subscribers.

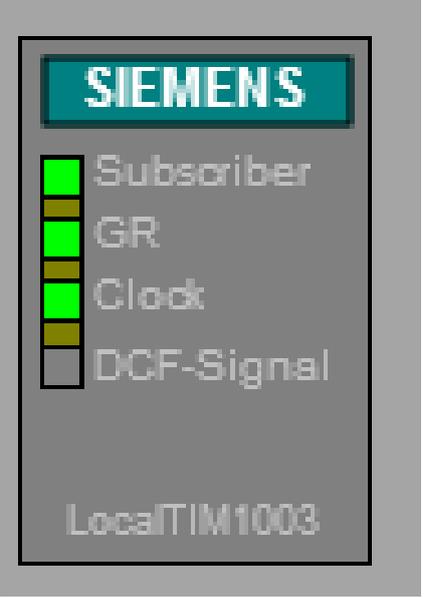
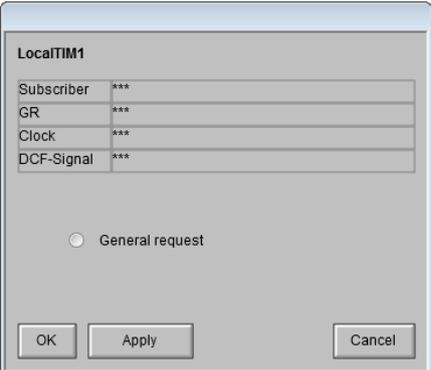
#### Subscriber Status

Table 6-1

Screen	Description
	<p>On this screen, the status of:</p> <ul style="list-style-type: none"> <li>the control center</li> <li>the local TIM</li> <li>both substations</li> </ul> <p>can be viewed.</p> <p>You can open a details list by moving the left mouse-button over the respective image.</p> <p>These faceplates are generated by SINAUT depending on the configuration and can be easily included into a project.</p>
 <p>Details view</p> 	<p>Control center: Apart from the existing ST7cc server and the directly connected TIMs, the status of the TCO (communication module of the ST7cc software) is also displayed.</p>

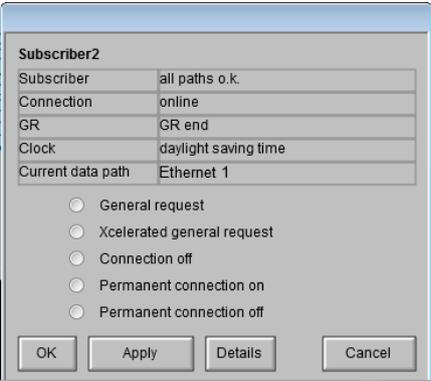
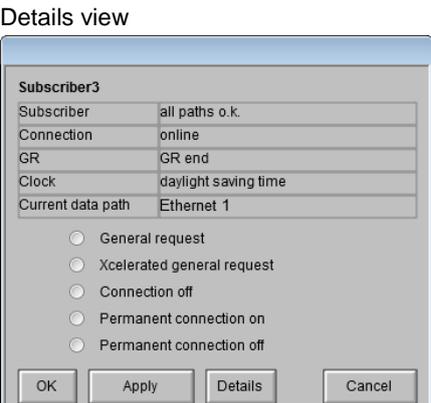
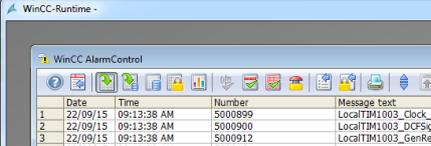
## 6 Operating the Application

### 6.1 Overview and description of the user interface

Screen	Description
 <p>Details view</p> 	<p>Local TIM:</p> <p>The picture typical indicates, whether:</p> <ul style="list-style-type: none"> <li>the TIM is accessible (subscriber)</li> <li>the last general request to the TIM was completed without error (GR), and</li> <li>the time on the TIM is ok (Clock).</li> </ul> <p>In the details view, you can trigger a general request to the TIM manually (General request), which will then transfer your latest accountancy information. The processing of the general request can be followed on the GR display as well as in text field GR in the faceplate.</p>
	<p>Station 1 (S7-300):</p> <p>The picture typical indicates, whether:</p> <ul style="list-style-type: none"> <li>the station CPU is accessible (subscriber)</li> <li>the last general request to the station was completed without error (GR), and</li> <li>the time in the station is ok (Clock).</li> </ul>

## 6 Operating the Application

### 6.1 Overview and description of the user interface

Screen	Description																				
<p>Details view</p> 	<p>In the details view, a general request can also be triggered (General request). From the TIM in the station, all data frames possibly still stored there can be transmitted as well as a current process image.</p> <p>Both further command options (Permanent connection on / off) are only relevant for a station connected via dialup network or dedicated line.</p>																				
	<p>Station 2 (S7-1200):</p> <p>The picture typical indicates, whether:</p> <ul style="list-style-type: none"> <li>• the station CPU is accessible (subscriber)</li> <li>• the last general request to the station was completed without error (GR), and</li> <li>• the time in the station is ok (Clock).</li> </ul>																				
<p>Details view</p> 	<p>In the details view, a general request can also be triggered (General request). From the TIM in the station, all data frames possibly still stored there can be transmitted as well as a current process image.</p> <p>Both further command options (Permanent connection on / off) are only relevant for a station connected via dialup network or dedicated line.</p>																				
 <table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Number</th> <th>Message text</th> </tr> </thead> <tbody> <tr> <td>22/09/15</td> <td>09:13:38 AM</td> <td>5000899</td> <td>LocalTIM1003_Clock_</td> </tr> <tr> <td>22/09/15</td> <td>09:13:38 AM</td> <td>5000900</td> <td>LocalTIM1003_DCFSig</td> </tr> <tr> <td>22/09/15</td> <td>09:13:38 AM</td> <td>5000912</td> <td>LocalTIM1003_GenRe</td> </tr> <tr> <td>22/09/15</td> <td>09:13:38 AM</td> <td>5000461</td> <td></td> </tr> </tbody> </table>	Date	Time	Number	Message text	22/09/15	09:13:38 AM	5000899	LocalTIM1003_Clock_	22/09/15	09:13:38 AM	5000900	LocalTIM1003_DCFSig	22/09/15	09:13:38 AM	5000912	LocalTIM1003_GenRe	22/09/15	09:13:38 AM	5000461		<p>Display of the relevant messages (see description of the "Alarm" screen)</p>
Date	Time	Number	Message text																		
22/09/15	09:13:38 AM	5000899	LocalTIM1003_Clock_																		
22/09/15	09:13:38 AM	5000900	LocalTIM1003_DCFSig																		
22/09/15	09:13:38 AM	5000912	LocalTIM1003_GenRe																		
22/09/15	09:13:38 AM	5000461																			

**6.1.2 “Communication” screen**

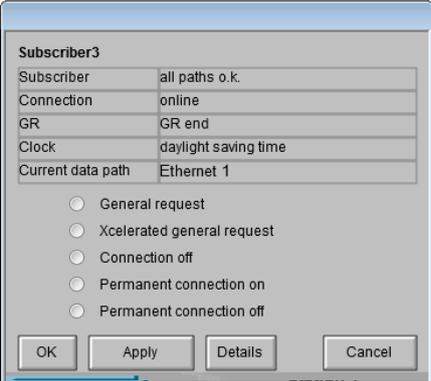
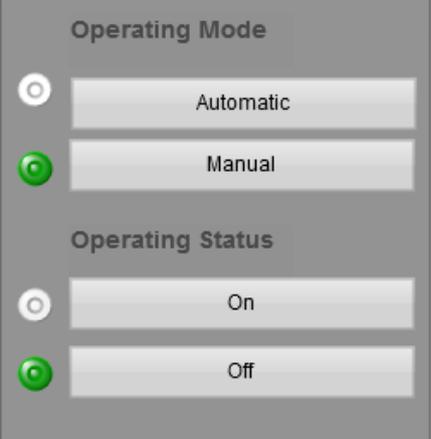
The “Communication” screen shows the connection status of both substations. With this screen, two stations can be controlled and monitored.

Table 6-2

Screen	Description												
 <p>The screenshot shows the 'Communication' screen with a 'SIEMENS' header and four status indicators: Subscriber (green), Connection (yellow), GR (green), and Clock (yellow). Below this is a 'Subscriber2' label. The 'Details view' window shows the following data:</p> <table border="1"> <tr><td colspan="2">Subscriber2</td></tr> <tr><td>Subscriber</td><td>all paths o.k.</td></tr> <tr><td>Connection</td><td>online</td></tr> <tr><td>GR</td><td>GR end</td></tr> <tr><td>Clock</td><td>daylight saving time</td></tr> <tr><td>Current data path</td><td>Ethernet 1</td></tr> </table> <p>Below the table are radio buttons for: General request, Xcelerated general request, Connection off, Permanent connection on, and Permanent connection off. At the bottom are buttons for OK, Apply, Details, and Cancel.</p>	Subscriber2		Subscriber	all paths o.k.	Connection	online	GR	GR end	Clock	daylight saving time	Current data path	Ethernet 1	<p>Station 1 (S7-300): The picture typical indicates, whether:</p> <ul style="list-style-type: none"> <li>• the station CPU is accessible (subscriber)</li> <li>• the last general request to the station was completed without error (GR), and</li> <li>• the time in the station is ok (Clock).</li> </ul> <p>In the details view, a general request can also be triggered (General request). From the TIM in the station, all data frames possibly still stored there can be transmitted as well as a current process image.</p> <p>Both further command options (Permanent connection on / off) are only relevant for a station connected via dialup network or dedicated line.</p>
Subscriber2													
Subscriber	all paths o.k.												
Connection	online												
GR	GR end												
Clock	daylight saving time												
Current data path	Ethernet 1												

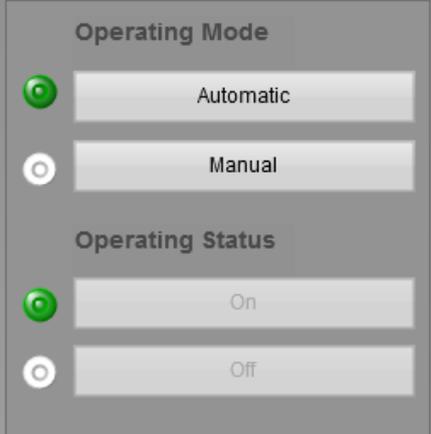
## 6 Operating the Application

### 6.1 Overview and description of the user interface

Screen	Description
 <p>Details view</p> 	<p>Station 2 (S7-1200):</p> <p>The picture typical indicates, whether:</p> <ul style="list-style-type: none"> <li>• the station CPU is accessible (subscriber)</li> <li>• the last general request to the station was completed without error (GR), and</li> <li>• the time in the station is ok (Clock).</li> </ul> <p>In the details view, a general request can also be triggered (General request). From the TIM in the station, all data frames possibly still stored there can be transmitted as well as a current process image.</p> <p>Both further command options (Permanent connection on / off) are only relevant for a station connected via dialup network or dedicated line.</p>
	<p>Station 1 (S7-300):</p> <p>“Operating Mode”: Operating mode of the station</p> <ul style="list-style-type: none"> <li>- automatic mode</li> <li>- manual mode</li> </ul> <p>“Operating Status”</p> <ul style="list-style-type: none"> <li>- On: switched on</li> <li>- Off: switched off</li> </ul>

## 6 Operating the Application

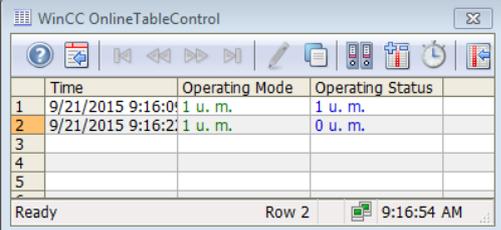
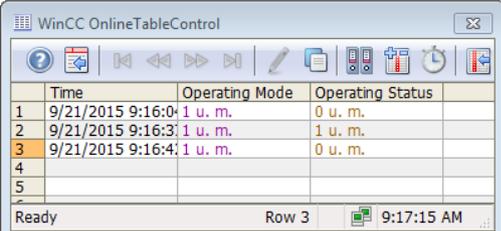
### 6.1 Overview and description of the user interface

Screen	Description
	<p>Station 2 (S7-1200):</p> <p>“Operating Mode”: Operating mode of the station</p> <ul style="list-style-type: none"> <li>- automatic mode</li> <li>- manual mode</li> </ul> <p>“Operating Status”</p> <ul style="list-style-type: none"> <li>- On: switched on</li> <li>- Off: switched off</li> </ul> <p>Note:</p> <p>In automatic mode, the operating status cannot be modified manually.</p>

#### 6.1.3 “Archive” screen

The process tags are stored in an archive. The “Archives” screen displays stored tags of the individual substations.

Table 6-3

Screen	Description
	<p>Station 1 (S7-300):</p> <p>Table with the stored values “OperatingMode” and “OperatingStatus”</p> <p>“Operating Mode”:</p> <p>“0”: automatic mode “1”: manual mode</p> <p>“OperatingStatus”</p> <p>“0”: Off “1”: On</p>
	<p>Station 2 (S7-1200):</p> <p>Table with the stored values “OperatingMode” and “OperatingStatus”</p> <p>“Operating Mode”:</p> <p>“0”: automatic mode “1”: manual mode</p> <p>“OperatingStatus”</p> <p>“0”: Off “1”: On</p>

## 6 Operating the Application

### 6.2 Watch tables "WT\_SetPump"

Screen	Description
	Station 1 (S7-300): Display of the trends of the stored values "OperatingMode" and "OperatingStatus" — : Operating Mode — : Operating Status
	Station 2 (S7-1200): Display of the trends of the stored values "OperatingMode" and "OperatingStatus" — : Operating Mode — : Operating Status
	Joint display of the trends of station 1 (S7-300) and station 2 (S7-1200) — : Operating Mode Station 1 — : Operating Status Station 1 — : Operating Mode Station 2 — : Operating Status Station 2

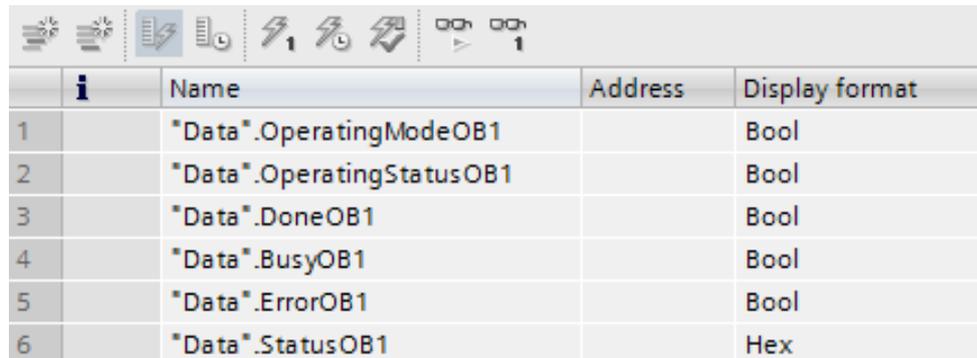
### 6.2 Watch tables "WT\_SetPump"

As an alternative to the WinCC user interface, the "WT\_SetPump" watch table of the stations can be used for monitoring or controlling the tags of DB "DATA" (DB).

Figure 6-2 Station 1\_Tag\_table "WT\_SetPump"

	Address	Symbol	Display format
1	DB1.DBX 6.1	"Data".OperatingModeOB1	BOOL
2	DB1.DBX 6.2	"Data".OperatingStatusOB1	BOOL
3	DB1.DBX 6.3	"Data".DoneOB1	BOOL
4	DB1.DBX 6.4	"Data".BusyOB1	BOOL
5	DB1.DBX 6.5	"Data".ErrorOB1	BOOL
6	DB1.DBD 8	"Data".StatusOB1	HEX

Figure 6-3 Station 2\_Watch\_table "WT\_SetPump"



	i	Name	Address	Display format
1		"Data".OperatingModeOB1		Bool
2		"Data".OperatingStatusOB1		Bool
3		"Data".DoneOB1		Bool
4		"Data".BusyOB1		Bool
5		"Data".ErrorOB1		Bool
6		"Data".StatusOB1		Hex

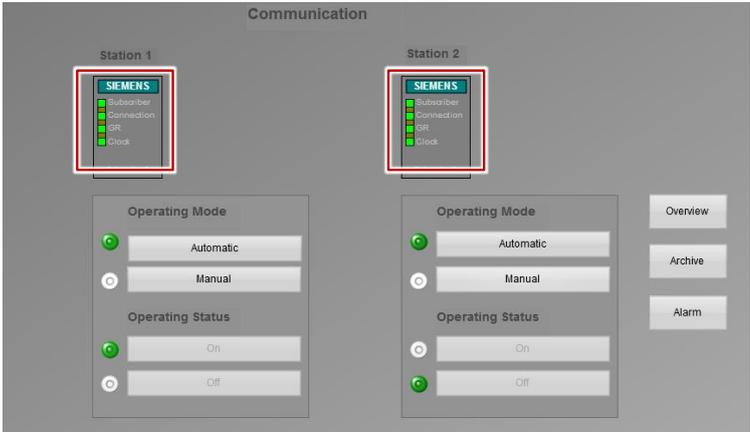
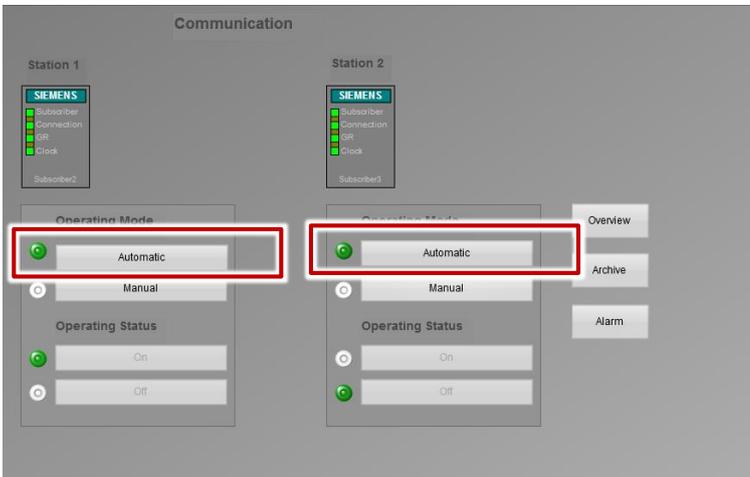
**Note** A description of the tags is available in [Table 3-4](#).

## 6.3 Cyclic switching of the operating state of the pumps in automatic mode

Requirements:

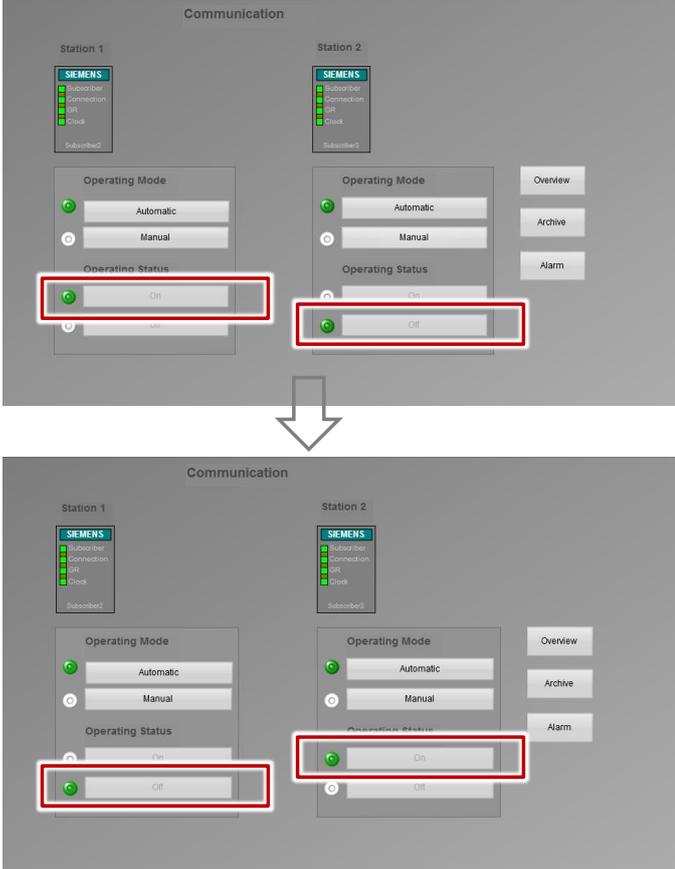
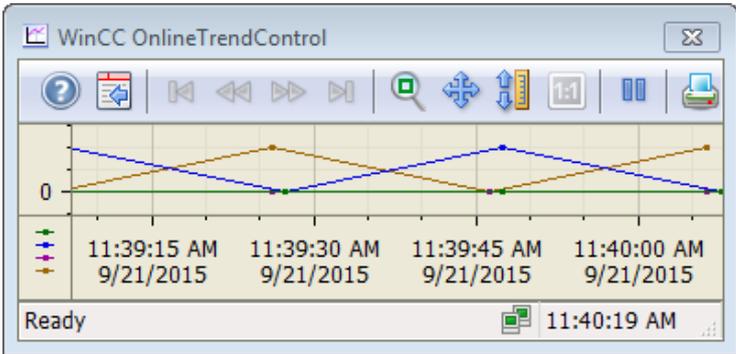
- The ST7cc project was activated (see [chapter 5.4.6](#))
- St7cc and WinCC Runtime were started (see [chapter 5.4.6](#))
- The “Overview” screen was opened.

Table 6-4

No.	Action
1.	<p>Go to the “Communication” screen.</p>  <p>The screenshot shows the 'Communication' screen with two stations, Station 1 and Station 2. Each station has a 'SIEMENS' status indicator box containing 'Subscriber', 'Connection', 'GR', and 'Clock' items. Below each station is an 'Operating Mode' section with 'Automatic' and 'Manual' buttons, and an 'Operating Status' section with 'On' and 'Off' buttons. On the right side, there are 'Overview', 'Archive', and 'Alarm' buttons. Red boxes in the image highlight the 'SIEMENS' status boxes for both Station 1 and Station 2.</p>
2.	<p>Switch both stations to “Automatic mode”.</p>  <p>This screenshot is similar to the previous one, but the 'Automatic' buttons in the 'Operating Mode' section for both Station 1 and Station 2 are highlighted with red boxes, indicating they have been selected.</p>

## 6 Operating the Application

### 6.3 Cyclic switching of the operating state of the pumps in automatic mode

No.	Action
3.	<p>After 30 seconds, the “Operating Status” of both stations is switched over automatically.</p>  <p>Note: In automatic mode, the pumps cannot be operated manually.</p>
4.	<p>You can view all of the archived values in “Archive” screen.</p>  <p> <span style="color: green;">—</span> : Operating Mode Station 1  <span style="color: blue;">—</span> : Operating Status Station 1  <span style="color: purple;">—</span> : Operating Mode Station 2  <span style="color: orange;">—</span> : Operating Status Station 2         </p>
5.	<p>Terminate the Ethernet connection between station 2 (S7-1200) and the central station and repeat steps 1-4 of this table.</p>

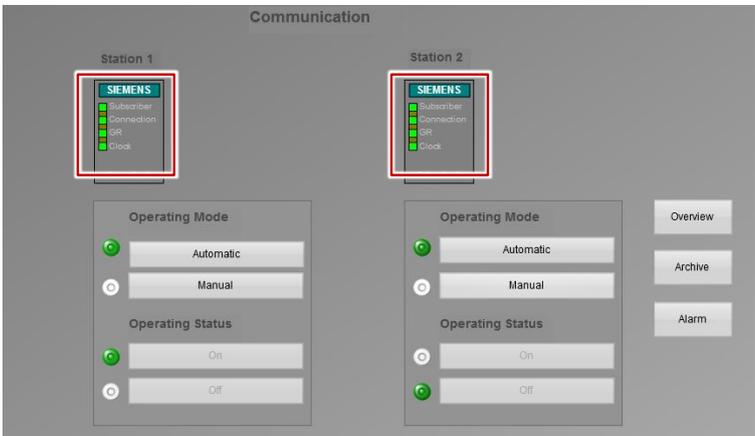
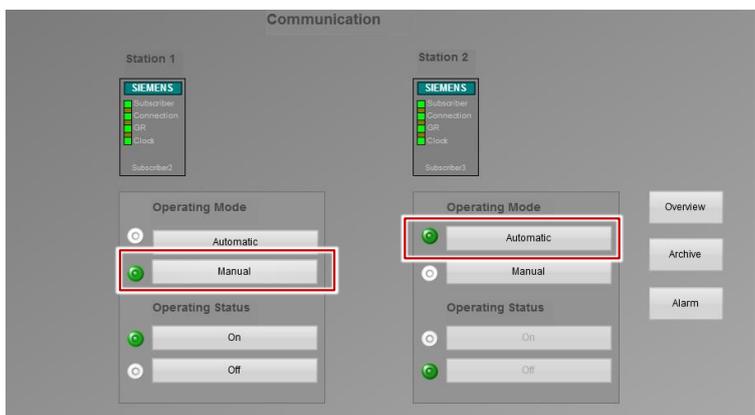
6.4 Automatic switching of a pump (automatic mode), when changing the operating state of the second pump (manual mode).

## 6.4 Automatic switching of a pump (automatic mode), when changing the operating state of the second pump (manual mode).

Requirements:

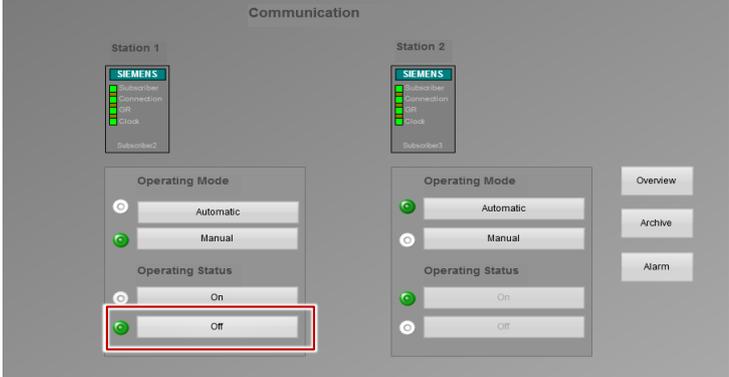
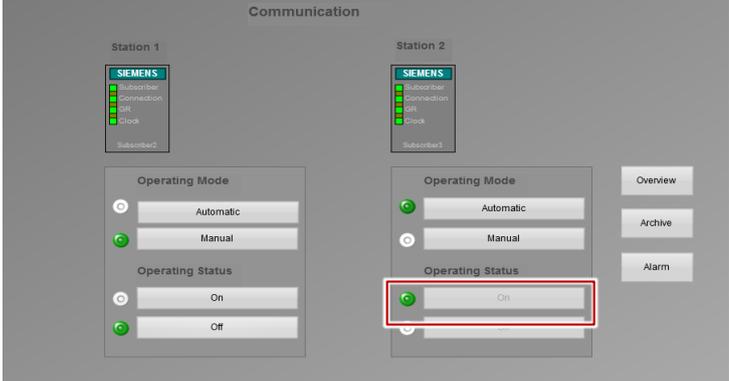
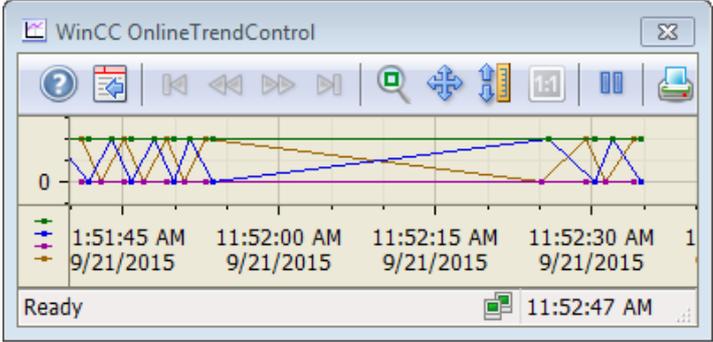
- The ST7cc project was activated (see [chapter 5.4.6](#))
- St7cc and WinCC Runtime were started (see [chapter 5.4.6](#))
- The “Overview” screen was opened.

Table 6-5

No.	Action
1.	<p>Go to the “Communication” screen.</p> 
2.	<p>Switch station 1 to “Manual mode” and station 2 to “Automatic mode”.</p> 

## 6 Operating the Application

### 6.4 Automatic switching of a pump (automatic mode), when changing the operating state of the second pump (manual mode).

No.	Action
3.	<p>Switch off the pump of station 1.</p> 
4.	<p>The pump in station 2 is automatically switched on.</p> 
5.	<p>You can view all of the archived values in "Archive" screen.</p>  <p> <span style="color: green;">—</span> : Operating Mode Station 1  <span style="color: blue;">—</span> : Operating Status Station 1  <span style="color: purple;">—</span> : Operating Mode Station 2  <span style="color: orange;">—</span> : Operating Status Station 2         </p>
6.	<p>Terminate the Ethernet connection between station 2 (S7-1200) and the central station and repeat steps 1-5 of this table.</p>

#### Note

The rules for station 2 (S7-1200) in automatic mode and station 1 (S7-300) in manual mode apply accordingly vice versa for station 1 (S7-300) in automatic mode and station 2 (S7 1200) in manual mode.

## 7 Links & Literature

Table 7-1

	Topic	Title
\1\	Siemens Industry Online Support	<a href="http://support.industry.siemens.com">http://support.industry.siemens.com</a>
\2\	Download page of the entry	<a href="https://support.industry.siemens.com/cs/ww/en/109479747">https://support.industry.siemens.com/cs/ww/en/109479747</a>
\3\	SIMATIC NET Industrial Remote Communication - TeleControl SINAUT ST7 Station Control System	<a href="https://support.industry.siemens.com/cs/ww/en/view/55639671">https://support.industry.siemens.com/cs/ww/en/view/55639671</a>
\4\	SIMATIC NET SINAUT ST7 Station Control System - System Manual	<a href="https://support.industry.siemens.com/cs/ww/en/view/63112365">https://support.industry.siemens.com/cs/ww/en/view/63112365</a>
\5\	WinCC V7.3: Communication	<a href="https://support.industry.siemens.com/cs/ww/en/view/102691766">https://support.industry.siemens.com/cs/ww/en/view/102691766</a>
\6\	SIMATIC NET S7-1200 - TeleControl CP 1243-8 IRC - Operating Instructions	<a href="https://support.industry.siemens.com/cs/ww/en/view/109478160">https://support.industry.siemens.com/cs/ww/en/view/109478160</a>
\7\	SIMATIC NET Telecontrol SINAUT ST7cc Control Center Software Manual	<a href="https://support.industry.siemens.com/cs/ww/en/view/63203610">https://support.industry.siemens.com/cs/ww/en/view/63203610</a>
\8\	WinCC V7.3: Working with WinCC	<a href="https://support.industry.siemens.com/cs/ww/en/view/102754925">https://support.industry.siemens.com/cs/ww/en/view/102754925</a>
\9\	MD2 dedicated line modem	<a href="https://support.industry.siemens.com/cs/ww/en/view/17163799">https://support.industry.siemens.com/cs/ww/en/view/17163799</a>

## 8 History

Table 8-1

Version	Date	Modifications
V1.0	10/2015	First version