Wireless Data Communication via GPRS with S7-1200 and CP 1242-7

Scenario 4: Remote Diagnostics and Teleservice with SIMATIC S7-1200 and CP 1242-7 GPRS with Telecontrol Server Basic

Application Description • May 2012

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Teleservice with SIMATIC S7-1200

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Preface

Objective of this application

This application assists during the commissioning of a GPRS based Telecontrol system with SIMATIC S7-1200 CPU, CP 1242-7 GPRS and the Telecontrol Server Basic server software. All available entries are listed under the term Configuration Example X-21 and can be identified via the scenario number.

This is the configuration example X-21, scenario 4.

Core topics of this application

The following main points are dealt with in this scenario:

- Polling diagnostic data from a remote station[1]

- Downloading project and program data from the STEP 7 V11 project into a remote station (PLC)

This application example does not focus on an example code that can be used promptly, but on the function description and step-by-step operating procedure of the teleservice functions with the CP1242-7 GPRS.

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[1] Remote Station (RS) is a remote station with a SIMATIC S7-1200 CPU and a CP 1242-7 GPRS

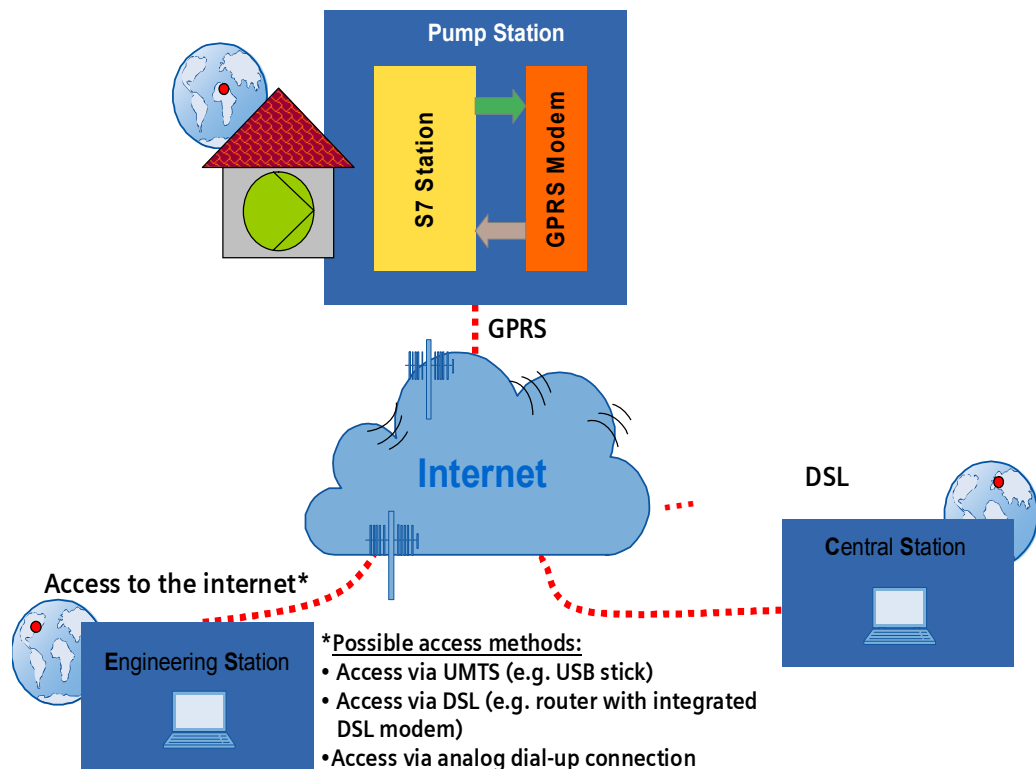# Table of Contents

1 Task

1.1 Overview

Introduction

The functions in the application – scenario 4 – will be explained here taking as an example a distributed pump station.

Overview of the automation problem

The figure below provides an overview of the automation task.

Figure 1-1 Teleservice via internet

Description of the automation task

In a remote distributed pump station, drinking water is pumped into an inhabited region over several kilometers to provide for a permanent local drinking water supply.

In defined servicing intervals and in the urgent event of a failure a service staff member must needs remote access to be able to

- check the diagnostic data of the remote station
- download updated program data or modify parameters

Remote access shall occur via internet and be independent of the provider of the internet access.

2 Solution

2.1 Overview of the general solution

**Solution on the basis of Telecontrol Basic**

The automated plant shall be accessible wireless via internet for remote servicing. This is realized using the Telecontrol Basic system. The remote station[2] is in this case always connected to a central station (**C**entral **S**tation[3]).

- The wireless data transmission to the CS occurs via GPRS.

- A standard PC or ICP will be used as the platform for the central station (CS). This platform is also connected to the internet and the "Telecontrol Server Basic" software is installed there.

For remote servicing (teleservice) the existing connection between RS and CS is used.

- The engineering station (ES)[4] is also connected to the internet.

- A SIMATIC field PC or standard PC or notebook will be used as the platform for the engineering station.

- The STEP 7 V11 software is installed on the engineering station.

Figure 2-1 Teleservice uses the process data connection

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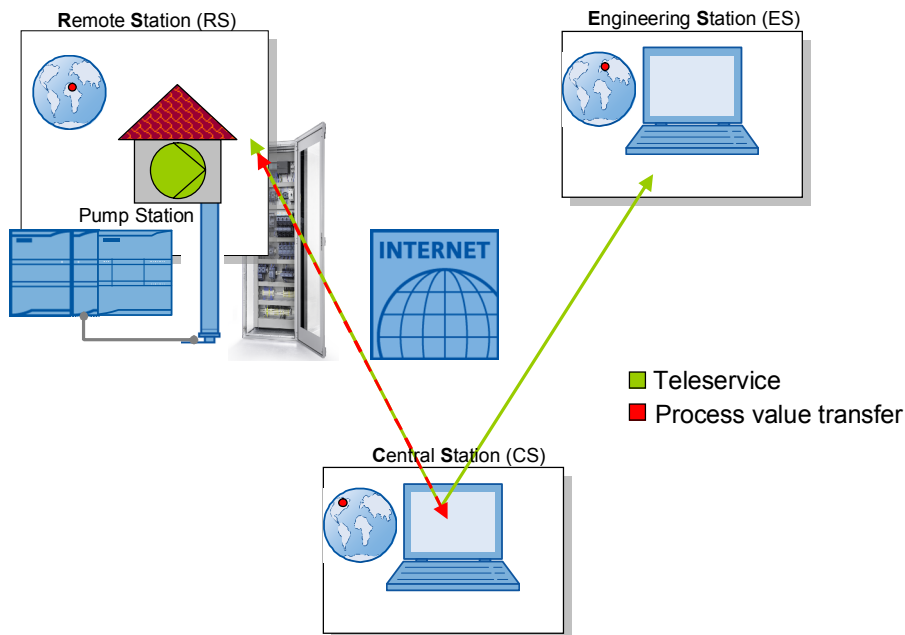
[2] Remote Station (RS) is a remote station with a SIMATIC S7-1200 CPU and a CP 1242-7 GPRS

[3] Central Station (CS) refers to a central control station with internet connection and the Telecontrol Server Basic software component installed on a PC, IPC or a comparable device

[4] Engineering Station (ES) refers to a programming device, notebook or a comparable device with software component STEP 7 V11 and an existing internet connection

Remote Station

A GSM/GPRS modem **CP 1242-7 GPRS (2)** is coupled to the **SIMATIC S7-1200 control 1211C (3)** via a bus interface.

The GSM/GPRS modem has an inserted **SIM card (5)**. For coupling with the air interface a quad band GSM/GPRS **antenna ANT 794-4MR (4)** is used.

The power for all components is supplied via a **SIMATIC PM 1207 Power Module (1)**.

Figure 2-2 Configuration of the remote station
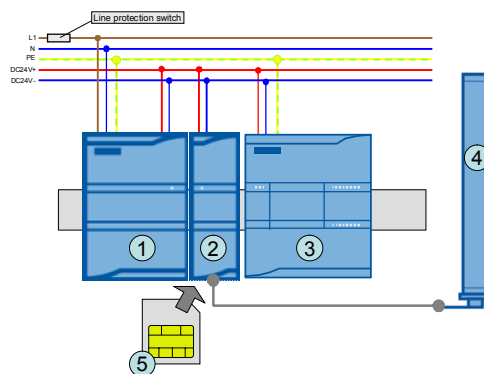
Central station

The central station consists of a Box PC **SIMATIC IPC627C (2)**. The software component **Telecontrol Server Basic (3)** is installed on the Microbox PC.

The power supply is provided via a **SIMATIC PM1207 Power module (1)**.

The Microbox PC is connected to the internet via a **router (4)**.

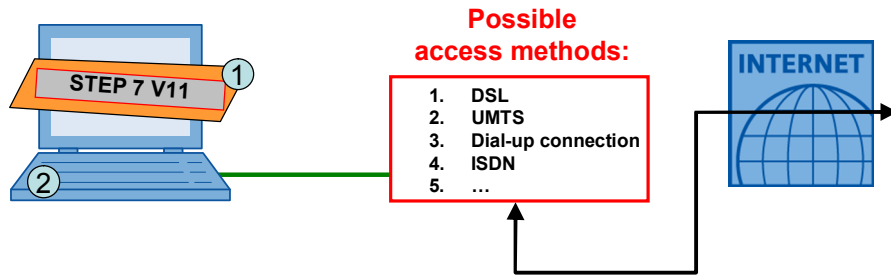Figure 2-3 Configuration of central station
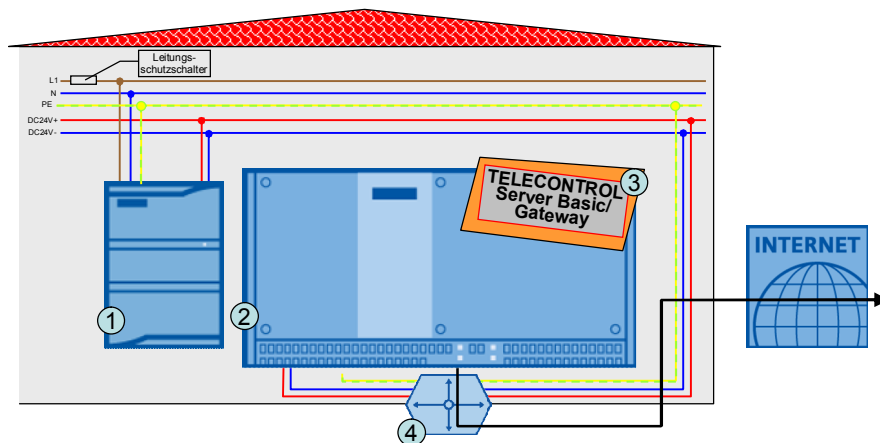
Note	As an alternative to the Telecontrol Server Basic software component the Telecontrol Server Gateway software can be used. This software is included in every CP 1242-7 order and can only be used for the Teleservice (no process value transmission possible!).

Engineering Station

The Engineering Station consists of a **SIMATIC field PG (1)**. The **STEP 7 V11 (2)** software component is installed on the SIMATIC field PG.

The SIMATIC field PG is connected to the internet via several possible access methods by any provider.

Figure 2-4 Configuration of the engineering station

Note	The central station and the engineering station with the STEP 7 V11 version are installed in this configuration example on two different PCs. The engineering station and the central station can also be realized with a single device.

2.2 Hardware and software components used

2.2.1 Remote station

Hardware components

Table 2-1

Component	Qty.	Order number	Note
SIMATIC S7-1200, PM 1207	1	6EP1332-1SH71	2.5A
SIMATIC S7-1200, CPU 1211C	1	6ES7211-1AD30-0XB0	DC/DC/DC
SIMATIC CP 1242-7 GPRS	1	6GK7242-7KX30-0XE0	
SINAUT ANT 794-4MR, rod aerial	1	6NH9860-1AA00	Alternative: flat antenna ANT794-3M (6NH9870-1AA00)
Ethernet line	1	6XV1870-3QH20	For the configuration, 2 meters
Line protection switch	1	5SX2116-6	1 pole B, 16A
Standard mounting rail	1	6ES5 710-8MA11	35mm
SIM card	1	Available at your mobile phone provider	Check if special M2M tariffs with included data volume are available

Standard software components

Table 2-2

Component	Qty.	Order number	Note
STEP 7 Basic V11	1	6ES7822-0AA01-0YA0	• As of SP1 • They only require the additional hardware support package "HSP CP 1242-7 V1.0" (entry ID: 52788225)

2.2.2 Central station

Hardware components

Table 2-3

Component	Qty.	Order number	Note
SIMATIC S7-1200, PM 1207	1	6EP1332-1SH71	2.5A
SIMATIC IPC427C	1	6ES7647-7BJ30-0DD0	
Circuit breaker	1	5SX2116-6	1 pole B, 16A
Router	1	Specialist dealer	with port forwarding

Note	The listed order number of the SIMATIC IPC427C covers the following system configuration: • Processor: CORE2 DUO 1.2 GHZ, 800 MHZ FSB, 3 MB SLC • Memory capacity: 2 GBYTE DDR3 1066 • Required power supply: 24V DC Industrial power supply • Expansion (HW): without extension • Removable drive: none • Internal drive: 32 GB SOLID-STATE DRIVE SATA • Operating system (pre-installed and activated on internal drive): Windows 7 Ultimate MUI The system data was specially selected for application as a server. The system data can be adapted in detail in the Industry Mall. https://eb.automation.siemens.com/. Instead of the IPC427C, a standard Windows PC may be used for testing.

Standard software components

Table 2-4

Component	Qty.	Order number	Note
Telecontrol Server Basic	1	6NH9910-0AA20-0AA0	8 stations; alternatively: 64, 256, 1000 or 5000 stations
Telecontrol Server Gateway (as alternative to Telecontrol Server Basic)	1	This software is included in every CP 1242-7 order and can only be used for the Teleservice (no process value transmission possible).	

Required services of a provider

Table 2-5

Component	Qty.	Order number
Internet connection with **static** IP address	1	Internet provider
DynDNS Service (when no static IP address is available)	1	e. g.: http://www.dyndns.com

2.2.3 Engineering station

Hardware components

Table 2-6

Component	Qty.	Order number	Note
SIMATIC Field PG	1	6ES7715-1BB20-0BE2	
Options for internet access:			
DSL router	1		Alternative
UMTS surf stick	1		Alternative
Analog modem for dial-up connection	1		Alternative already integrated in most laptops (see SIMATIC field PG)

Note	The listed order number of the SIMATIC field PG M3 covers the following system configuration:

- Processor: Intel Core i5 (2.4 GHz)
- ROM DiskDrive: DL Multistandard DVD RW
- HDD: 500 Gbyte SATA hard disk
- Memory capacity: 3GByte DDR3 RAM
- Operating system (pre-installed and activated): Windows 7 Ultimate, MUI (EN, DE,FR,IT, ES)

The system data can be adapted in detail in the Industry Mall.
https://eb.automation.siemens.com/.

Instead of the field PG M3, a standard Windows PC may be used for testing.

2 Solution

Standard software components

Table 2-7

Component	Qty.	Order number	Note
STEP 7 Basic V11 (already required for the remote station)	1	6ES7822-0AA01-0YA0	• As of SP1 • They only require the additional hardware support package "HSP CP 1242-7 V1.0" (entry ID: 52788225)

Required services of a provider

Table 2-8

Component	Qty.	Order number
Internet connection with static or dynamic IP address	1	Internet provider

2.2.4 Sample files and projects

Sample files and projects

The following list includes all files and projects contained in the code of this example (56720905_CE-X21_CP1242-7_GPRS_Scenario4_CODE.zip).

Table 2-9 Project data

No.	Component	Note
1	CE-X21_Scenario4_CP1242-7_V10	Folder with STEP 7 V11 project of the remote station and the engineering station
2	CE-X21_Scenario4_TCS_Basic_V10	Folder with the configuration file of Telecontrol Server Basic

2.3 Teleservice network access methods

Principally, <u>four</u> different network access methods are possible illustrated in the table below.

Table 2-10 Access methods

		Network type	
		Radio	Wired
Transmission	Connection oriented		
	IP-based (package oriented)		

- Connection-oriented data transmission via radio networks
- Connection-oriented data transmission via cable networks
- Package-oriented data transmission via radio networks
- Package-oriented data transmission via cable networks

This application example focuses on IP-based transmission via radio (GPRS).

Advantages of a teleservice solution via GPRS

The following advantages enable performant and effective remote plant monitoring:

- As opposed to a connection-oriented dial-up connection GPRS only produces costs for consumed data volumes.
- World-wide access to the remote station is possible via internet.
- The data connections (sub-connections) between remote and central station remain active even throughout the teleservice connection.
- World-wide availability of GSM/GPRS is guaranteed.

IP-based point-to-point transmission

For this IP-based teleservice solution with the Telecontrol Basic System the engineering station can only establish a connection to **one** remote station.

To reach entire networks from the engineering station with **several** Ethernet nodes, alternative access methods must be used (e.g. VPN tunnel from engineering station to remote network with SINAUT MD741-1 and SCALANCE S 612).

Further information on alternative options is described in document \4\.

3 Basics of Data Transmission with CP1242-7 and Telecontrol Server Basic

Introduction

The following chapter describes the mechanisms around the S7-1200 system, CP1242-7 GPRS and Telecontrol Server Basic necessary for the comprehension of the processes.

3.1 Overview of the GPRS communication platform

Overview

The following graphic shows the complete system with all parameters, which are required for a communication between the remote station and the central station.

Figure 3-1
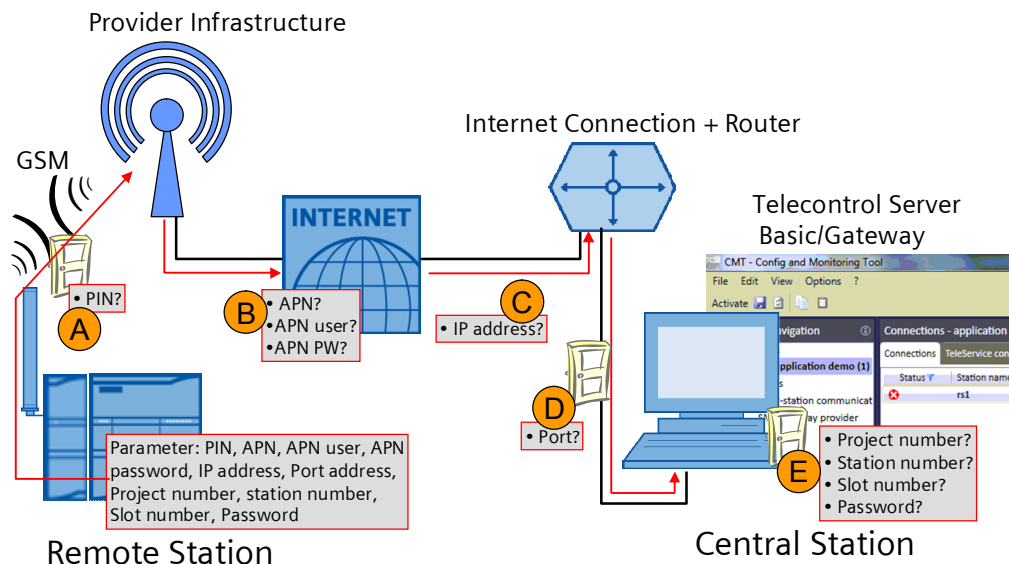
Connection setup between remote station and central station

Table 3-1 Explanation of the connection setup correspondent to Figure 3-1

Digit	Description
A	The CP 1242-7 GPRS logs in automatically at the GSM network of the provider, given that the **PIN number** of the SIM card has been recognized as valid.
B	The CP 1242-7 GPRS logs in at the GPRS access point of the mobile service provider using the **APN address**, **APN user name** and **APN user password.** An IP address from the address area of the provider is assigned to the CP 1242-7 GPRS. The modem is now accessible via internet and can send IP-based requests to other participants on the internet.
C	The CP 1242-7 GPRS sends a connection request to the central station. The **static IP address** of the internet connection via which the central station is accessible is required. This could also be done with the help of the combination of **DNS name server** (in form of an IP address) and the **host address** (in form of a URL)

Digit	Description
D	As soon as the connection request has reached the router of the local IT network of the central station, it will forward it to the central station PC/ICP with the **port number**.
E	The Telecontrol Server Basic software now checks the connection request of the CP with the data stored in the configuration. A remote station is always identified by **project number**, **station number** and **slot number** (these three values yield a six-digit identification number). A **password** for the authentication of the remote station is additionally scanned. If the connection enquiry is evaluated successfully the Telecontrol Server Basic software updates the internal routing table entry related to this remote station and the corresponding IP address of the CP. Between the CP of the remote station and the central station there is a connection for the transmission of TCP/IP packages. The telecontrol system shown here uses this TCP/IP connection to transmit in both directions with the help of an individual log.

Note

- **Project number** and **station number** must be defined in the Telecontrol Server Basic software and stored in the remote station**.**
- The **slot number** is defined by the hardware setup of the remote station (slot number) and must be stored in the Telecontrol Server Basic software.

3.2 Overview of teleservice on the basis of the GPRS communication platform

Overview

If the GPRS communication platform is functioning, the protocol for the teleservice can also be transferred on the basis of the existing TCP/IP connection between remote station and central station.

An additional third station (the engineering station) enables using the teleservice outside of the IT server landscape of the central station as well. The communication between the engineering station and remote station is also always handled via the central station.

The graphic below shows the complete system with all parameters required for a teleservice communication between remote station and engineering station in addition to the parameters from Figure 3-1.

Figure 3-2
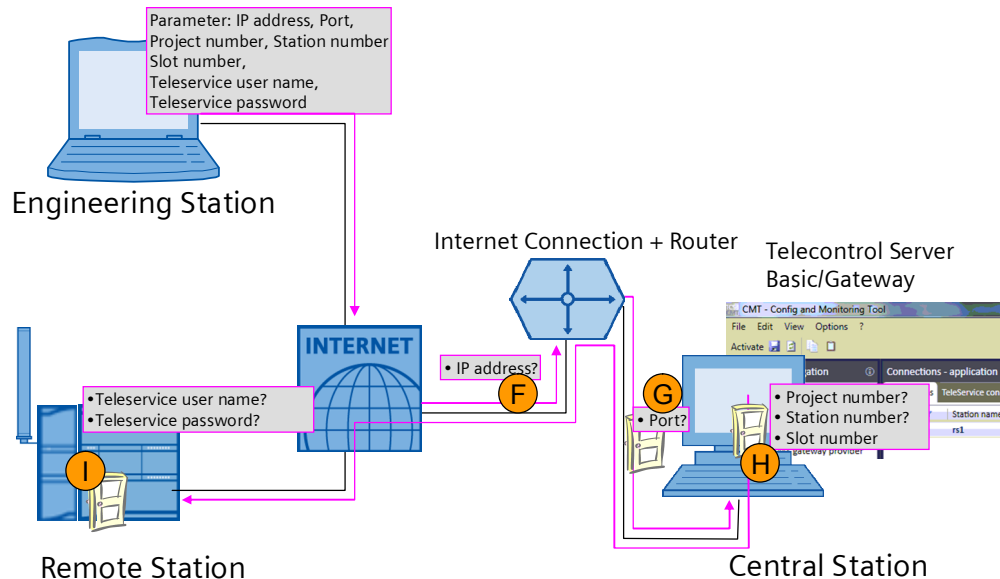
Teleservice connection setup between remote station and engineering station

Table 3-2 Teleservice connection setup to Figure 3-2

Digit	Description
F	The engineering station sends a connection request to the central station. The **static IP address** of the internet connection via which the central station is accessible is required. Alternatively, this could also be performed with the help of the combination of **DNS name server** (in form of an IP address) and the **host address** (in form of a URL)
G	As soon as the connection request has reached the router of the local IT network of the central station, it will forward it to the central station PC/ICP with the **port number**.

Digit	Description
H	The Telecontrol Server Basic software now checks the connection request of the engineering station with the data stored in the configuration. A remote station is always identified by **project number**, **station number** and **slot number** (these three values yield a six-digit identification number). If this remote station is entered in Telecontrol Server Basic and online (or offline and the "cyclic interrupt SMS" function is used, see chapter 3.5), the teleservice request from the engineering station to the remote station is forwarded on the basis of the existing TCP/IP.
I	For protection against unauthorized access to the CP 1242-7 the **Teleservice user name** and the **Teleservice password** is checked at the start of a teleservice session. If the teleservice connection request is validated, diagnostic and program data can then be transferred between the remote station and the engineering station. The process value communication is not affected by this.

3.3 Definition of the connection specific characteristics

Introduction

This chapter explains how the different types of connections are defined for the entire Telecontrol Basic GPRS platform and which configuration is relevant especially for the teleservice connection.

Overview of the characteristics of a connection

The following characteristics define the function of the Telecontrol system.

Table 3-3

Parameter	Possible values for the parameters	Remarks
Operating mode	• Telecontrol • GPRS direct	Is adjusted directly in the equipment configuration and at the Telecontrol Server Basic. In the following it's called **main connection.**
Connecting mode	• Permanent • Temporary	
Connection type	• Telecontrol connection (TCON_wdc) • UDP • ISOonTCP • SMS • Teleservice	Is programmed in the user program using the library modules. In the following it's called **sub-connection**. A connection is always reserved for the connection type Teleservice. This doesn't have to be programmed separately.
Connection parameter	Active/passive Connection setup, Connection ID, Information on the connection partner	

Definition of main connection

The main connection is defined by the selection of the corresponding parameters in the equipment configuration for the CP 1242-7 GPRS. For the teleservice

connection the operation mode **Telecontrol** and connection mode **Permanent** or connection mode **Temporary** can be selected.

In this application example (scenario 4) the operation mode **Telecontrol** and the connection mode **Permanent** have been selected for the main connection of the remote station. This means that the connection setup from the CP1242-7 must always be routed via a telecontrol server (central station) and the GPRS connection must be maintained permanently.

Definition of sub-connection

Several **connection types are available** for the sub-connection. **The selection is restricted by the type** of the main connection.

The desired connection type is programmed directly in the user program with the help of the library blocks.

3.4 Establishing a connection

Sequence

As soon as the **main connection** with the telecontrol server has been established, additional services can be initiated, depending on the requirements, by setting up a sub-connection. There are several **connection types** for the sub-connections (see Figure 3-3).

Five different sub-connections can be used <u>simultaneously</u> in the main connection used here.

Figure 3-3 Number of available connections
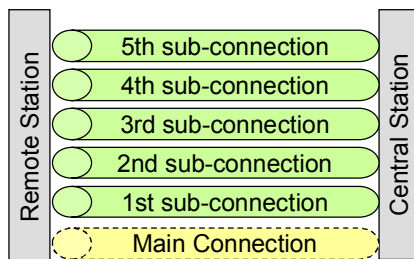
The main connection is a pre-requisite for all other sub-connections and is used additionally for the connection type Teleservice. The main connection is set up <u>automatically</u> by the CP 1242-7 GPRS provided that all parameters in the remote station are accessible (see chapter 3.1).

The different sub-connections are set up <u>on demand</u> and, depending on the **connection type**, represent either a connection

- from an engineering station to a remote station (**Telecontrol connections TCON_wdc** e.g. Diagnosis) or
- directly to the central station (Telecontrol connections **TCON_wdc** e.g. process data transfer) or
- to another remote station which can be reached via the central station (telecontrol connection, **UDP[only send]**) or
- to another device (**SMS**).

Figure 3-4 Example: number of simultaneous connections for operating mode "Telecontrol"
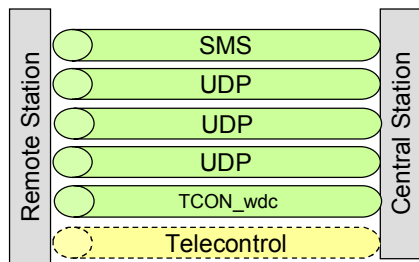
Connection type in this example

In this application example (scenario 4) **no** resource for a sub-connection is required. Connection type "Teleservice" for downloading project or program data and for requesting diagnostic data is directly integrated in the main connection.

The quantity framework of the simultaneously usable sub-connections is not restricted.

For a better understanding the teleservice connection should, however, be considered as an independent connection type "Teleservice".

Figure 3-5 Main connection, teleservice connection and sub-connection used in this scenario
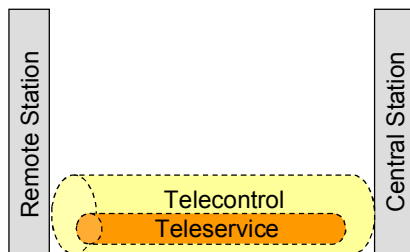
3.5 Alternative: Teleservice with temporary connection of the CP 1242-7

For application cases in which process values must never or only sporadically be transmitted from the remote station to the central station the connection mode for the main connection can be set to "**temporary**".

The main connection is here only set up on demand and using various mechanisms.

- The remote station initiates the connection setup using a command in the user program of the S7-1200 controller.

- The central station initiates the connection setup to transfer process values (cyclic data exchange or requests from the OPC interface). A cyclic interrupt SMS is therefore sent to the remote station.

- The central station initiates the connection setup, **to forward a teleservice request from an engineering station**. A cyclic interrupt SMS is therefore sent to the remote station.

- A cyclic interrupt SMS with special text content or a cyclic interrupt is directly sent to the remote station via telephone.

Note	The basics for data transmission and the operation from the user view of chapter 5 do not change when using a temporary connection. Further information on the temporary connection are available in document \1\ in chapter 4.1 f..

4 Starting up the Application

4.1 Installing and wiring the hardware

Network plan

The following graphic shows all the network relevant information which you require for the interconnection of all components.

Figure 4-1 Network plan with IP addresses
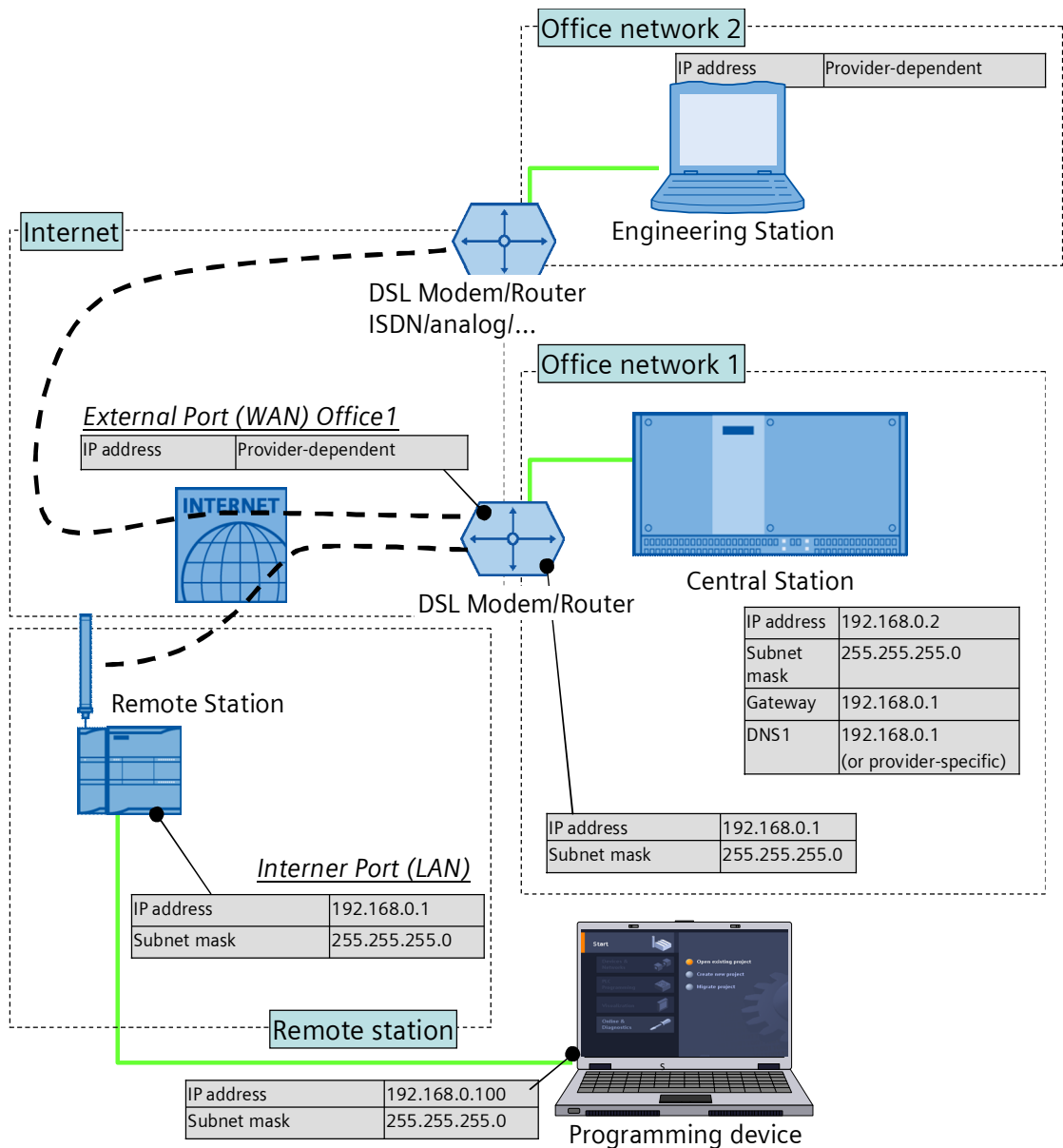
Install hardware

Table 4-1

No.	Action	Remarks
1	Install all the required components on the DIN rails	• Remote station: Component list Chapter 2.2.1 • Central station: Component list Chapter 2.2.2
2	Wire and connect all required components for the remote station and for the central station as described. Please watch the ground connections of the components and only activate the power supply for the SIMATIC PM 1207 at the very end. Place the SIM card in the CP 1242-7 GPRS	• Remote station: Configuration display Figure 2-2 • Central station: Configuration display Figure 2-3 • Engineering station: Configuration display Figure 2-4

Note	Only connect the CP 1242-7 GPRS to the voltage supply after configuring the S7-1200 in order to prevent a wrong PIN number being transferred.
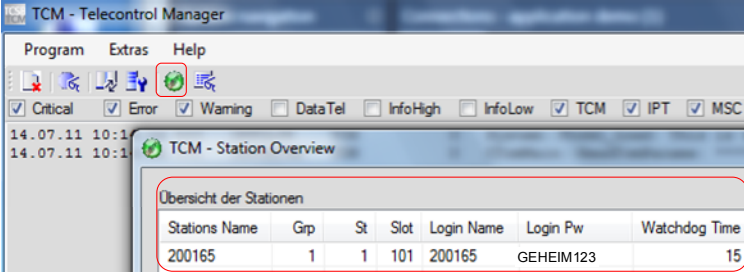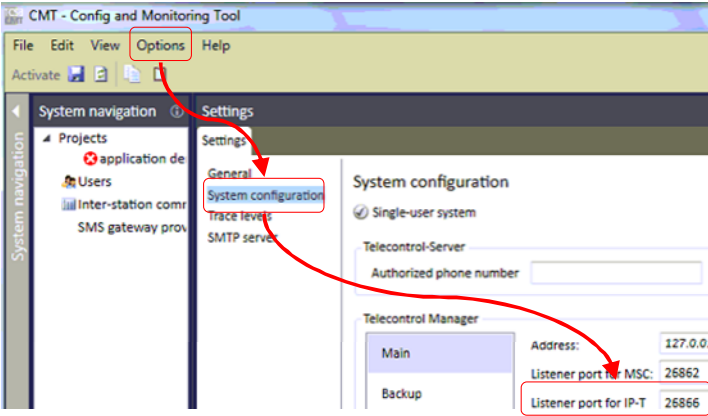
4.2 Configuration instructions

The following configuration instruction can be applied to the Telecontrol Server Basic software and to the Telecontrol Server Gateway software.

Configuring the central station

Table 4-2

No.	Action	Remarks
1.	Install all software components on your central station IPC.	• Telecontrol Server Basic
2.	Establish the internet connection on your IPC. Allocate the office network addresses to all network participants shown in Figure 4-1 with IP addresses given in the network address (or comparable ones).	• It is assumed that the router is already connected to the internet. • Check the internet connection at your central station with the help of the internet browser by calling up a random internet page.
3.	At the "Office network 1" router you set a port forwarding for port 26866 to the IP address of the central station If you have activated a firewall on your central station IPC, you define an exception for port 26866.	

No.	Action	Remarks
4.	Terminate the Telecontrol Manager of the Telecontrol Server Basic software. Use the right mouse-button to click the icon in the info area of Windows and select "Exit".	
5.	Copy the "Snmc.sqlite" file (from project folder CE-X21_Scenario4_TCS_Basic_V10) into the work directory of Telecontrol Server Basic. Please note, that possibly available configurations in the Telecontrol Server Basic could get lost! Please also see the "Note" at the end of the table.	**Storage path** C:\ProgramData\Siemens\Automation\TCS Basic\Data Please note that the "ProgramData" folder is hidden. **Wrong storage path** There is also a "Smsc.sqlite" file in the Installation directory C:\Programme\...\... (or C:\Programs\...\...). However, this file must not be overwritten.
6.	Open the "Config and Monitoring Tool" via "Start > Programs > Siemens Automation > SIMATIC > TCS Basic > Config and Monitoring Tool". Activate the configuration via the "Activate" button.	The "rs1" station in the "application demo" project now needs to represent a white "x" on red background.
7.	Start the Telecontrol Manager again via „Start > Programs > Siemens Automation > SIMATIC > TCS Basic > Telecontrol Manager".	
8.	Check the settings for the "rs1" station in the "Database" info window (see "Note" at the end of this table). 	
9.	Check the settings for the IP-T-port in the "Config and Monitoring Tool". The value must be set to 26866. 	

Note	The Telecontrol Manager has two functions which can be exclusively called up via key combinations. • STRG + ALT + double click on the TCS icon in the task bar opens the "Database" info window. • STRG + SHIFT + double click on the TCS icon in the task bar opens the "Log and Trace Control" window.

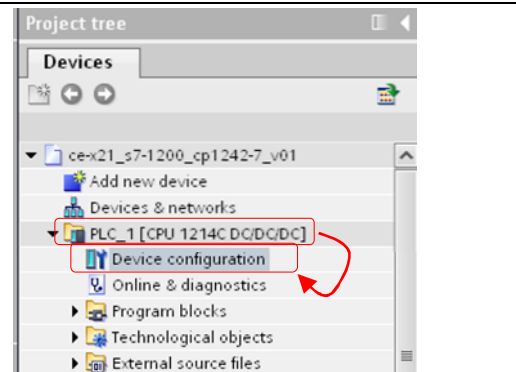| Note	The standard password for the "Config and Monitoring Tool" is "0000".

Note	If you do not wish to overwrite your existing "Smsc.sqlite" configuration file with the configuration file supplied here, you need to create a station with the following properties in the Telecontrol Server Basic with the following properties. • Project name/number for the station: "<own name>/1" • Station name/number: "<own name>/1" • Telecontrol password: "GEHEIM123" This is the only way to ensure that all further startup data provided here will work without problems.
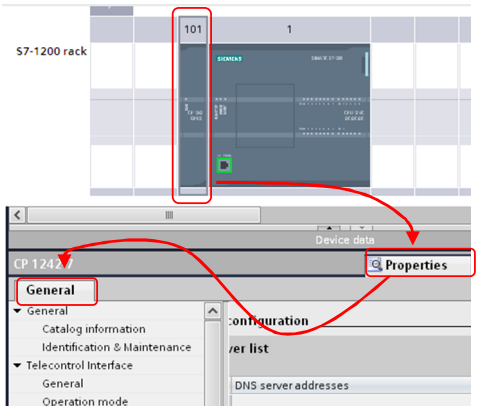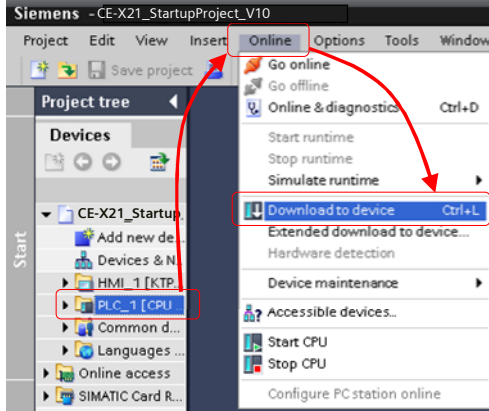
Configuring the remote station

Table 4-3

No.	Action	Remarks
1.	Network the S7-1200 controller with your programming device. Assign the Ethernet parameters as shown in Figure 4-1.	Assign to S7-1200 IP address: http://support.automation.siemens.com/WW/view/en/36932465 --> Chapter 7.1.3
2.	Open the "ap11" project file with STEP 7 V11.	Table 2-9 No. 1
3.	Open the equipment configuration of the control "PLC_1".	

No.	Action	Remarks
4.	Mark the CP 1242-7 GPRS and open the "Properties" window in order to be able to input the connection parameters. Assign the parameters as described in the following steps. You can find a complete description of the parameters in document \1\ chapter 5.2.	
5.	Assign a static IP-address to the modem (see Figure 4-1 "WAN" <u>or</u> hostname when DynDNS is used).	Telecontrol interface > Operation mode > CP1242-7 GPRS *assign name or IP-address to Telecontrol Server*
6.	Enter the PIN number of the SIM card which is inserted in the modem.	Telecontrol interface > Modem settings > *PIN* and *confirm PIN*
7.	Assign project number, station number and password for identification of the remote station in the Telecontrol server. These parameters need not be modified when using the file from Table 2-9 No. 2.	Telecontrol interface > Modem identification > *Project number*, *Station number*, *Password* and *confirm password*
8.	Enter the APN address, APN user name and APN user password to login at the GPRS network of the provider.	Telecontrol interface > GPRS access > *APN Name*, *APN User name*, *APN Password* and *confirm APN Password*
9.	Enter the Teleservice user login, Teleservice user password for log in of the engineering station at the remote station. **NOTE:** Teleservice user login and password are already entered in this project file. User login: **scenario4** Password: **12341234**	Telecontrol interface > Teleservice settings/ Teleservice user settings > Teleservice User Login, Teleservice User Password and confirm Teleservice User Password
10.	Save the project. Marc the program file of the S7-1200 and transmit the program via "online/load in the equipment" in the control. Make sure that the LED on the S7-1200 controller indicates "RUN".	
11.	Activate the voltage supply for the CP1242-7 GPRS.	

Configuring the engineering station

Table 4-4

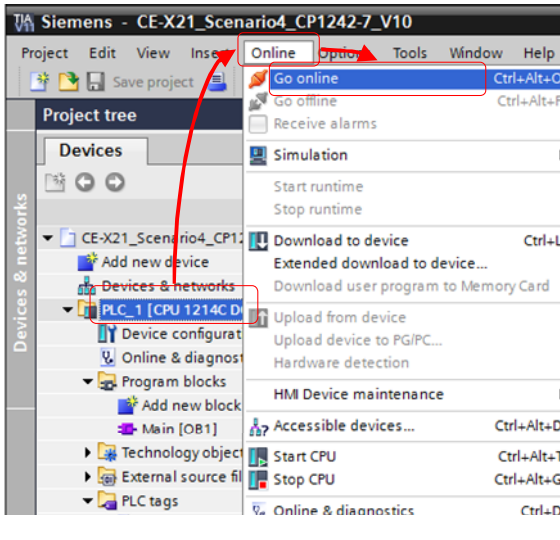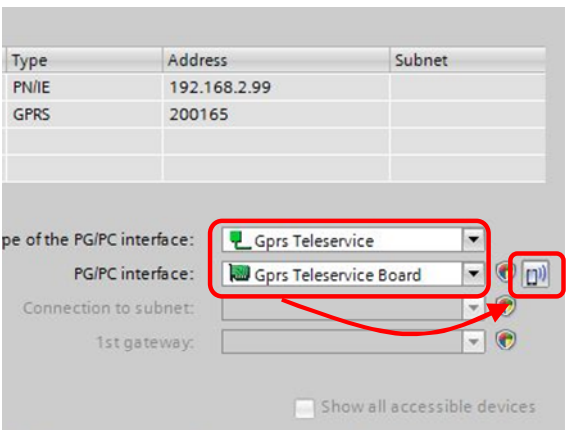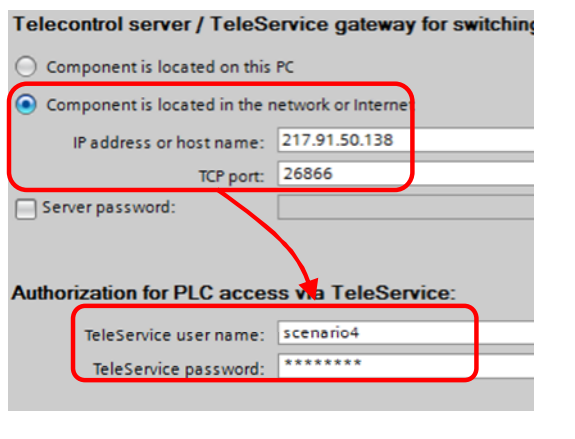| No.	Action	Remarks
12.	Establish an internet connection at your SIMATIC Field PG.	Check the internet connection at your engineering station with the help of the internet browser by calling up a random internet page.
13.	Open the ap11 project file with STEP 7 V11.	Table 2-9 No. 1
14.		

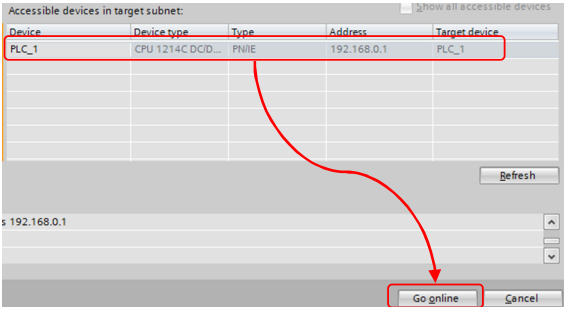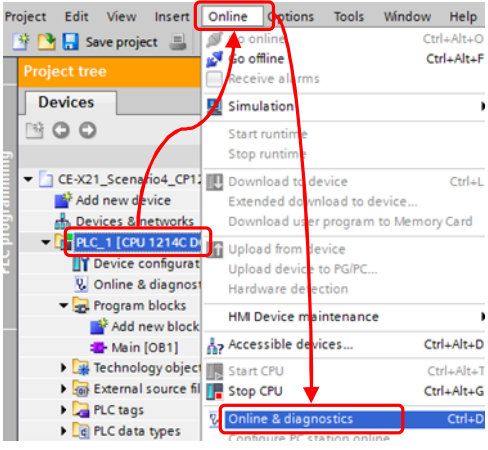| Note	It is not possible to set up a teleservice connection to the remote station using an empty project. At least the correct hardware configuration of the S7-1200 controller and the CP 1242-7 GPRS must always be present. The access point at the central station and the remote station is defined via the configuration of the CP 1242-7 GPRS.

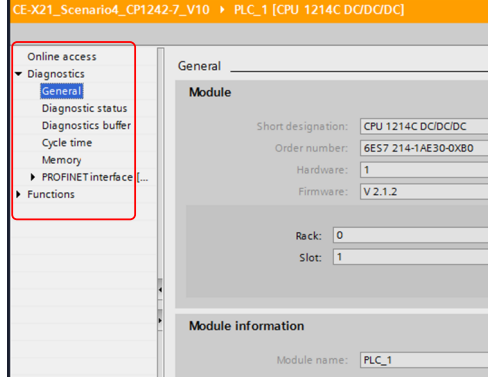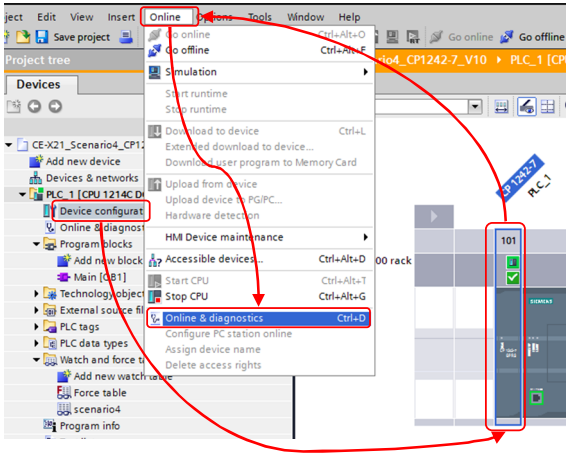Access ID des STEP 7 V11 Projekts in der Remote Station muss übereinstimmen mit Access ID des lokalen STEP 7 V11 Projekts auf der Engineering Station.
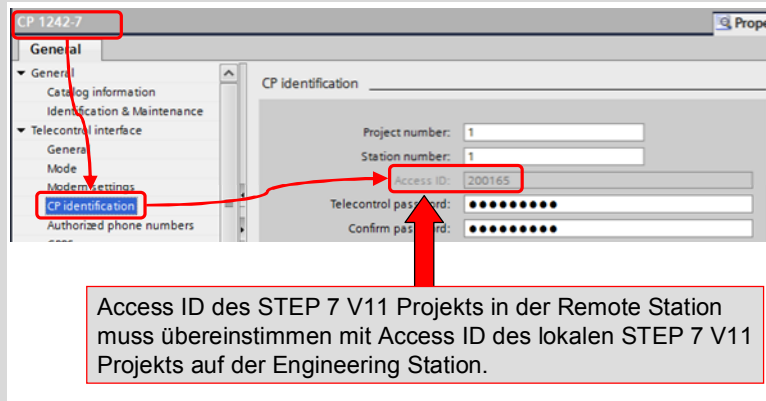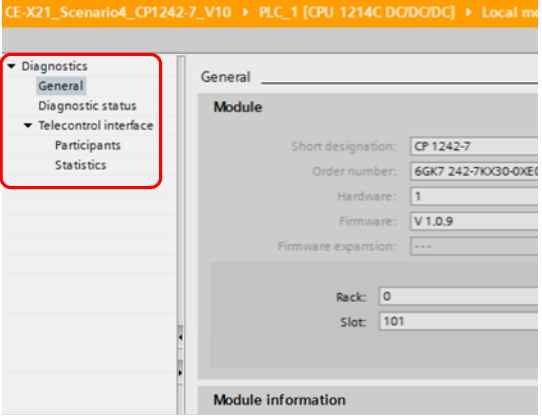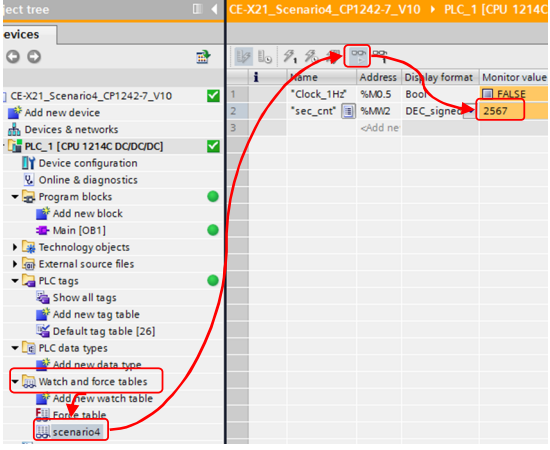
5 Operating the Application
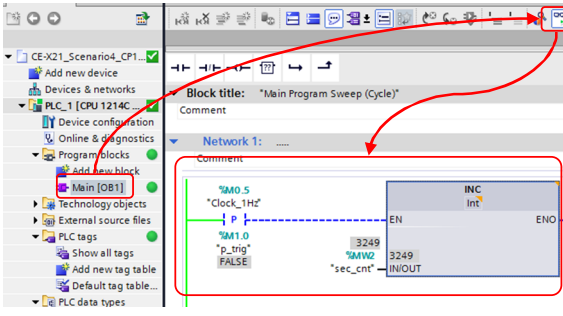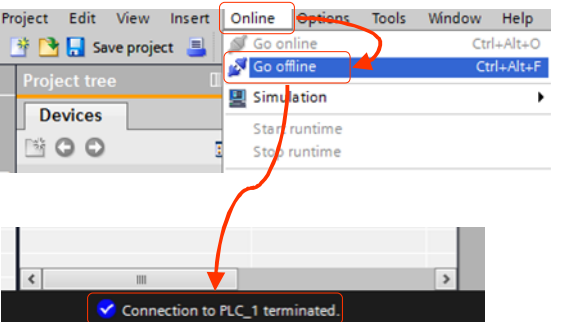
Polling diagnostic data from the station

Table 5-1

No.	Action	Remarks
1.	Select the "PLC_1" controller and open the "Go online" dialog via the "Online >> Go online" primary navigation.	
2.	Select the following settings in the "Go online" dialog. • Type of PG/PC interface: Teleservice via GPRS • PG/PC interface: Teleservice via GPRS Click on the icon with the mobile phone.	
3.	Enter the following parameters in the "GPRS Teleservice" window. • Activate the "Component is located in the network or Internet" radio button • IP address or host names: IP address of the central station (see Table 4-1 "External port (WAN) Office1") • TCP port: 26866 • TeleService user name: **scenario4** • TeleService password: **12341234** Press the "Connect" button.	

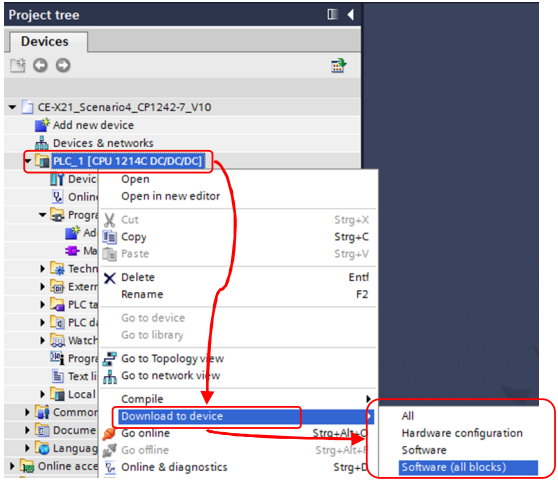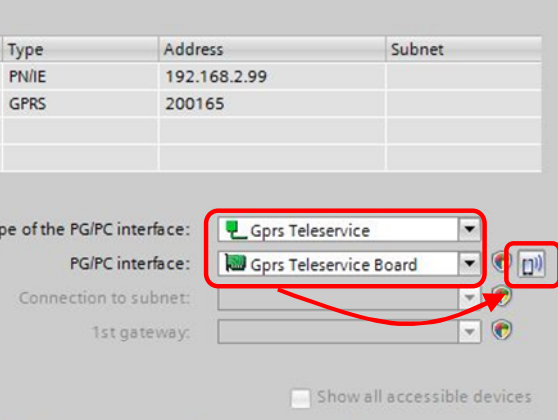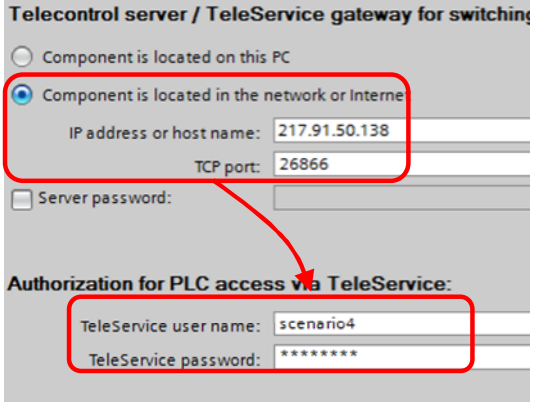| No.	Action	Remarks
4.	Mark the detected controller and press the "Go online" button. With the help of the teleservice connection you are now connected to the remote station.	
5.	Select the "PLC_1" controller. "Poll the diagnostic data of the S7-1200 controller via "Online > Online & diagnostics".	
6.	Now select the respective topic in "Diagnostics" to call up the information of the S7-1200 controller.	

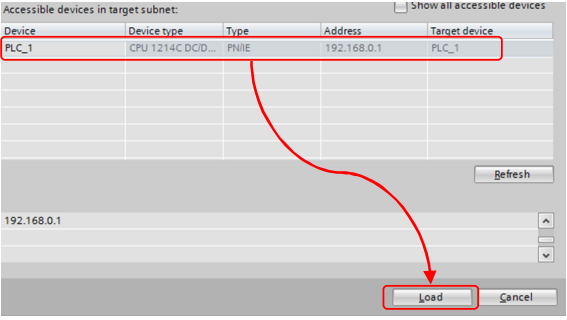| No.	Action	Remarks
7.	To be able to poll the diagnostic data for CP 1242-7 GPRS navigate to the hardware configuration. Select the module in the hardware setup and navigate to "Online > Online & diagnostics" to be able to poll the online status.	
8.	Now select the respective topic in "Diagnostics" to call up the information of the CP 1242-7 controller.	
9.	To be able to view process values online, navigate to "Watch and force tables" to be able to open the "scenario 4" monitoring table. Click the "Monitor all" button. In the controller the "sec_cnt" count is incremented every second. The process value is transferred directly to the engineering station and displayed via the just started monitoring function.	

No.	Action	Remarks
10.	To be able to view the program status online, open any program block and click on the "Monitor on/off" button.	
11.	Now terminate the online mode via "Online > Go offline". The teleservice connection is automatically terminated after a few seconds.	

Downloading project and program data from the STEP 7 project into a remote station

Table 5-2

No.	Action	Remarks
1.	Ensure that STEP 7 V11 on your engineering station is not in offline mode.	
2.	Select the project content to be transferred to the remote station • Program block/s or • Hardware configuration or • All	
3.	Select the following settings in the "Go online" dialog. • Type of PG/PC interface: Teleservice via GPRS • PG/PC interface: Teleservice via GPRS Click on the icon with the mobile phone.	
4.	Enter the following parameters in the "GPRS Teleservice" window. • Activate the "Component is located in the network or Internet" radio button • IP address or host names: IP address of the central station (see Table 4-1 "External port (WAN) Office1") • TCP port: 26866 • TeleService user name: **scenario4** • Teleservice password: **12341234** Click the "Connect" button.	

No.	Action	Remarks
5.	Mark the detected controller and press the "Load" button. With the help of the teleservice connection you are now connected to the remote station.	
6.	Follow the instructions for the download of the selected program of program parts.	
7.	After the download the teleservice connection is automatically terminated.	

6 Links & Literature

6.1 Internet links

This list is by no means complete and only presents a selection of suitable information.

Table 6-1

	Topic	Title
\1\	CP1242-7 GPRS Operating instruction	http://support.automation.siemens.com/WW/view/en/42330276
\2\	Telecontrol Server Basic Operating instruction	http://support.automation.siemens.com/WW/view/en/55636857
\3\	S7-1200 Automation system with system handbook	http://support.automation.siemens.com/WW/view/en/36932465
\4\	WAN Access Methods	http://support.automation.siemens.com/WW/view/en/26662448

7 History

Table 7-1

Version	Date	Revisions
V1.0	May 2012	First issue