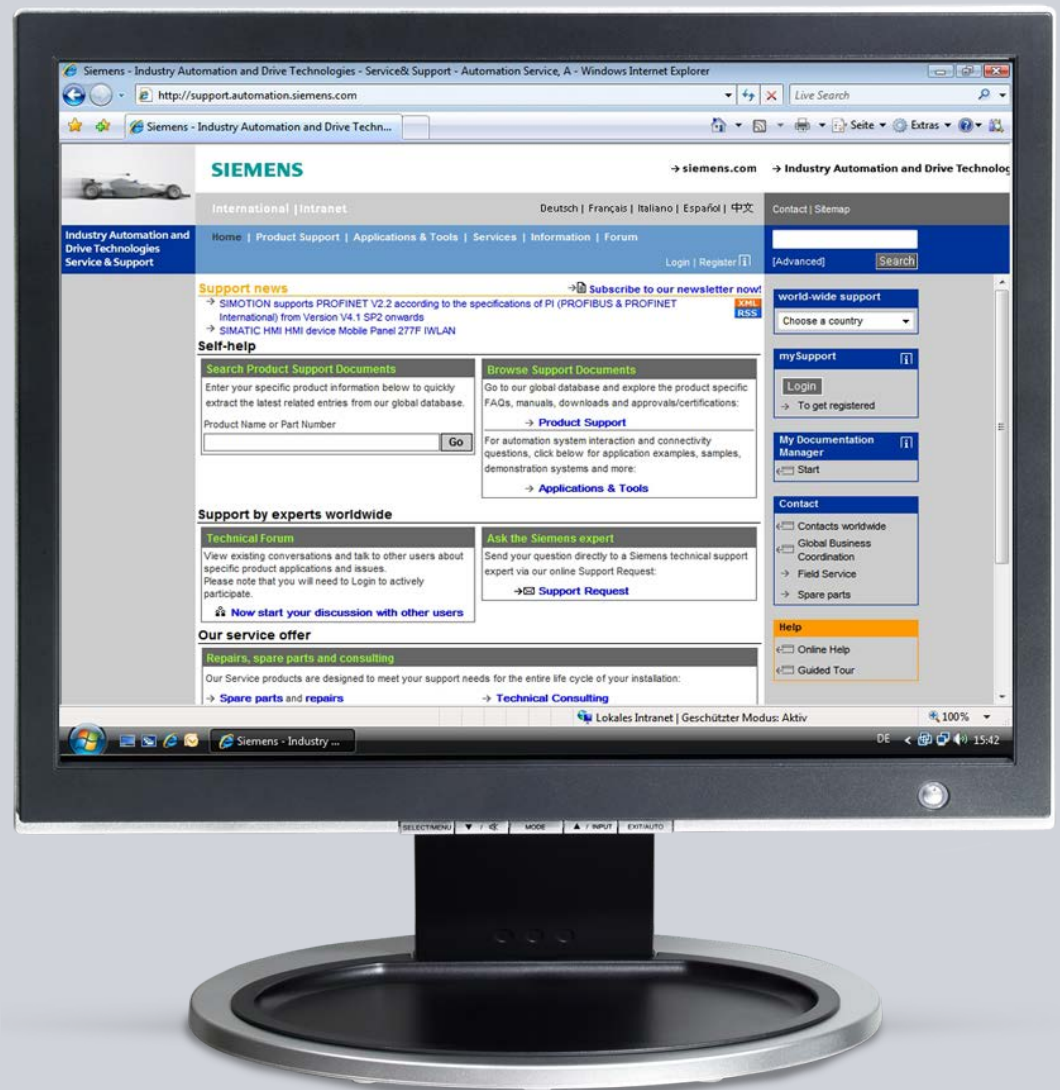


# Teleservice of an S7-1200 over Internet/GPRS

TS Gateway

FAQ • August 2013



## Service & Support

Answers for industry.

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Go to the following link to download this document.

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### **Caution**

The functions and solutions described in this article confine themselves predominantly to the realization of the automation task. Furthermore, please take into account that corresponding protective measures have to be taken in the context of Industrial Security when connecting your equipment to other parts of the plant, the enterprise network or the internet. Further information can be found in Entry ID: !50203404!

<http://support.automation.siemens.com/WW/view/de/50203404>

## **Question**

How do you diagnose an S7-1200 CPU (with CP 1242-7) over the internet/GPRS network?

## **Answer**

Follow the instructions and notes listed in this document for a detailed answer to the above question.

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# 1 Overview

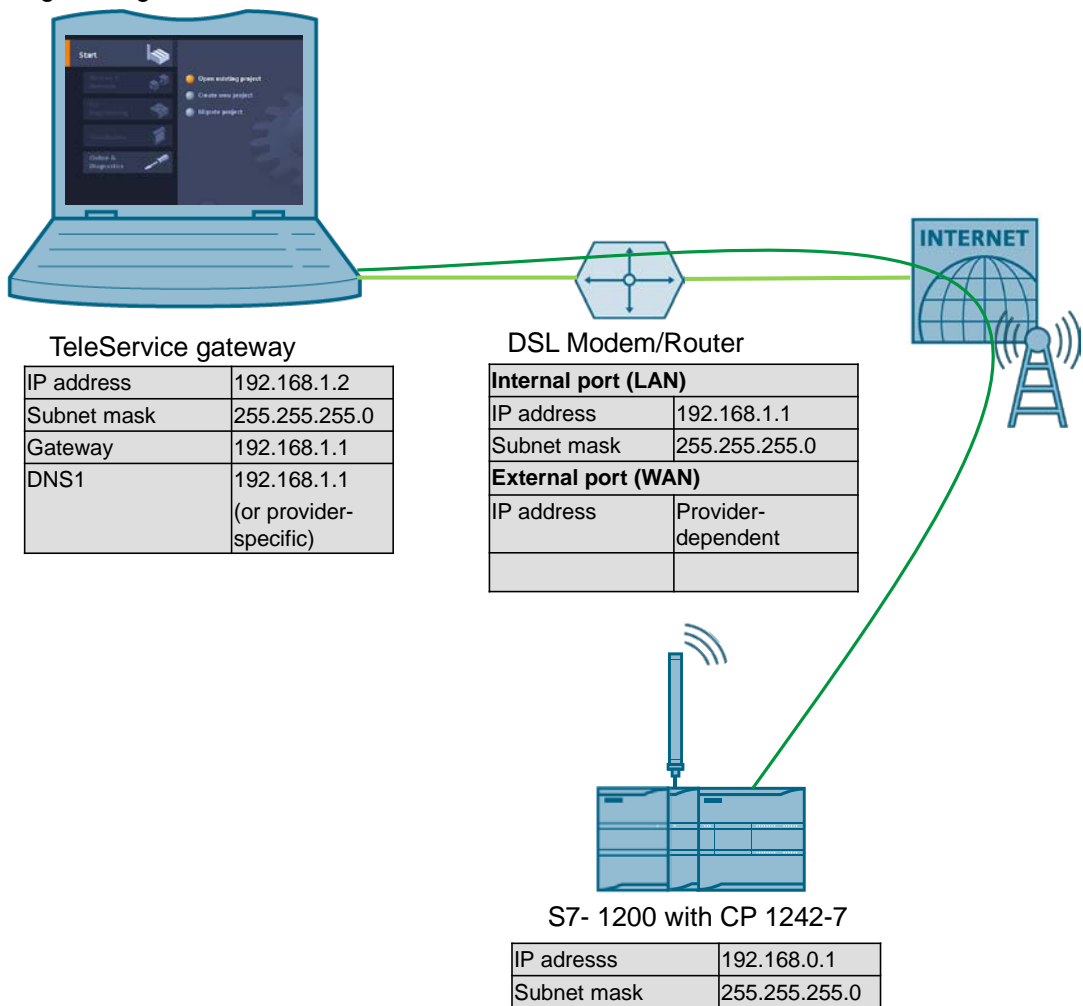
TS Gateway is an application used for TeleService connections over GPRS with remote SIMATIC stations of the type S7-1200.

An alarm SMS is sent through the TeleService gateway (PC, on which the TS Gateway software is installed) or from a telephone to the CP 1242-7 to alert the S7-1200 station. Then the TeleService connection can be established.

The figure below shows the configuration for this FAQ response. More sample configurations are available in the "TS Gateway" system manual (internet link \2).

Fig. 1-1

Engineering station with STEP 7

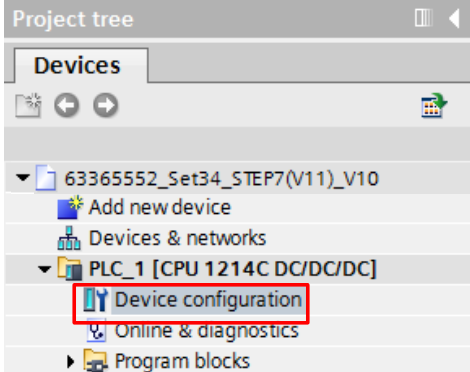
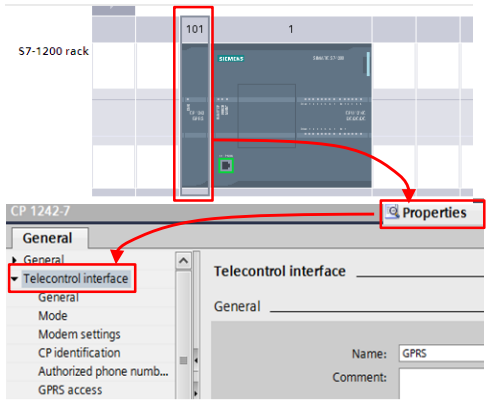


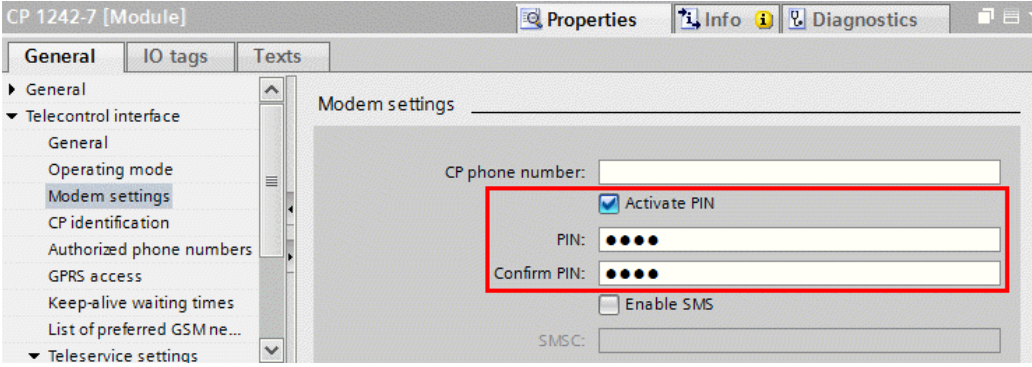
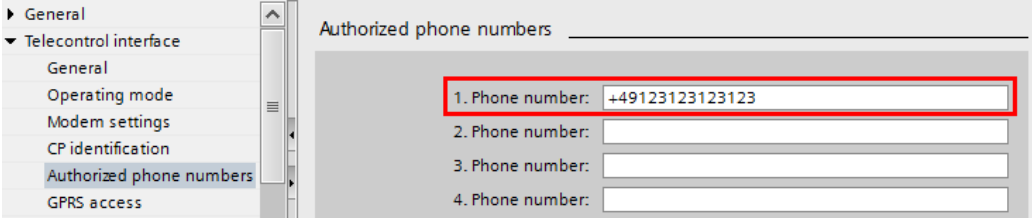
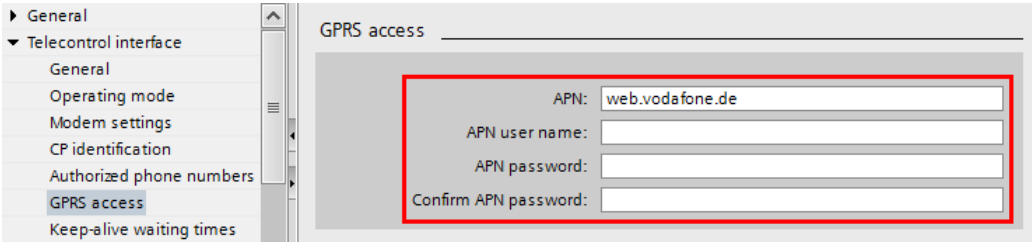
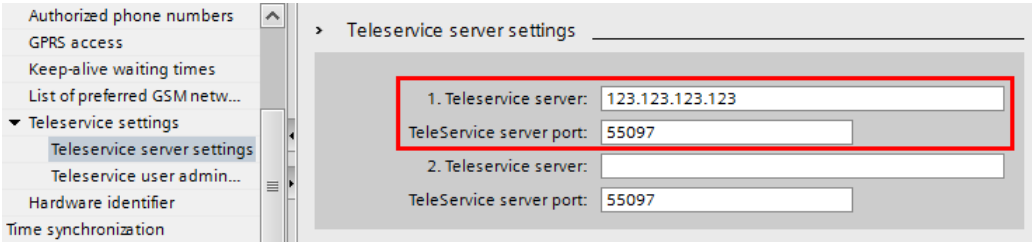
## 2 Alarm SMS by Telephone

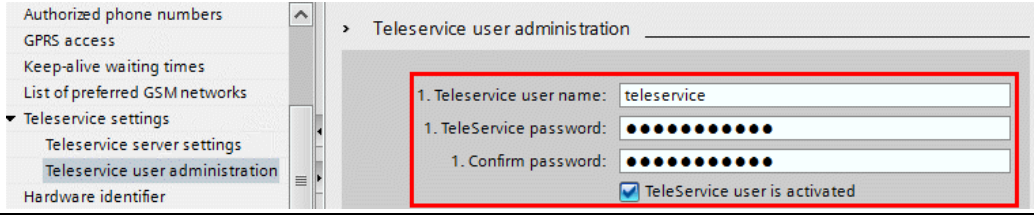
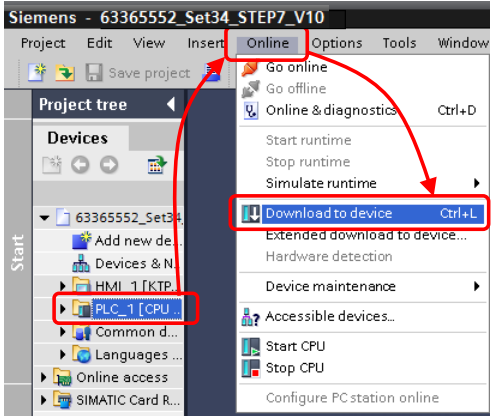
### 2.1 Configuration

#### 2.1.1 Configuration in STEP 7

Table 2-1

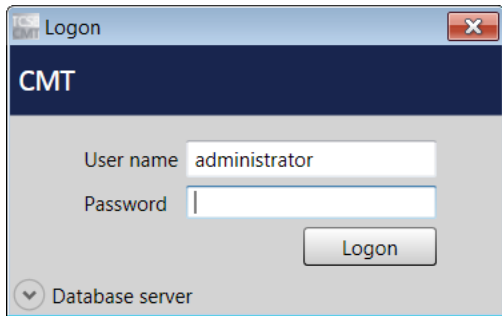
No.	Action	Remark
1.	Set the IP address of the PG/PC so that it is in the same network as the IP address of the CPU.	For example: IP Address of the CPU: 192.168.0.1 IP Address of the PG/PC: 192.168.0.100
2.	Open your STEP7 V12 project.	For STEP 7 V11.0 SP1 you also need the Support Package "CP 1242-7" (HSP0003001). The HSP is available at this internet link: \4\ A detailed description of how to install HSPs is available at this internet link: \5\.
3.	Connect the S7-1200 controller with your programming device. Assign the IP address configured in the STEP 7 project to the CPU. (If the CPU has not yet been configured)	Information about this is available in section 5.6.4.3 "Assigning an IP Address Online to a CPU" in this document: \3\ .
4.	Open the device configuration of your controller in the "Project Tree" by selecting "Device configuration".	
5.	Mark the CP 1242-7 and go to "Properties > Telecontrol Interface".	

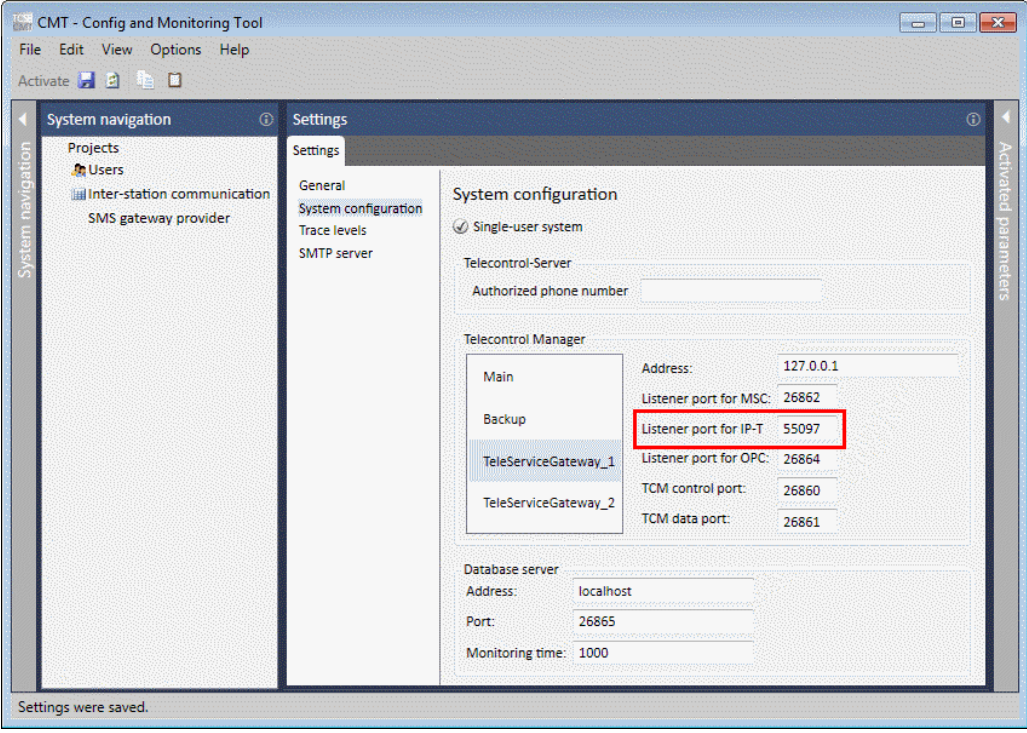
No.	Action	Remark
6.	<p>In the "Modem settings" tab, enter the PIN number of the SIM card in the CP 1242-7. Check "Activate PIN".</p> 	
7.	<p>Go to the "Authorized phone numbers" tab. In the "1. Phone number" field, enter the phone number of the mobile phone from which alarm SMSs are to be sent to the remote station.</p>  <p>You can also enter the "*" symbol which has the effect that an alarm SMS is accepted from any telephone number.</p>	
8.	<p>Go to the "GPRS Access" tab. Enter the APN data to log in to the GPRS network of the provider.</p> 	<p>This data is in the documentation of your GSM/GPRS provider. With some providers there is no user name or password.</p>
9.	<p>Go to the "Teleservice settings &gt; Teleservice server settings" tab. In the "Teleservice Server" input field, enter the static IP address (or host name when using DynDNS) of the internet router (external port) that is connected to the TeleService Gateway PC.</p> 	<p><b>Note:</b> You can set the TeleService server port here. If you want to use a different port, that port must also be changed accordingly in the TS Gateway software and in the settings of the DSL router (see also Note No. 2 in Table 2-3).</p>

No.	Action	Remark
10.	<p>Go to "Teleservice user administration". Create a Teleservice user by entering a user name and password in the appropriate fields. Then check "Teleservice user is activated".</p> 	
11.	<p>Save the project. Now mark the program folder of the S7-1200 and transfer the program to the controller by means of "Download to device". Make sure that the LED of the S7--1200 controller display the "RUN" state.</p>	

### 2.1.2 Configuration in the "TS Gateway" Software

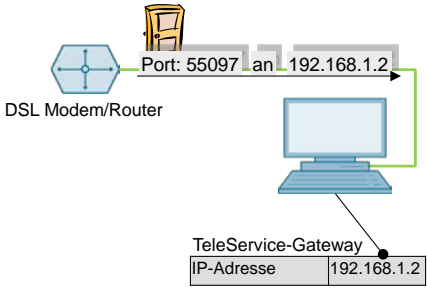
Table 2-2

No.	Action	Remark
1.	Now install the "TS Gateway" software on your PC (TeleService Gateway PC).	
2.	Open the CMT (Config and Monitoring Tool) with "Start > All programs > Siemens Automation > SIMATIC > TCS Basic > Config and Monitoring Tool".	
3.	<p>Enter the password "0000" and confirm the input with the "Logon" button.</p> <p><u>Note:</u> "0000" is the default password for the "Config and Monitoring Tool".</p>	

No.	Action	Remark
4.	<p>Go to "Options &gt; Settings &gt; System configuration".                      Make sure that the "Listener port for IP-T" is set the same as in the STEP 7 device configuration (No. 9 in Table 2-1).</p> 	

### 2.1.3 Network Settings

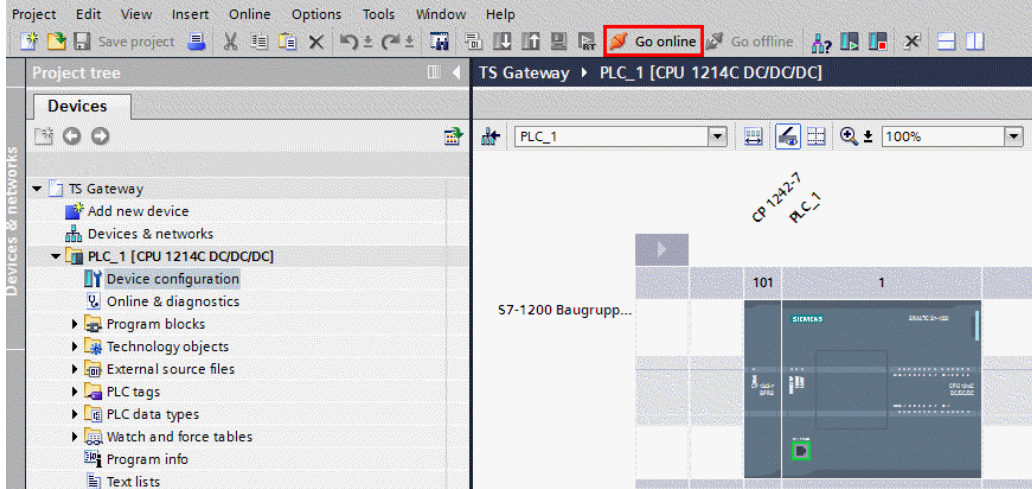
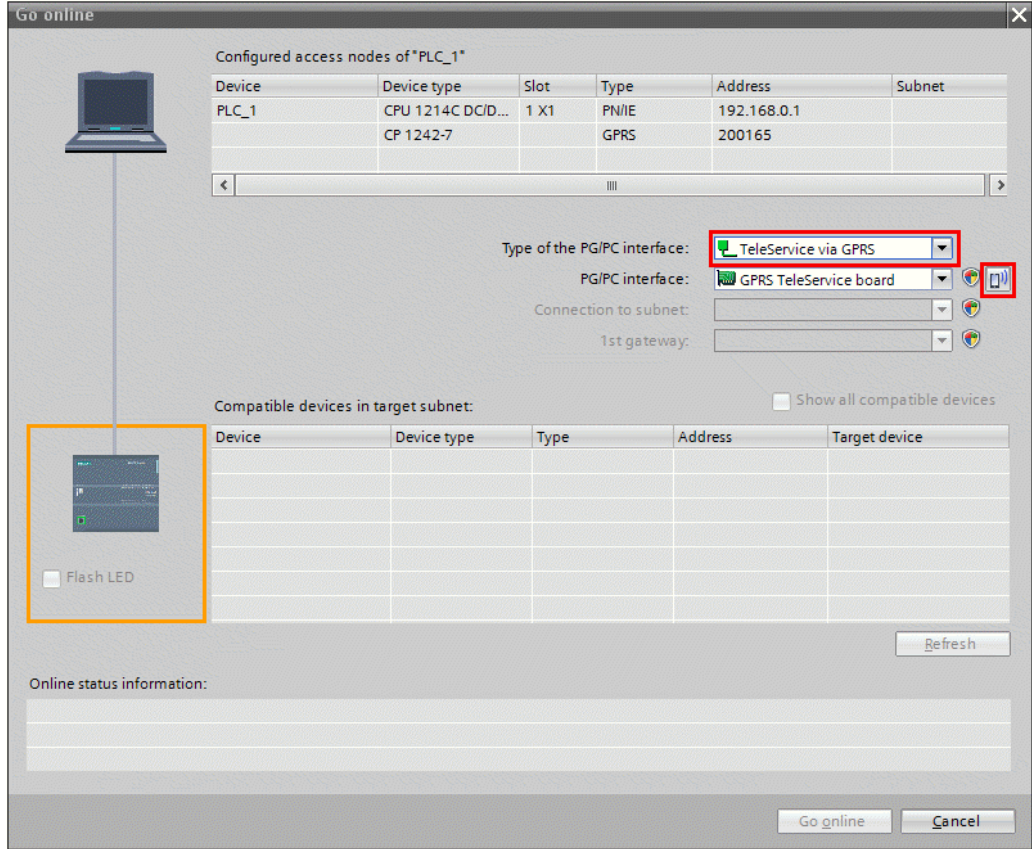
Table 2-3

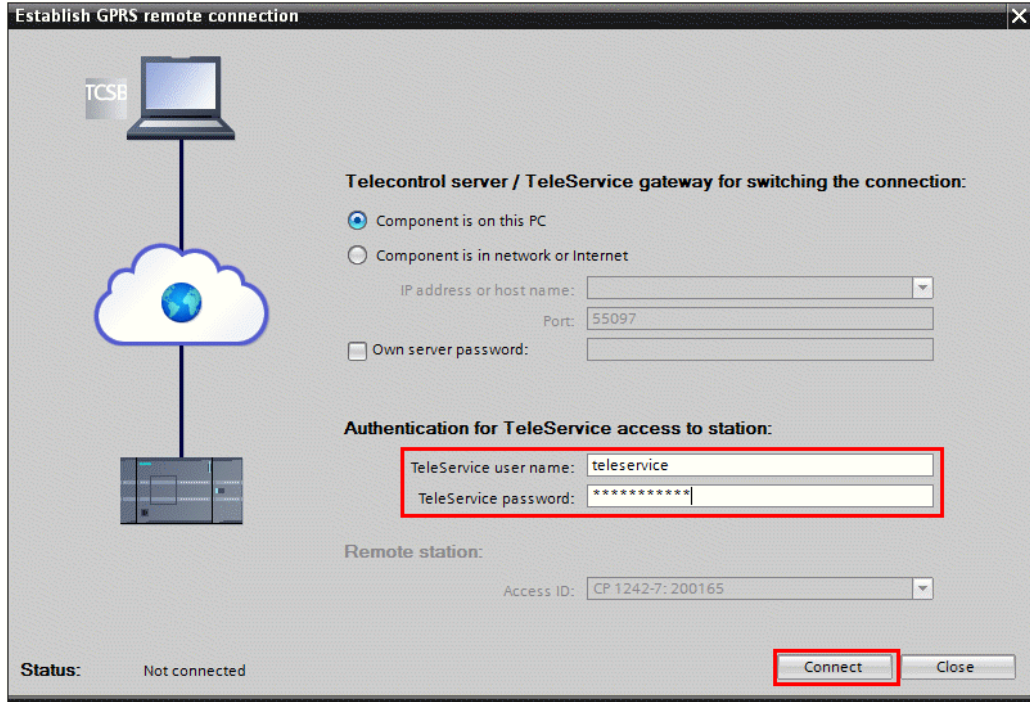
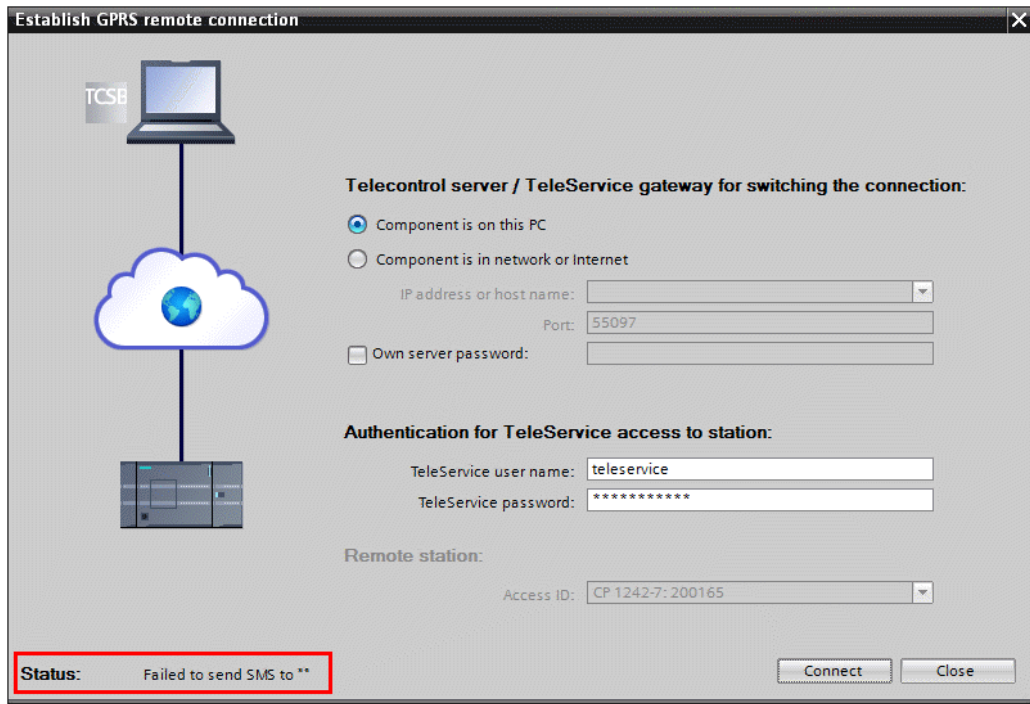
No.	Action	Remark
1.	<p>Establish the connection to the internet on your TeleService Gateway PC.</p>	<ul style="list-style-type: none"> <li>It is presumed that the router is already connected to the internet.</li> <li>Test the internet connection on your PC by calling a random site in an internet browser.</li> </ul>
2.	<p>On the DSL router, set a port forwarding for the Port 55097 to the IP address of the TeleService Gateway PC.</p> <p><b>Note:</b> If you change the port numbers, you must enable the ports used accordingly in the router or through the functions in the operating system. (Make sure that TCM is authorized in the Windows firewall.)</p>	

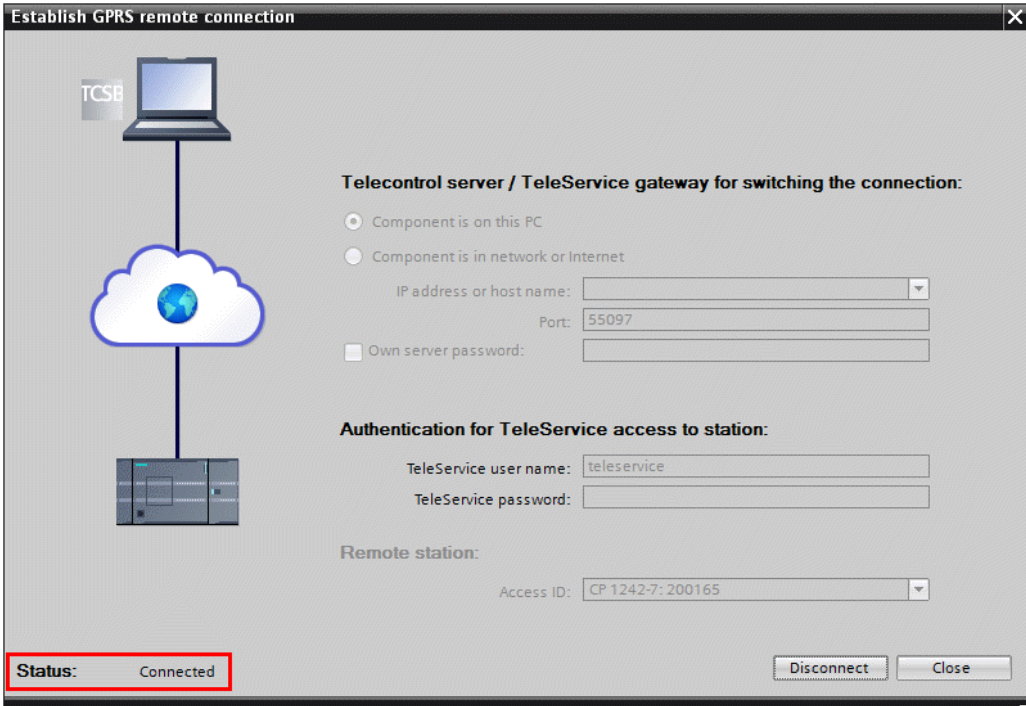


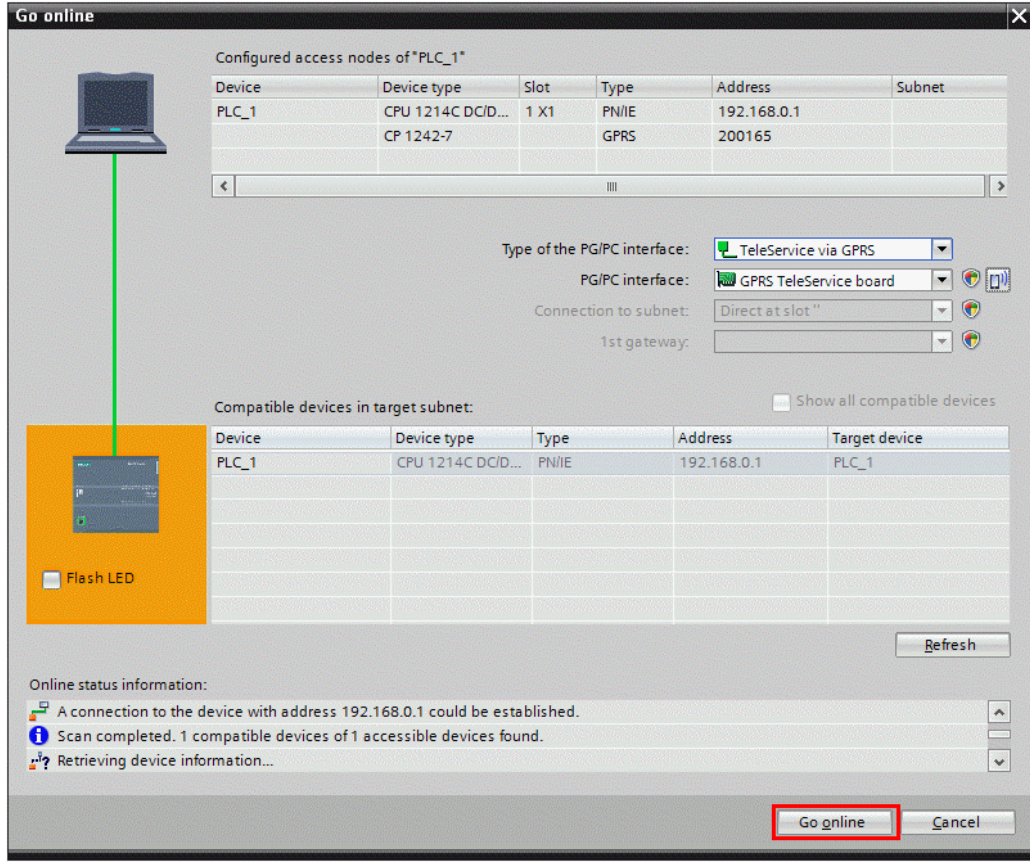
## 2.2 Test Teleservice

Table 2-4

No.	Action	Remark
1.	Go online to the CPU with "Go online".	
2.	Select "TeleService via GPRS" and establish the GPRS remote connection by clicking the relevant icon.	

No.	Action	Remark
3.	<p>Enter the TeleService access data. This data has been created by the user in No. 10 in Table 2-1 .</p>  <p>Then click "Connect".</p>	
4.	<p>This request will fail, but the step must be made. You get an error message saying that the sending of the SMS has failed.</p> 	
5.	<p>Send an SMS from the mobile phone to the telephone number of the CP with this text: TELESERVICE. When the SMS is received, the Teleservice LED flashes.</p>	

No.	Action	Remark
6.	Then click "Connect" again.	
7.	<p>When the GPRS remote connection is established, "Connected" is displayed as the status.</p>  <p>The following LEDs light on the CP 1242-7.</p> <ul style="list-style-type: none"> <li>● NETWORK: Status of the network connection</li> <li>● CONNECT: Data transfer</li> <li>● SIGNAL QUALITY: Signal quality of the GSM network (green or yellow depending on the signal strength)</li> <li>● TELESERVICE: Status of the TeleService connection</li> <li>● DIAG: Basic status of the module</li> </ul>	

No.	Action	Remark																												
8.	<p>Then click "Go online". Now you can read out the diagnostics file, download blocks, etc.</p>  <p>The screenshot shows the 'Go online' dialog box with the following details:</p> <ul style="list-style-type: none"> <li><b>Configured access nodes of "PLC_1"</b> <table border="1"> <thead> <tr> <th>Device</th> <th>Device type</th> <th>Slot</th> <th>Type</th> <th>Address</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>PLC_1</td> <td>CPU 1214C DC/D...</td> <td>1 X1</td> <td>PN/IE</td> <td>192.168.0.1</td> <td></td> </tr> <tr> <td></td> <td>CP 1242-7</td> <td></td> <td>GPRS</td> <td>200165</td> <td></td> </tr> </tbody> </table> </li> <li><b>Type of the PG/PC interface:</b> TeleService via GPRS</li> <li><b>PG/PC interface:</b> GPRS TeleService board</li> <li><b>Connection to subnet:</b> Direct at slot "</li> <li><b>1st gateway:</b> (empty)</li> <li><b>Compatible devices in target subnet:</b> <table border="1"> <thead> <tr> <th>Device</th> <th>Device type</th> <th>Type</th> <th>Address</th> <th>Target device</th> </tr> </thead> <tbody> <tr> <td>PLC_1</td> <td>CPU 1214C DC/D...</td> <td>PN/IE</td> <td>192.168.0.1</td> <td>PLC_1</td> </tr> </tbody> </table> </li> <li><b>Online status information:</b> <ul style="list-style-type: none"> <li>A connection to the device with address 192.168.0.1 could be established.</li> <li>Scan completed. 1 compatible devices of 1 accessible devices found.</li> <li>Retrieving device information...</li> </ul> </li> </ul>	Device	Device type	Slot	Type	Address	Subnet	PLC_1	CPU 1214C DC/D...	1 X1	PN/IE	192.168.0.1			CP 1242-7		GPRS	200165		Device	Device type	Type	Address	Target device	PLC_1	CPU 1214C DC/D...	PN/IE	192.168.0.1	PLC_1	
Device	Device type	Slot	Type	Address	Subnet																									
PLC_1	CPU 1214C DC/D...	1 X1	PN/IE	192.168.0.1																										
	CP 1242-7		GPRS	200165																										
Device	Device type	Type	Address	Target device																										
PLC_1	CPU 1214C DC/D...	PN/IE	192.168.0.1	PLC_1																										

## 3 Alarm SMS by TeleService Gateway

### 3.1 Configuration

#### SMTP Server

Initially an e-mail is sent by the TelService server for the alarm SMS function. The e-mail is sent through an SMTP server to an SMS gateway. Make the following settings to configure the SMTP server.

Table 3-1

No.	Action	Remark
1	Create an e-mail account with an e-mail service provider of your choice.	Pay attention to the note at the end of the table.
2	Take the following data from the documentation of your SMTP server provider. <ul style="list-style-type: none"> <li>• Mail server</li> <li>• User name</li> <li>• Password</li> <li>• E-mail address</li> </ul>	You need this data for configuring with the CMT Config and Monitoring Tool.

<b>WARNING</b>	<b>All e-mail providers that do not have an SSL encryption for the SMTP logon are supported by TS Gateway.</b>
----------------	--

#### SMS Gateway Provider

The SMS gateway transforms the e-mail into an SMS and transfers this to the CP 1242-7. To receive the e-mail some network providers require that first a personal mobile e-mail address is enabled. Make the following settings to configure the SMS Gateway provider.

Table 3-2

No.	Action	Remark
1.	Insert the SIM card of the remote station in mobile phone.	
2.	Send the special enabling text to the abbreviated dialing number of your SMS network provider. For example, for Vodafone.de: Text: OPEN Abbreviated dialing number: 3400	You receive a personal e-mail address by SMS which is usually composed of the telephone number and the gateway name.
3.	Consult your SMS gateway provider to find out how to configure the e-mail for the alarm SMS. For example, for Vodafone.de you enter the following text in the "Subject" field and/or "Text" field: <MSG> TCSB then automatically enters the correct message, which is stored in the system and is understood by CP 1242-7.	You need this data for configuring with the CMT Config and Monitoring Tool.

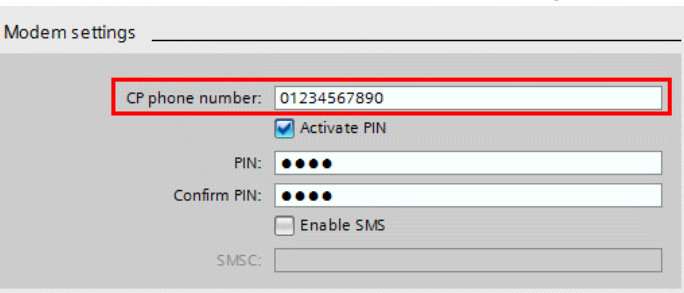
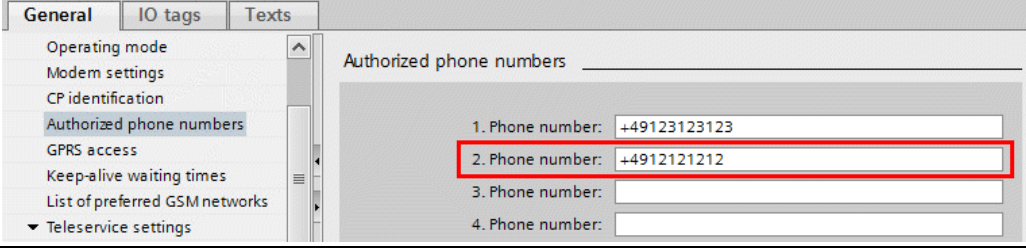
No.	Action	Remark
4.	Insert the SIM card in the CP 1242-7.	

**Note** Check with your network provider whether it is necessary to send enabling and disabling SMSs.

**Note** Examples and notes on configuring the SMS gateway are in the document \2\ in Attachment A.

### 3.1.1 Configuration in STEP 7

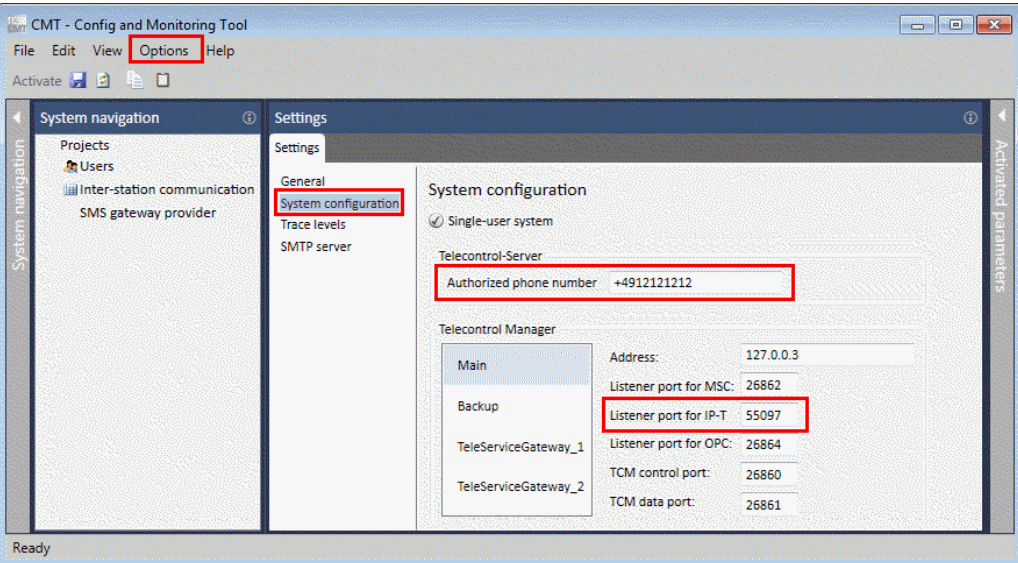
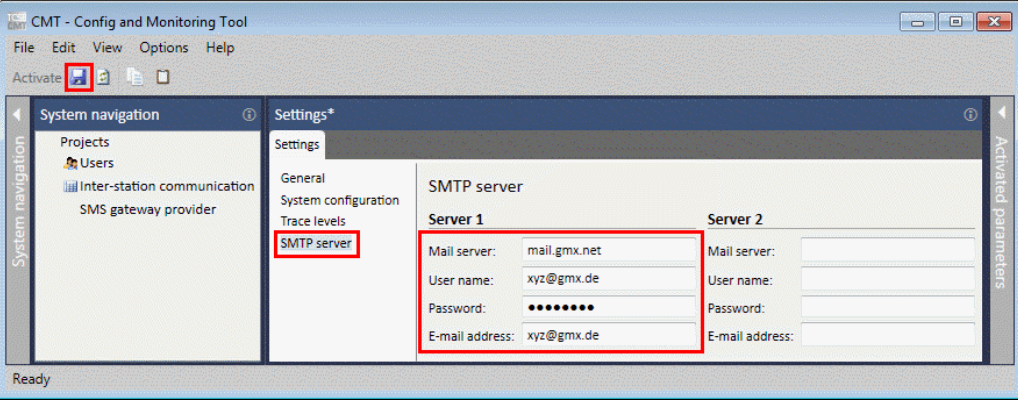
Table 3-3

No.	Action	Remark
1.	<p>Make the following settings as described in Table 2-1 . In step 6 you also enter the telephone number of the CP in addition to the PIN settings.</p>  <p>In Step 7, for 2. Phone number you must enter an identification that matches the setting in the TS Gateway (see Note below).</p> 	
2.	Save the project. You do not need to download the project into the CPU.	

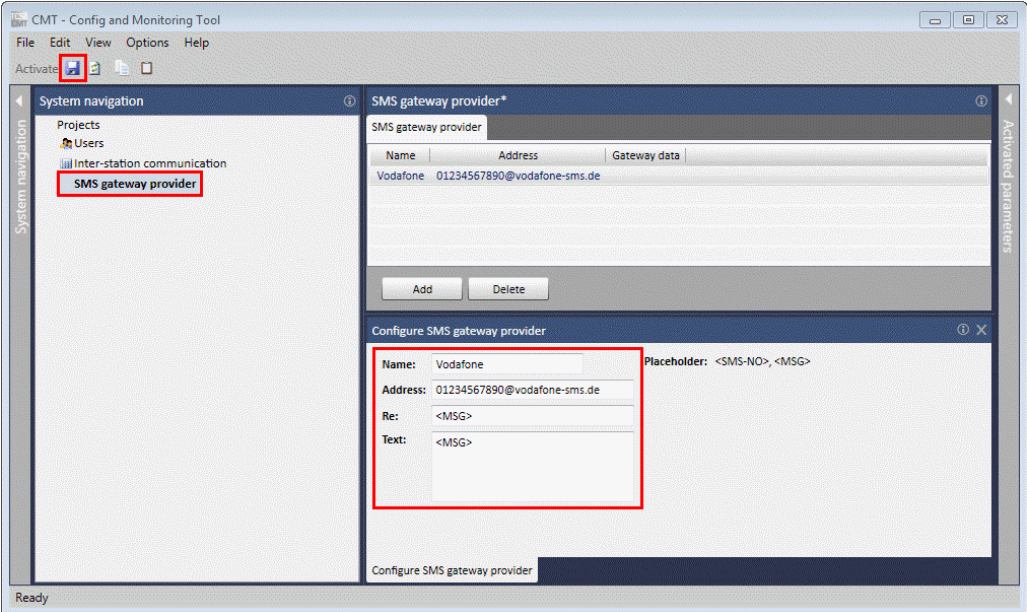
**Note** The "Authorized phone number" parameter is not a telephone number in the case of the Telecontrol server but a computer ID that is transmitted in the e-mail.

### 3.1.2 Configuration in the "TS Gateway" Software

Table 3-4

No.	Action	Remark
1.	Make the following settings as described in Table 2-2 .	
2.	<p>Go to "Options &gt; Settings &gt; System configuration". Set the "Authorized phone number" parameter and the "Listener port for IP-T" parameter so that they match the settings in STEP 7.</p> 	
3.	<p>Switch to "SMTP Server" and enter the data for the SMTP server (See section SMTP Server</p>  <p>Then save the settings.</p>	

### 3 Alarm SMS by TeleService Gateway

No.	Action	Remark
4.	<p>Double-click "SMS Gateway Provider". Enter all the information required for sending the alarm SMS (See section SMS Gateway Provider)</p>  <p>Then save the settings.</p>	

### 3.1.3 Network Settings

Table 3-5

No.	Action	Remark
1.	Make the following settings as described in Table 2-3 .	

### 3.2 Test Teleservice


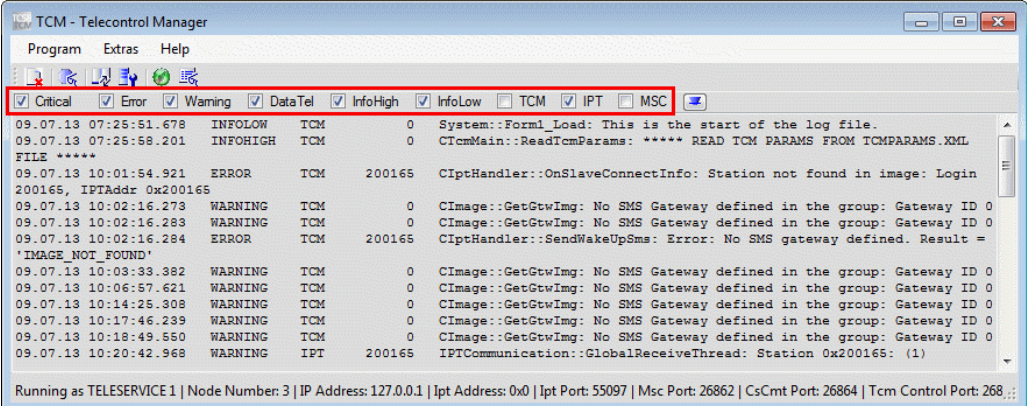
Table 3-6

No.	Action	Remark
1.	Make the following settings as described in Table 2-4 .	
2.	Steps 4 to 6 are not relevant.	



## 4 Diagnostics

Table 4-1

1.	Open the "Database" info window with CTRL + ALT + double-click on the TCM icon in the taskbar.	
2.	The window with the Trace opens. Set the check mark as shown in the figure.	

### Note

If the GPRS remote connection from the TeleService gateway to the CP is not established, check that the settings in the CMT tool match those in the CP configuration in TIA Portal (port numbers, passwords, etc).

## 5 Internet Links

Table 5-1

	<b>Subject area</b>	<b>Title</b>
\1\	CP 1242-7 Operating Instructions	<a href="http://support.automation.siemens.com/WW/view/en/61029644">http://support.automation.siemens.com/WW/view/en/61029644</a>
\2\	TS Gateway Operating Instructions	<a href="http://support.automation.siemens.com/WW/view/en/48548898">http://support.automation.siemens.com/WW/view/en/48548898</a>
\3\	System Manual for SIMATIC S7-1200 Automation System	<a href="http://support.automation.siemens.com/WW/view/en/36932465">http://support.automation.siemens.com/WW/view/en/36932465</a>
\4\	HSP for CP1242-7	<a href="http://support.automation.siemens.com/WW/view/en/54164095">http://support.automation.siemens.com/WW/view/en/54164095</a>
\5\	How can you update the hardware catalog in STEP 7 (TIA Portal) V11?	<a href="http://support.automation.siemens.com/WW/view/en/54163658">http://support.automation.siemens.com/WW/view/en/54163658</a>