Teleservice of an S7-1200 over Internet/GPRS

TS Gateway

FAQ • August 2013



Service & Support

Answers for industry.



This entry originates from the Siemens Industry Online Support. The conditions of use specified there apply (<u>www.siemens.com/nutzungsbedingungen</u>).

Go to the following link to download this document. http://support.automation.siemens.com/WW/view/de/77896780

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.

Contents

1	Overview	4
2 2.1 2.1.1 2.1.2 2.1.3 2.2	Alarm SMS by Telephone Configuration Configuration in STEP 7 Configuration in the "TS Gateway" Software Network Settings Test Teleservice	5 5 7 8 9
3 3.1 3.1.1 3.1.2 3.1.3 3.2	Alarm SMS by TeleService Gateway Configuration Configuration in STEP 7 Configuration in the "TS Gateway" Software Network Settings Test Teleservice	13 13 14 15 16 16
4	Diagnostics	17
5	Internet Links	18

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".	Project tree □ Devices □ Image: Constraint of the state o		
5.	Mark the CP 1242-7 and go to "Properties > Telecontrol Interface".	S7-1200 rack		

No.	Action	Remark			
6.	In the "Modem settings" tab, enter "Activate PIN".	the PIN number of the SIM card in the CP 1242-7. Check			
	CP 1242-7 [Module]	🖾 Properties 🚺 Info 🚺 🗓 Diagnostics 💷 🗉 🖿			
	General IO tags Texts				
	▶ General				
		m settings			
	General Operating mode	Chalana analan			
	Modem settings	Cr phone number:			
	CP identification				
	Authorized phone numbers				
	Keep-alive waiting times				
	List of preferred GSM ne	SMSC:			
_	▼ Teleservice settings				
7.	Go to the "Authorized phone numb	ers" tab.			
	In the "1. Phone number" field, ent SMSs are to be sent to the remote	er the phone number of the mobile phone from which alarm			
	General				
	✓ Telecontrol interface Author	rized phone numbers			
	General				
	Operating mode	1. Phone number: +49123123123123			
	CP identification	2. Phone number:			
	Authorized phone numbers	3. Phone number:			
	GPRS access 4. Phone number:				
	You can also enter the "*" symbol telephone number.	which has the effect that an alarm SMS is accepted from any			
8.	Go to the "GPRS Access" tab.				
	Enter the APN data to log in to the	in to the GPRS network of the provider.			
	General GPRS	access			
	▼ Telecontrol interface General				
	Operating mode	APN: web.vodafone.de			
	Modem settings	APN user name:			
	CP identification	APN password:			
	GPRS access	Confirm APN password:			
	Keep-alive waiting times				
	This data is in the documentation of user name or password.	of your GSM/GPRS provider. With some providers there is no			
9.	Go to the "Teleservice settings >Teleservice	eleservice server settings" tab.			
	In the "Teleservice Server" input fir DynDNS) of the internet router (ex	eld ,enter the static IP address (<u>or</u> host name when using ternal port) that is connected to the TeleService Gateway PC.			
	Authorized phone numbers	leservice server settings			
	GPRS access	eserve server settings			
	List of preferred GSM netw	1. Teleservice server: 123.123.123.123			
	▼ Teleservice settings	TeleService server port: 55097			
	Teleservice server settings	2. Teleservice server:			
	Hardware identifier	TeleService server port: 55097			
	Time synchronization				
	Note: You can set the TeleService must also be changed accordingly router (see also Note No. 2 in Tabl	server port here. If you want to use a different port, that port in the TS Gateway software and in the settings of the DSL ie 2-3).			

No.	Action		Remark		
10.	Go to "Teleservice user administration". Create a Teleservice user by entering a use Then check "Teleservice user is activated Authorized phone numbers GPRS access Keep-alive waiting times List of preferred GSM networks Teleservice settings Teleservice user administration Hardware identifier	Ser nar ". ce user a leservice eleServico 1. Confirm	ne and password in the appropriate fields.		
11.	Save the project. Now mark the program folder of the S7-12 and transfer the program to the controller means of "Download to device". Make sur that the LED of the S71200 controller dis the "RUN" state.	200 by e splay	Siemens - 63365552_Set34_STEP7_V10 Project Edit View Inser Project tree Project tree Project tree Conline		

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.	Enter the password "0000" and confirm the input with the "Logon" button. <u>Note:</u> "0000" is the default password for the "Config and Monitoring Tool".	CMT User name administrator Password Logon

No.	Actior	ı			Ren	nark
4.	Go to "Options > Settings Make sure that the "Listen (No. 9 in Table 2-1).	> System confi er port for IP-T	guration". " is set the sa	ame a	s in the STEP	7 device configuration
	File Edit View Options Help Activate Image: Im					
	System navigation ①	Settings				0 <
	Projects	Settings				Act
	MUsers	General System configuration Trace levels SMTP server Aut Telec M B Trace Trac	System configu Single-user syste Telecontrol-Server Authorized phon Telecontrol Manag Main Backup TeleServiceGat TeleServiceGat	ration m e number ger eway_1 eway_2	Address: Listener port for MSC: Listener port for IP-T Listener port for OPC: TCM control port: TCM data port:	127.0.0.1 26862 55097 26864 26860 26861
	Settings were saved.		Database server Address: Port: Monitoring time:	localhost 26865 1000		

2.1.3 Network Settings

Table 2-3

No.	Action	Remark
1.	Establish the connection to the internet on your TeleService Gateway PC.	 It is presumed that the router is already connected to the internet. Test the internet connection on your PC by calling a random site in an internet browser.
2.	On the DSL router, set a port forwarding for the Port 55097 to the IP address of the TeleService Gateway PC. <u>Note:</u> 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.)	Port: 55097 an 192.168.1.2 DSL Modem/Router TeleService-Gateway IP-Adresse 192.168.1.2

2.2 Test Teleservice





No.	Action		Remark	
3.	Enter the TeleService access d	lata.		
	This data has been created by	the user in No. 10 ir	Table 2-1 .	
	Establish GPRS remote connection		×	
	TCSE			
		T-1		
			neservice galeway for switching the connection.	
		Component is on this PC		
		IR address or bost pa	ma:	
		ir address of host ha	Port: 55097	
		Own server password:		
		Authentication for Tele	Service access to station:	
		TeleService user na	me: teleservice	
		TeleService passw	vord: *********	
		Demote stations		
		Remote station.	CB 12/2 7- 2021/CF	
		Acces	s ID: CP 1242-7: 200165	
	Status: Not connected		Connect Close	
	Then click "Connect".			
4.	This request will fail, but the ste	ep must be made.		
	You get an error message sayi	ng that the sending	of the SMS has failed.	
	Establish GPRS remote connection		×	
	TCSB			
		l elecontrol server / l e	eleService gateway for switching the connection:	
		 Component is on this PC 		
		 Component is in networ 	k or Internet	
		IP address or host na	me:	
		Own server password:		
		_		
1				
		Authentication for Tele	Service access to station:	
		Authentication for Tele	Service access to station:	
		Authentication for Tele TeleService user na TeleService passw	Service access to station: me: teleservice	
		Authentication for Tele TeleService user na TeleService passw	Service access to station: me: teleservice ord: ********	
		Authentication for Tele TeleService user na TeleService passw Remote station:	Service access to station: me: teleservice ord: *********	
		Authentication for Tele TeleService user na TeleService passw Remote station: Acces	Service access to station: me: teleservice rord: ********** s ID: CP 1242-7: 200165	
		Authentication for Tele TeleService user na TeleService passw Remote station: Acces	Service access to station: me: teleservice ord: ********** s ID: CP 1242-7:200165	
	Status: Failed to send SMS to **	Authentication for Tele TeleService user na TeleService passw Remote station: Acces	Service access to station: me: teleservice mord: ********* s ID: CP 1242-7: 200165	
_	Status: Failed to send SMS to **	Authentication for Tele TeleService user na TeleService passw Remote station: Acces	Service access to station: me: teleservice ord: ********* s ID: CP 1242-7: 200165 Connect Close	
5.	Status: Failed to send SMS to ** Send an SMS from the mobile	Authentication for Tele TeleService user na TeleService passw Remote station: Acces	Service access to station: me: teleservice rord: ************************************	

No.	Action	Remark			
6.	Then click "Connect" again.				
7.	When the GPRS remote connection is established, "Connected" is displayed as the status.				
	Establish GPRS remote connection	×			
	Telecontrol serve	r / TeleService gateway for switching the connection:			
	 Component is on 	his PC			
	Component is in r	etwork or Internet			
	IP address or h	ost name:			
		Port: 55097			
	Own server password:				
	Authentication for	TeleService access to station:			
	TeleService u	ser name: teleservice			
	TeleService	password:			
	Remote station:				
		Access ID: CP 1242-7: 200165			
	Status: Connected Disconnect Close				
	The following LEDs light on the CP 1242-7	r.			
	NETWORK: Status of the network connectic	n			
	CONNECT: Data transfer				
	SIGNAL QUALITY: Signal quality of the GSM	I network (green or yellow depending on the			
	signal strength)				
	TELESERVICE: Status of the TeleService c	onnection			
	DIAG: Basic status of the module				

No.	Action		Remark					
8.	Then click "Go on	line". Now you	u can read out the	e diag	nostics fil	e, download	blocks,	etc.
	Go online							×
		Configured access	s nodes of "PLC_1"					
		Device	Device type	Slot	Туре	Address		Subnet
		PLC_1	CPU 1214C DC/D	1 X1	PN/IE	192.168.0.1		
			CP 1242-7		GPRS	200165		
		<			IIII			>
			Тур	e of the	PG/PC interface	e: 🖳 TeleService	e via GPRS	-
					PG/PC interface	e: 🛛 🕅 GPRS TeleS	ervice board	- 🕐 🔃
				Conne	ction to subne	t: Direct at slot	0	
					1st gatewa	y:		
	Compatible devices in target subnet:						snow all compatible devices	
		Device	Device type	Туре		Address	Target de	vice
		rtc_1	CF0 1214C DOD			192.100.0.1	ric_1	
	Flash LED							
								<u>R</u> efresh
	Online status informatio	n:						
	🚽 A connection to the	device with address	192.168.0.1 could be esta	blished.				^
	Scan completed. 1	compatible devices o	of 1 accessible devices fou	nd.				
	"? Retrieving device in	formation						~
							o online	Cancel
							<u>o o</u> nine	

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. Mail server User name Password E-mail address 	You need this data for configuring with the CMT Config and Monitoring Tool.

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

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.</msg>	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.	Make the following settings as described in In step 6 you also enter the telephone numb General Telecontrol interface	Table 2-1 . per of the CP in	n addition to the PIN settings.
	Operating mode Modem settings CP identification Authorized phone numbers GPRS access Keep-alive waiting times List of preferred GSM networks Teleservice settings In Step 7, for 2. Phone number you must en TS Gateway (see Note below)	CP phone number: PIN: Confirm PIN: SMSC: tter an identific	01234567890 Activate PIN •••• •••• Enable SMS cation that matches the setting in the
	General IO tags Texts Operating mode Modem settings Authorized phote Modem settings GPRS access GPRS access Keep-alive waiting times List of preferred GSM networks Image: Comparison of the settings Teleservice settings Image: Comparison of the settings Image: Comparison of the settings	1. Phone numbers 2. Phone number: 3. Phone number: 4. Phone number:	+49123123123 +4912121212
2.	Authorized phone numbers GPRS access Keep-alive waiting times List of preferred GSM networks Teleservice settings Save the project. You do not need to downl	 Phone number: Phone number: Phone number: Phone number: Phone number: Dad the project 	+49123123123 +4912121212 t 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 describe	d in Table	2-2.
2.	Go to "Options > Settings > System con Set the "Authorized phone number" part they match the settings in STEP 7.	nfiguratior rameter al System con	". Ind the "Listener port for IP-T" parameter so that
	SMTP server PatoSc Ready	Telecontrol S Authorized Telecontrol N Main Backup TeleServio	eGateway_2 eGateway_2 EGateway_2
3.	Switch to "SMTP Server" and enter the	data for t	ne SMTP server (See section SMTP Server
	Switch to SMTP Server and enter the data for the SMTP server (See section SMTP Server File Edit View Options Help Activate Settings System navigation Settings Frojects SMTP server System configuration SMS gateway provider SMTP server SMTP server SMTP server SMTP server SMTP server SMTP server SMTP server Server 1 Server 2 Mail server: mail.gmx.net User name: xyz@gmx.de Password: E-mail address: xyz@gmx.de		
	Then save the settings.		
	~		

No.	Action	Remark
4.	Double-click "SMS Gateway Provider". Enter all the information required for sending the Provider	e alarm SMS (See section SMS Gateway
	System navigation System value System navigation Projects Subsers Muter-station communication SMS gateway provider Add De Configure SMS gateway provider Name: Vodafone	Contraction of the second
	Address: 01234567890 Re: MSG> Text: MSG> Configure SMS gateway pro Ready	Pvodafone-sms.de

3.1.3 Network Settings

Tał	ble	3-5
1 GL	10	00

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.	
	Image: TCM - Telecontrol Manager Program Extras Help Image: Image: Image: Image: Image: Imag	
	09.07.13 10:03:33.32 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:06:57.621 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:14:25.308 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:17:46.239 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:18:49.550 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:20:42.968 WARNING TCM 0 CImage::GetGtwIng: No SMS Gateway defined in the group: Gateway ID 0 09.07.13 10:20:42.968 WARNING IPT 200165 IPTCommunication::GlobalReceiveThread: Station 0x200165: (1) Running as TELESERVICE1 Node Number: 3 IP Address: 127.0.0.1 Ipt Address: 0x0 Ipt Port: 55097 Msc Port: 26862 CsCmt Port: 26864 Tcm Control Port: 268.55	

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

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