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Monitoring and Control with the LOGO! CMR Module

LOGO! 8

http://support.automation.siemens.com/WW/view/en/105074237

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Table of Contents

1 Task

Introduction

The devices from the LOGO! series enable solving small automation tasks quickly and efficiently. The modules of LOGO! 8 expand the function spectrum and cover further requirements. Simplified handling, a new display, and the full communication range via Ethernet facilitate the realization of small automation tasks.

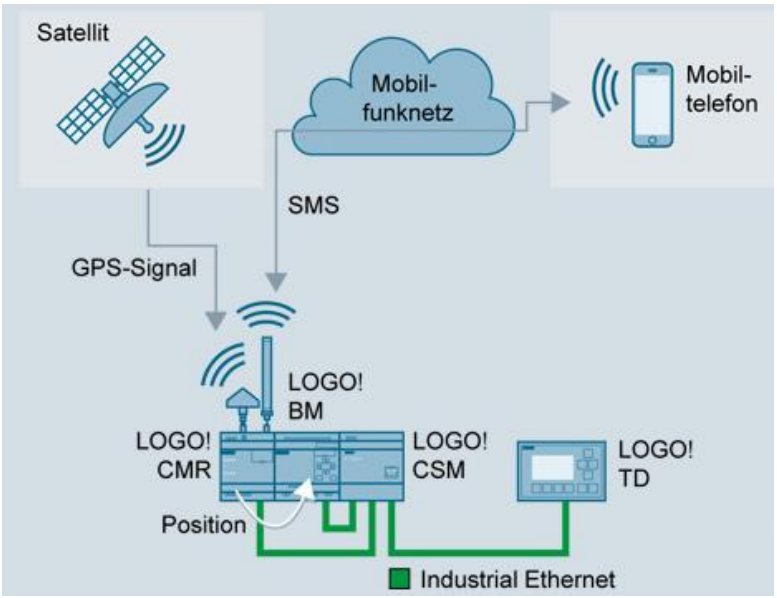
The provided programs and the documentation show the possible application areas of the LOGO! CMR20X0 communication module. A wide range of functions is covered here, from “sending and receiving of SMS”, over “time-of-day synchronization”, to “tracking of position data”.

Overview of the automation task

The automation task consists of illustrating the application options of LOGO! CMR20X0. The documentation is divided into four scenarios.

The figure below provides an overview of the general application options of LOGO! 8 in conjunction with LOGO! CMR.

Figure 1-1 SMS layout diagram of the application



Description of the automation task

The aim of this solution is to realize the following scenarios:

1. Sending an SMS to a defined recipient depending on the state of the process (here temperature monitoring).
2. Controlling a process by means of SMS (here fan control).
3. Controlling an outlet flap in animal breeding depending on the local sunrise and sunset using time-of-day synchronization.
4. Tracking the position of containers via GPS.

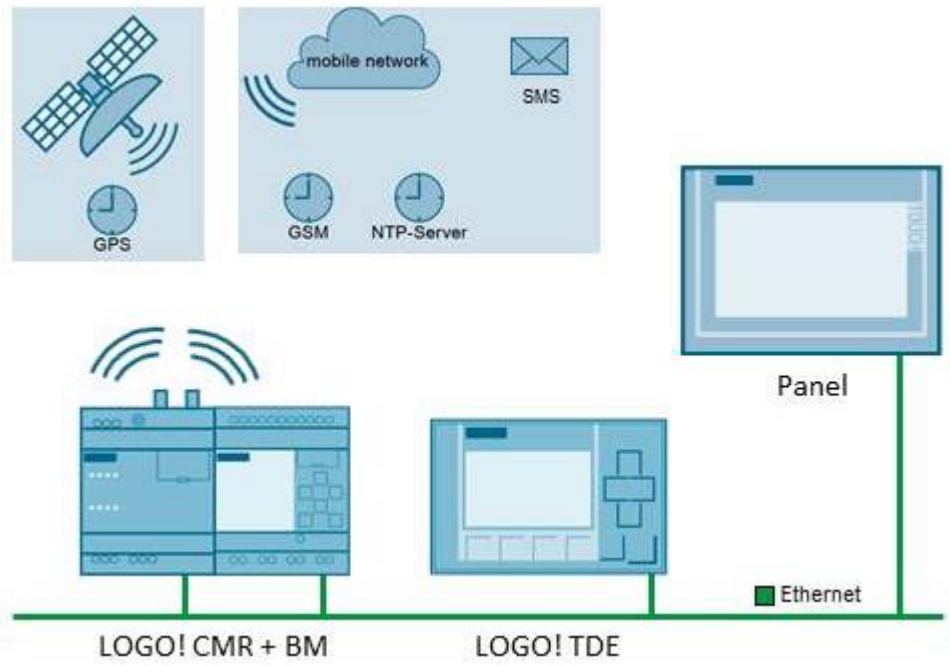
2 Solution

2.1 Overview

Schematic layout

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

Figure 2-1



Advantages

This application offers you the following advantages:

- Overview over the application options of LOGO! CMR20X0 in interaction with LOGO! 8 (LOGO! BM).
- Adaptable example projects for simple adjustment to own requirements.
- Step-by-step instructions for configuring the LOGO! CMR module.

Chapter 2.2 provides an overview of the realized scenarios.

Delimitation

This application does not contain a description of:

- LOGO!Soft Comfort V8.
- Ladder diagram (LAD) or function block diagram (FBD).

2.2 Description of the core functionality

Generally, four scenarios are realized which illustrate the application options of LOGO! CMR20X0. This chapter provides an overview of the realized scenarios.

The following scenarios are described:

1. Temperature monitoring: “Temperature monitoring with SMS alarm”
2. Fan control: “receiving SMS commands”
3. Time-of-day-dependent control of an outlet flap: “Time-of-day synchronization”
4. Position tracking of containers: “GPS tracking”

In this documentation, you will find the following information on the individual scenarios:

Table 2-1

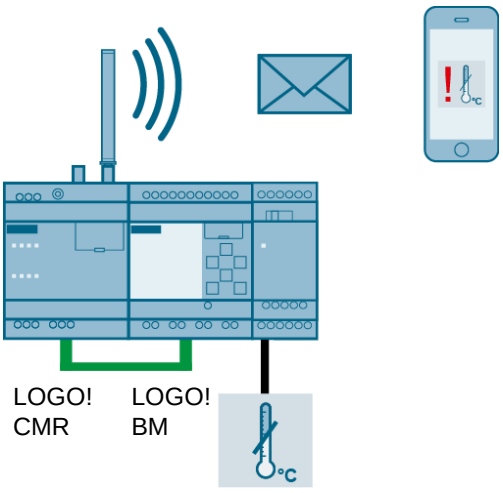
Information	Chapter
Function Mechanisms	3
Configuration	4
Commissioning	5
Operation	6

2.2.1 Scenario: “Temperature monitoring with SMS alarm”

Schematic layout

The figure below provides an overview of the scenario:

Figure 2-2



Content

LOGO! CMR monitors a temperature value of LOGO! BM. The temperature value can either be fed real via a LOGO! module, or directly be simulated in LOGO! BM. The description in this document uses the simulated temperature value.

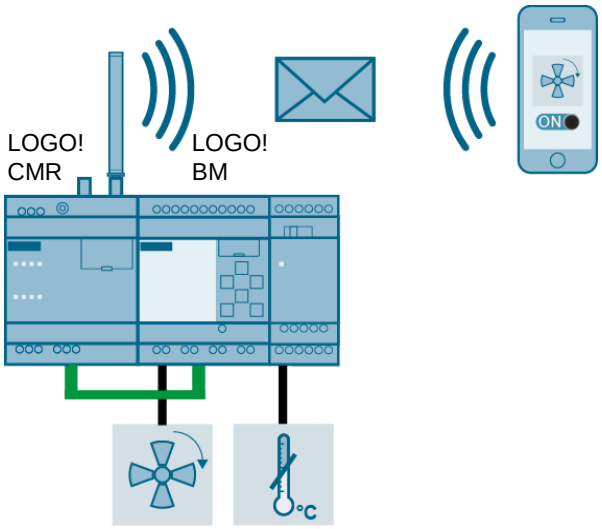
If in LOGO! CMR a defined limit value is exceeded or fallen short of, an SMS is sent to a defined recipient group via the LOGO! CMR module.

2.2.2 Scenario: “receiving SMS commands”

Schematic layout

The figure below provides an overview of the scenario:

Figure 2-3



Content

To extend the temperature monitoring already realized in the first scenario, the option of controlling a fan signal via SMS is implemented.

If an SMS is sent to the LOGO! CMR module with a command (see Figure 4-1) LOGO! 8 switches the respective signal on. In the example, the signal for a fan is switched.

2.2.3 Scenario: “Time-of-day synchronization”

Schematic layout

The figure below provides an overview of the scenario:

Figure 2-4

Content

The system time of LOGO! CMR can be synchronized in different ways (GSM, GPS, NTP).

The “time-of-day synchronization” scenario shows requirements and implementation for the various synchronization options.

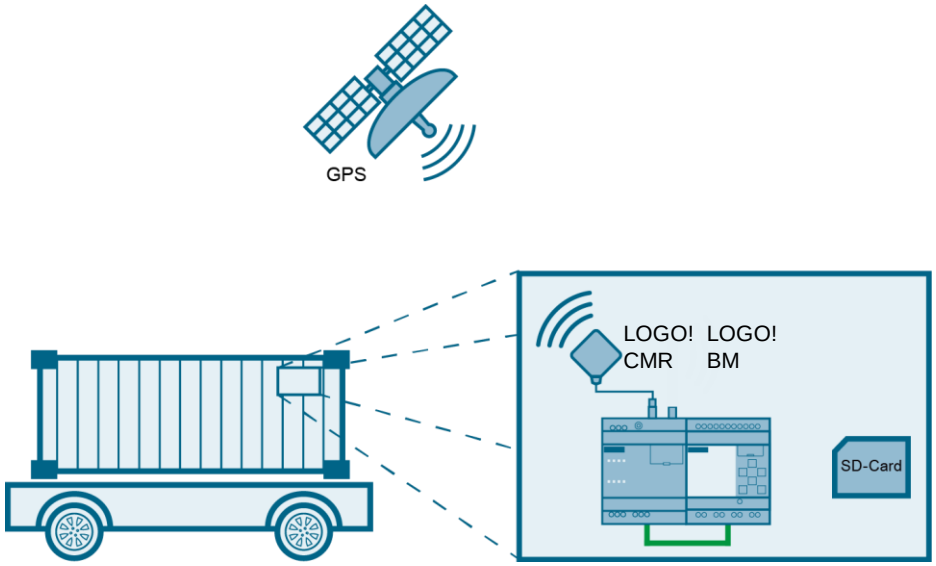
A scenario for controlling an outlet flap in animal breeding at sunrise and sunset is laid out using function block “Astronomical clock”.

2.2.4 Scenario: “GPS tracking”

Schematic layout

The figure below provides an overview of the scenario:

Figure 2-5



Content

The example project shows the tracking of a container. The GPS data is recorded via the CMR module mounted at the container, transferred to the LOGO! BM, and stored there in a .csv file via the data log function.

The following functions are realized:

- recording the current GPS position.
- storing the data in the microSD card as a .csv file.
- preparing the data via an Excel macro.
- displaying of the position curve via a freeware tool.

2.3 Hardware and software components

2.3.1 Validity

This application is valid for

- LOGO! 8
- LOGO!Soft Comfort V8
- WinCC V13 Basic

2.3.2 Components used

The individual scenarios were created using the following components:

Hardware components for all scenarios

Table 2-2

Component	Qty.	Article number	Note
LOGO! CMR20X0	1	6GK7142-7BX00-0AX0	
LOGO! 12/24RCE	1	6ED1052-1MD00-0BA8	In the documentation also referred to as LOGO! 8 or LOGO! BM.
LOGO! TDE	1	6ED1055-4MH00-0BA1	For visualization.
LOGO! CSM12/24	1	6GK7177-1MA20-0AA0	Any other switch can also be used.
LOGO! Power	1	6EP1351-1SH02	You can also use any other 24V power supply.

Additional hardware components for “Temperature monitoring with SMS alarm” and “Receiving SMS commands”

Table 2-3

Component	Qty.	Article number	Note
LOGO! AM2 RTD	1	6ED1055-1MD00-0BA2	For connecting a resistivity thermometer. Alternatively, the temperature simulation can also be used for testing.
SIMATIC HMI KTP700 BASIC	1	6AV2123-2GB03-0AX0	For additional visualization.
Mobile wireless antenna	1	6NH9860-1AA00	
SIM card	1		SMS to be sent/received.

Additional hardware components “Time-of-day synchronization“

Table 2-4

Component	Qty.	Article number	Note
SIMATIC HMI KTP700 BASIC	1	6AV2123-2GB03-0AX0	For additional visualization.
GPS antenna	1	6GK5895-6ML00-0AA0	
Connection cable for GPS antenna	1	6XV1875-5LH50	
Mobile wireless antenna	1	6NH9860-1AA00	
SIM card	1		When selecting the provider, please ensure that the required services are also supported. Not every provider supports time-of-day synchronization via GSM, for example.

Additional hardware components “GPS tracking”

Table 2-5

Component	Qty.	Article number	Note
GPS antenna	1	6GK5895-6ML00-0AA0	
Connection cable for GPS antenna	1	6XV1875-5LH50	
microSD card	1		The following microSD cards are recommended: • Max. 4GB • max. speed class 6 • FAT 32

Software components

Table 2-6

Component	Qty.	Article number	Note
LOGO!Soft Comfort Version 8	1	6ED1058-0BA08-0YA1	
WINCC Basic V13	1	6AV2100-0AA03-0AA5	Only optionally required for the first two scenarios.
Microsoft Excel 2010	1		Required for executing the Microsoft Excel macro.

Sample files and projects

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

Table 2-7

Component	Note
105074237_LOGO!_CMR_2020_LOGO!_8.zip	This zip-file contains • the LOGO!Soft Comfort project. • the WinCC V13 Basic project. • a configuration file for LOGO! CMR20X0. • an Excel macro. • an Excel file with GPS data as an example.
105074237_LOGO!_CMR_DOKU_v10_e.pdf	This document.

3 Function Mechanisms

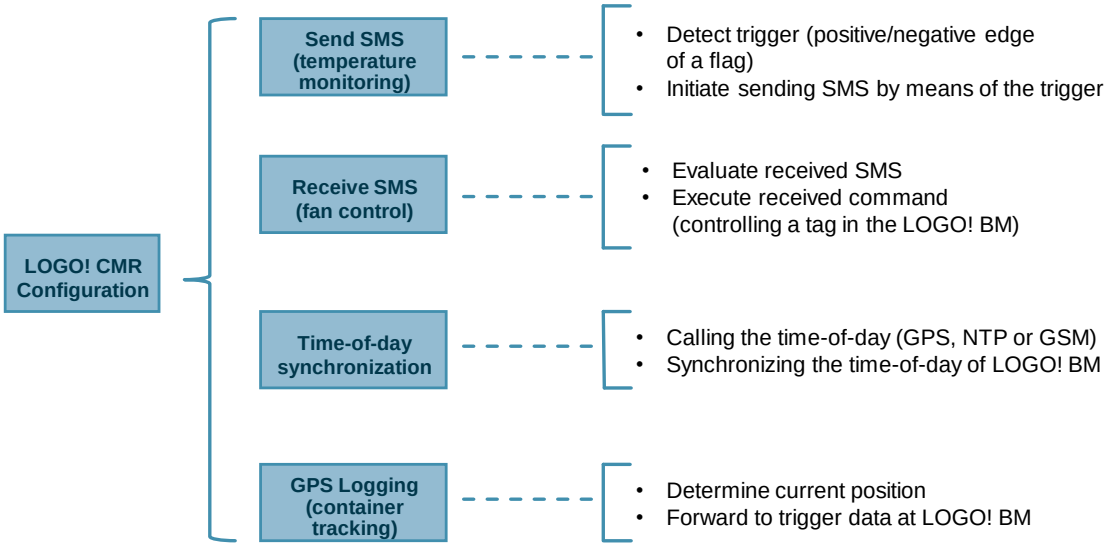
3.1 Overview

Division

Parts of the functionality of the four scenarios are already covered via the configuration of the LOGO! CMR module. The following overviews show where the functionality is realized in the example scenarios.

LOGO! CMR functionality

Figure 3-1

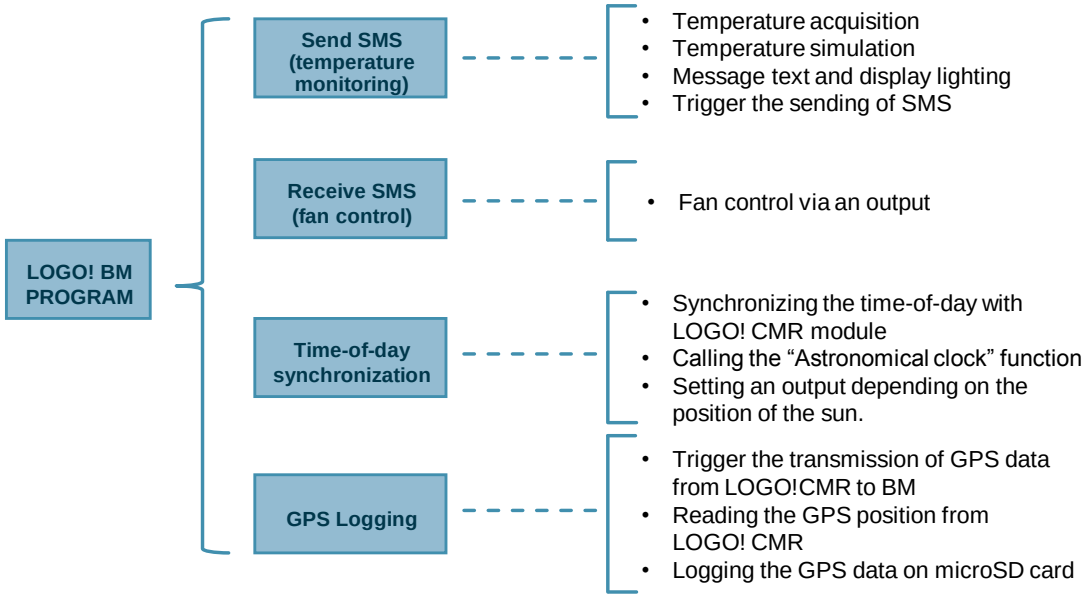


User program functionality

Overview

The LOGO!Soft Comfort project is divided into four independent parts according to the four scenarios.

Figure 3-2



The user program is well documented and commented.

3.2 “GPS tracking” scenario

The result of GPS data logging is a .csv file on the internal microSD card of LOGO! BM. An Excel macro is provided for processing the .csv file.

LOGO! CMR provides the data to LOGO! BM in 16 byte structure (see manual \4\, Chapter 7.2).

When copying the data in LOGO! BM, the bytes are automatically converted into a word format. The data in the resulting .csv file therefore still needs to be prepared.

The Excel macro can then read the respective .csv file in Excel and convert it into a readable GPS format by pressing a button.

Handling as described in Chapter 6.4.

4 Configuration and Settings

This chapter shows the required configuration steps in LOGO! CMR, to provide the functionality of the scenarios.

4.1 “Temperature monitoring with SMS alarm” configuration

The following table describes the configuration at LOGO! CMR20X0 via the WBM (web interface), to monitor a temperature value with the existing example project.

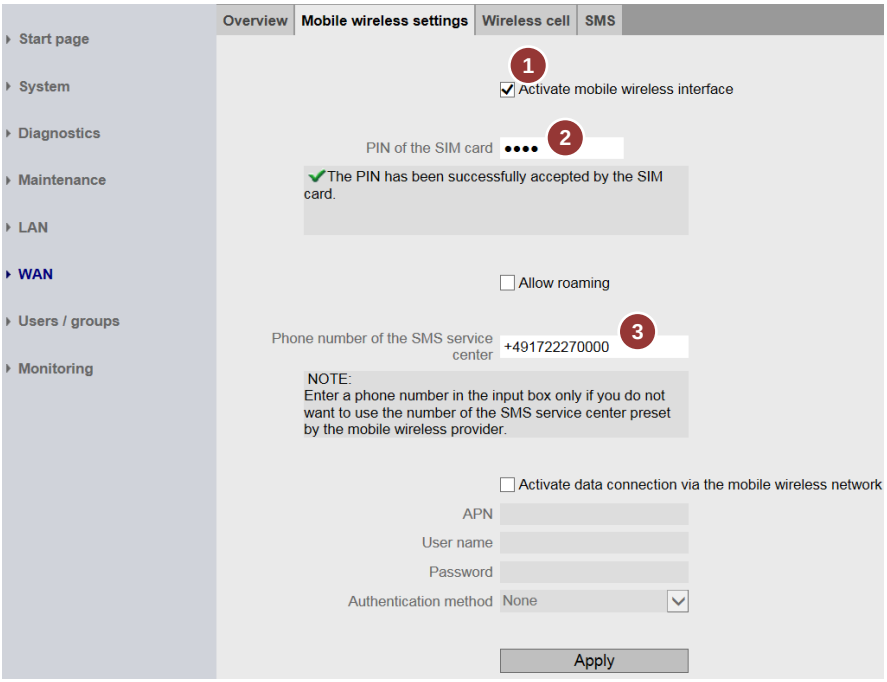
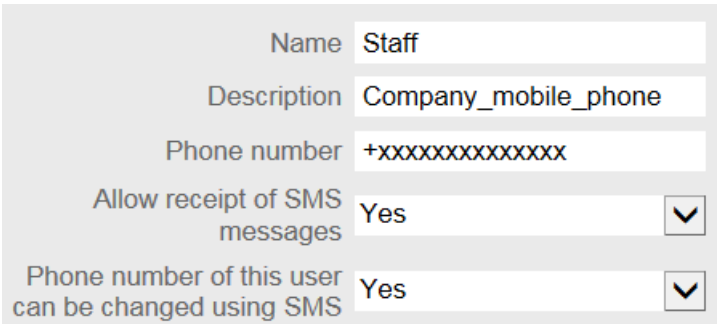
For sending an SMS you need to make the following settings:

- activate the SIM card and the mobile wireless interface.
- define text messages (content of the SMS to be sent).
- define recipients (specifying the telephone numbers) and recipient groups.
- define signals (symbolic naming of a data area, e.g. a flag).
- configure events (exceeding a limit value).
- define actions (sending an SMS).
- assign the actions for the events (if a limit value was exceeded, an SMS shall be sent).

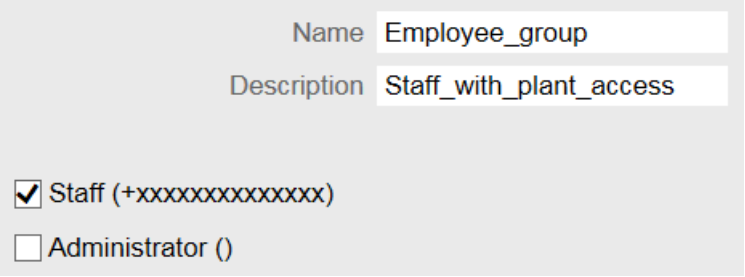
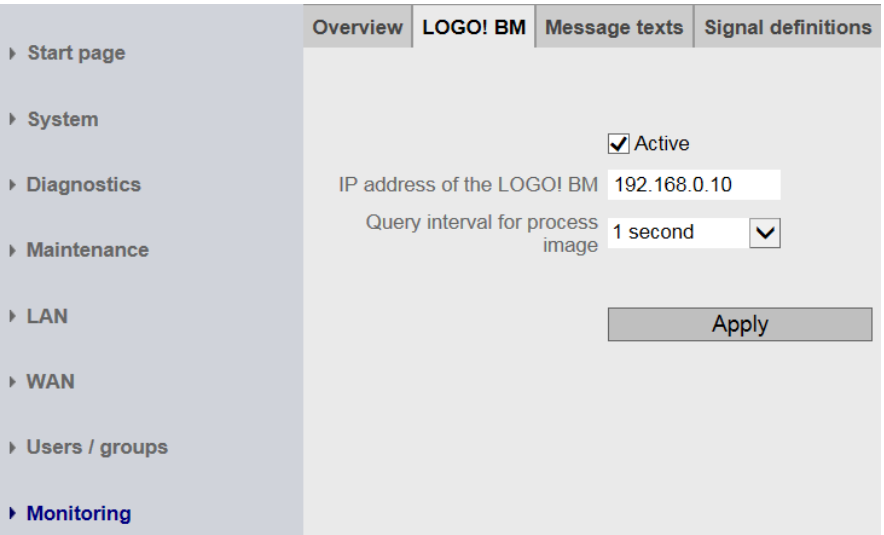
Alternatively, the supplied configuration file can also be used and adjusted to your application (see Chapter 5.3.3).

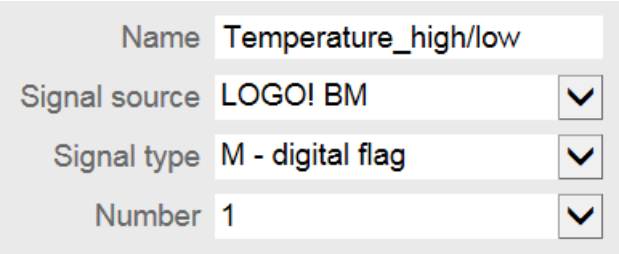
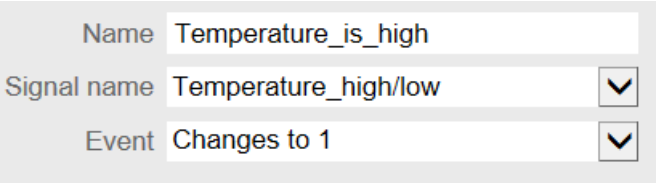
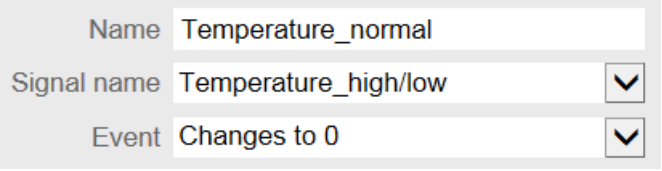
4.1 “Temperature monitoring with SMS alarm” configuration

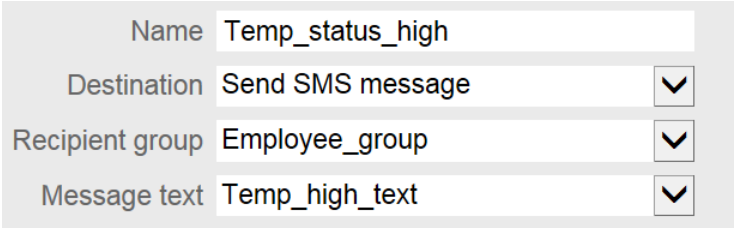
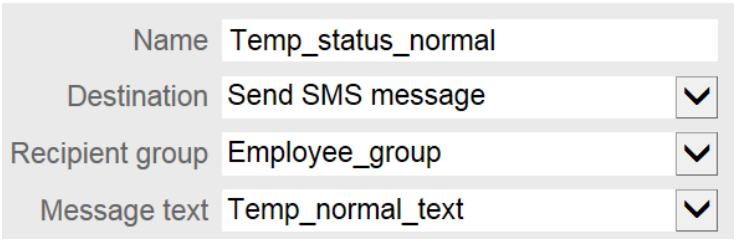
Table 4-1

No.	Action
1.	Open your Web browser. enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “WAN > Mobile Wireless Settings”. Make the following settings: 1. activate the “Activate mobile wireless interface” checkbox. 2. enter the PIN of your SIM card. 3. if necessary, enter the telephone number of the SMS service center of your provider. 
3.	Go to “Users/groups > User” and create a new user. To do this, click on the “Add” button and follow the input mask. Confirm the entries with “Apply”. 

4.1 “Temperature monitoring with SMS alarm” configuration

No.	Action
4.	Now go to “Users/groups > Recipient groups”. Add a new recipient group via the “Add” button in the input mask. By activating the checkbox at the user names you assign the user group. Confirm the entries with “Apply”. 
5.	Go to the “Monitoring > LOGO! BM” menu and activate the “Active” checkbox. Enter the IP address of LOGO! BM. Confirm the entries by clicking on the “Apply” button. You can test the connection by clicking on the “Ping LOGO! BM” button. 
6.	Go to the “Message texts” tab. Create the following two message texts: Name: Temp_high_text — Inhalt: The temperature of the facility is very high!/Die Temperatur der Anlage ist sehr hoch! Name: Temp_normal_text — Inhalt: The temperature of the facility is in a normal range!/Die Temperatur der Anlage ist in einem normalen Bereich! these texts are used as content when sending an SMS.

No.	Action
7.	Click on the “Signal definitions” tab and define a digital flag for the SMS. Click on the “Add” button and confirm with “Apply” after entering the values. Enter the following values:  This assigns the name “Temperature_high/low” to the digital flag.
8.	Next, define the “Temperature_is_high” and “Temperature_normal” events via the “Evants” tab. To do this, use the signal defined in step 7. “Temperature is high”:  “Temperature_normal”:  Confirm the entry of new events by clicking on the “Apply” button. This causes the respective event to take place at a signal change.

No.	Action
9.	In this step, actions are defined. Go to the “Actions” tab. Press “Add” to define the actions “Temp_status_high” and “Temp_status_normal”. Temp_status_high:  Temp_status_normal:  Confirm your entries respectively by clicking on “Apply”.
10.	Finally, the defined events and actions are logically connected via an “if …, then…” logic. Go to the “Assignments” tab. Assign the “Temp_status_high” action to the “Temperature_is_high” event. Assign the “Temp_status_normal” action to the “Temperature_normal” event.  This sends the changes of digital flag 1 defined in step 7 by SMS.

4.2 “Receiving SMS commands” configuration

Function

If the “Receive SMS” function has been enabled at the LOGO! CMR module (see action 2, Table 4-2), the following actions can be performed as a standard (see Figure 4-1, screenshot from the manual).

Figure 4-1

Syntax of the SMS commands and possible responses

What information would I like to have?	Example
Read diagnostics data from the CMR	DIAG?
Read GPS position from the CMR	GPSPOSITION?
Read process image (PI)	MONITOR?
Read status of the BM	STATUS?
Read current value	LOGO?VM125,WORD

What do I want to influence?	Example
Set the status of the BM	Password;STATUS=RUN
Write current value	Password;LOGO=VM125,1,WORD
Set digital output of the CMR	Password;OUTPUT=O1,1
Change phone number of a user	Password;CHANGEUSER="Joe","01721234567"
Configure address of an NTP server	Password;NTPSERVER="217.13.75.19"
Query mobile wireless provider using a service code	Password;SERVICECODE="*100#"

When reading values, please note FAQ in \7\.

Description

The following table describes the configuration at LOGO! CMR via WBM, in order to control an output with the existing example project.

When changing the signal controlled via the LOGO! BM user program, a feedback shall be sent via SMS.

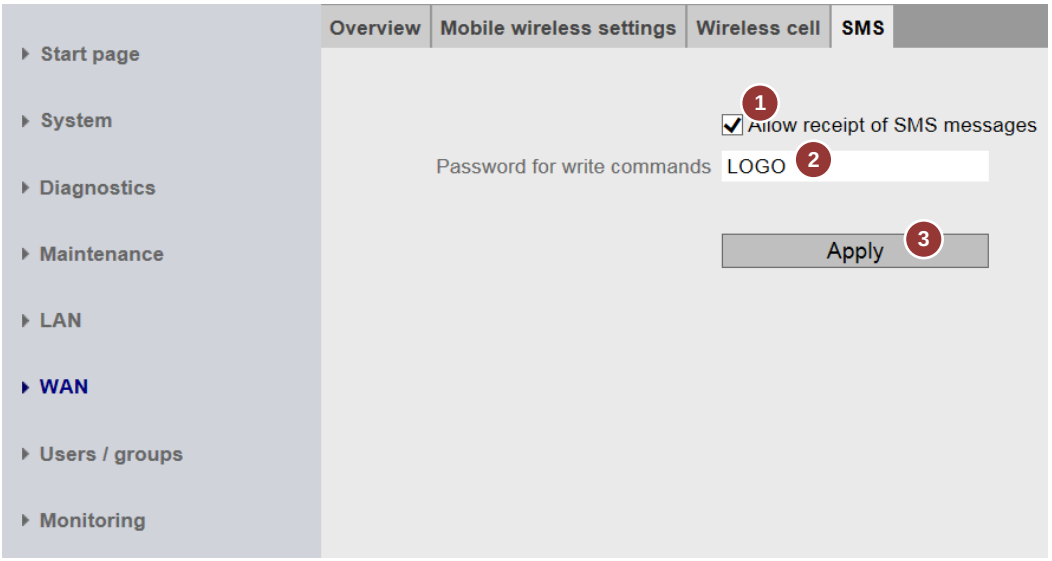
In the description it is assumed, that the configuration was already performed in Chapter 4.1.

- Enabling the receiving of SMS.
- Defining text messages.
- Defining recipients and recipient groups.
- Configuring of events.
- Defining of actions.
- Subsequent assignment of the actions for the events.

Alternatively, you can also use the configuration file supplied in the download and adjust it to your application.

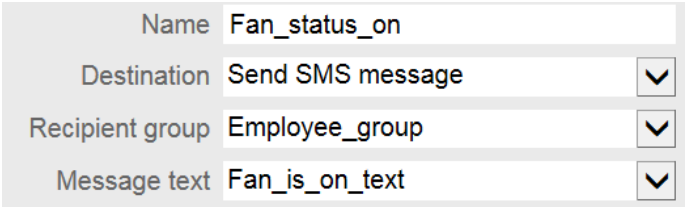
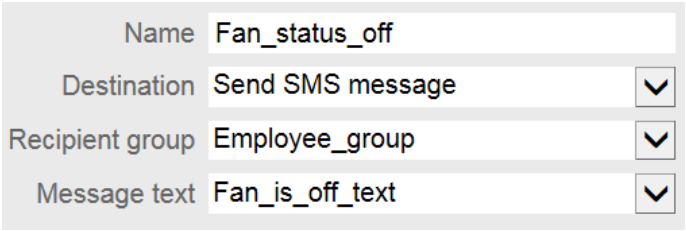
4.2 “Receiving SMS commands” configuration

Table 4-2

No.	Action
1.	Open your Web browser. Enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to then assign your own password. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “WAN > SMS”. Make the following settings: 1. Activate the “Allow receipt of SMS messages” checkbox. 2. Enter a password of your choice, for example “LOGO!”. 3. Confirm the changes by clicking on “Apply”.  By adopting the settings, the commands listed in Figure 4-1 can be used.
3.	Make the following settings in “Monitoring”, analog to Chapter 4.1. “Message texts”: • Fan_is_on_text: “The fan is on!” • Fan_is_off_text: “The fan is off!”

4.2 “Receiving SMS commands” configuration

No.	Action
4.	Two signals are defined. The “Switch_fan_on/off” signal shows the program of LOGO! BM that the fan shall be switched on. The “Fan_status_on/off” signal indicates the status of the fan. For any change of the fan status, an SMS shall be sent. “Signal definitions”: “Switch_fan_on/off”: Name: Switch_fan_on/off Signal source: LOGO! BM Signal type: VM - variables memory Data type: BYTE Address: 6 “Fan_status_on/off” Name: Fan_status_on/off Signal source: LOGO! BM Signal type: Q - digital output Number: 1
5.	“Events”: Fan_switches_on: Name: Fan_switches_on Signal name: Fan_status_on/off Event: Changes to 1 Fan_switches_off: Name: Fan_switches_off Signal name: Fan_status_on/off Event: Changes to 0

No.	Action
6.	“Actions”: Fan_status_on:  Fan_status_off: 
7.	“Assignments”: SMS_fan_on:  SMS_fan_off:  These settings acknowledge a change in the fan control (output signal Q1 of LOGO! 8) by sending an SMS message text.
8.	In order to control the fan, you can use the following commands via SMS: Switching on the fan: **“LOGO;LOGO=VM6,1,BYTE”** Switching off the fan: **“LOGO;LOGO=VM6,0,BYTE”** (see Figure 4-1) (Syntax: “Password; LOGO=VMx,y,BYTE”) This controls the first bit of the internal flag 6. Depending on flag 6, output Q1 is then controlled for controlling the fan.

4.3 “Time-of-day synchronization” configuration

The following tables show the configuration options at LOGO! CMR to ensure time-of-day synchronization.

The following synchronization methods are possible:

- NTP procedure
- via GPS
- via mobile wireless network

Note If you have selected time-of-day forwarding to LOGO! BM:

make sure that you have disabled the automatic daylight saving time switchover in the LOGO! BM. This avoids having different settings and resulting time deviations in LOGO! BM and LOGO! CMR.

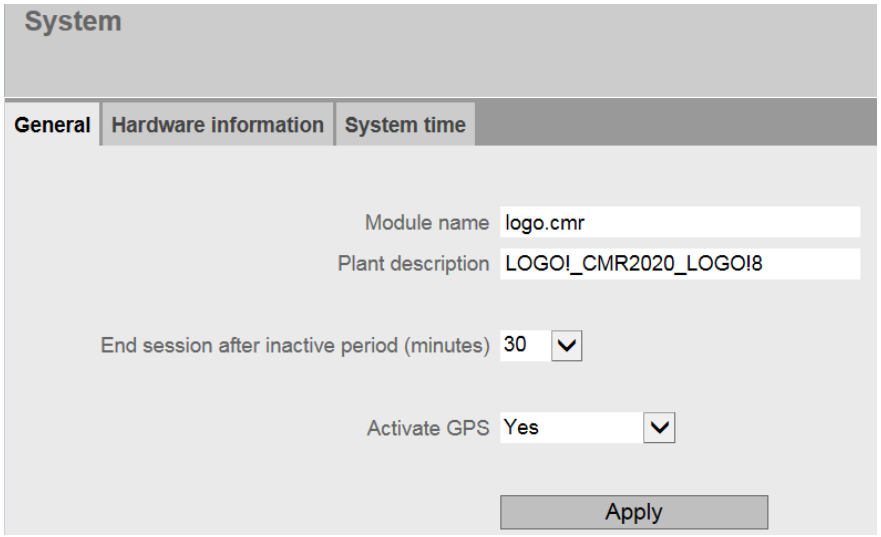
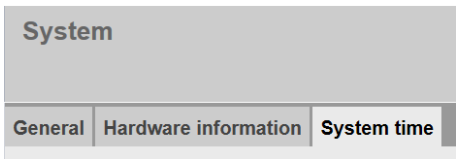
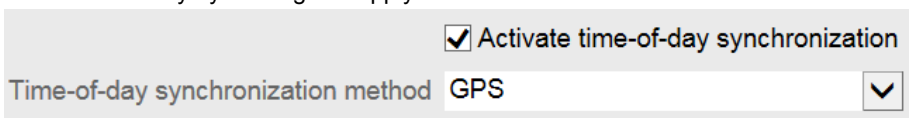
Synchronization via GPS

In order to synchronize the time via GPS, the following requirements must be fulfilled:

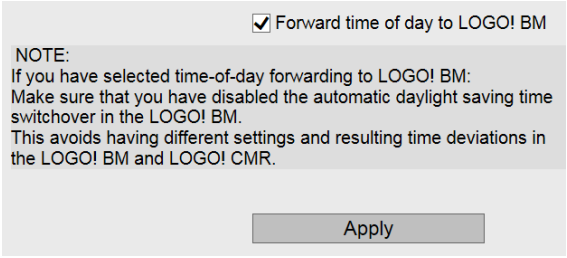
- GPS must be active.
- a GPS antenna must be connected.
- sufficient GPS reception is available.

4.3 “Time-of-day synchronization” configuration

Table 4-3

No.	Action
1.	Open your Web browser. enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “System > General” and activate GPS by selecting entry “Yes” in the drop-down menu. Confirm the entry by clicking on “Apply”. 
3.	Then go to the “System time” tab in “System > General”.  Activate the “Activate time-of-day synchronization” checkbox. In the drop-down menu you select the “GPS” option. Select how frequently the clock shall be synchronized via the drop-down menu. Confirm the entry by clicking on “Apply”. 

4.3 “Time-of-day synchronization” configuration

No.	Action
4.	The LOGO! CMR module synchronizes its time-of-day via GPS. To forward the time to LOGO! BM as well, activate checkbox “Forward time to LOGO! BM”.  Confirm the entry by clicking on “Apply”.

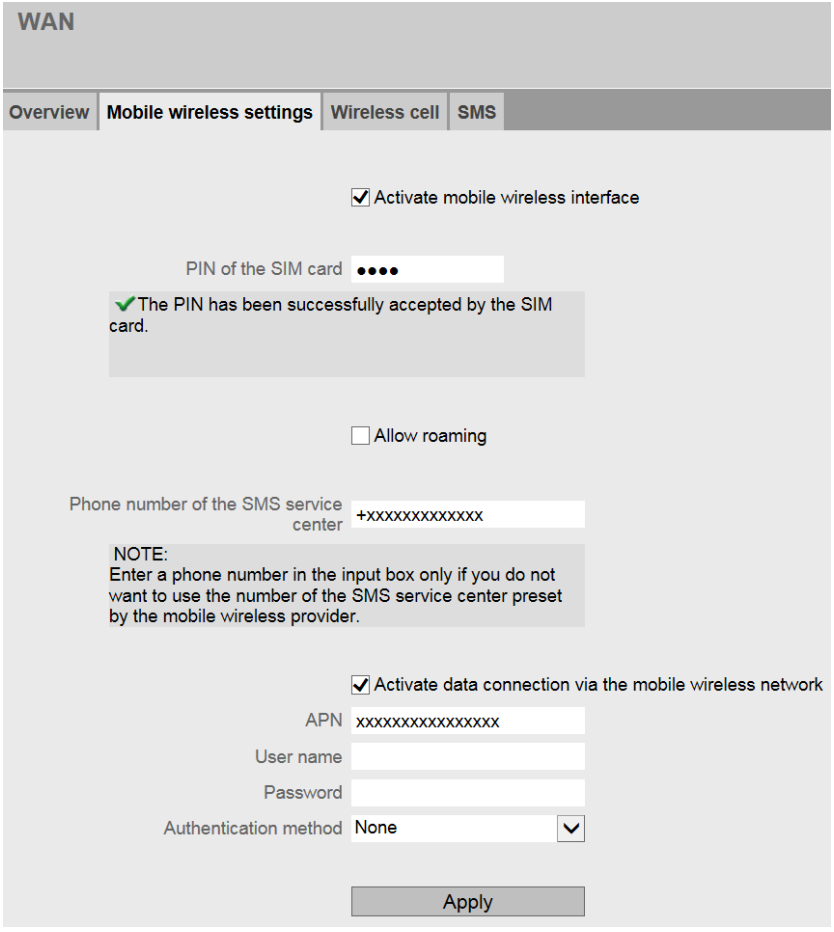
Synchronization via NTP

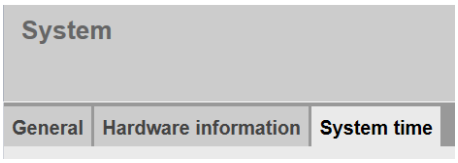
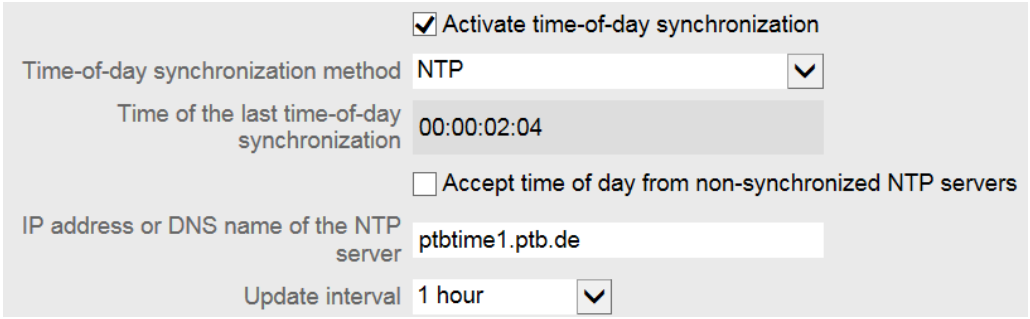
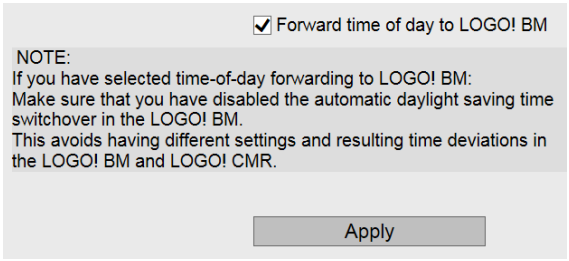
Note

Establishing the connection to an NTP server is only possible via the mobile wireless interface.
Synchronization via the Ethernet interface is not possible.

The following table describes how to establish the time-of-day synchronization via NTP.

Table 4-4

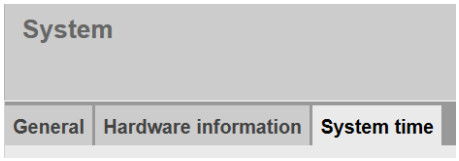
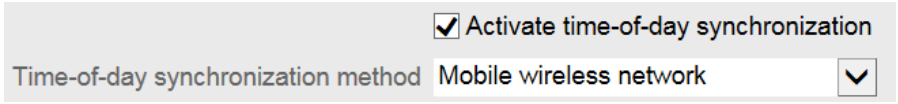
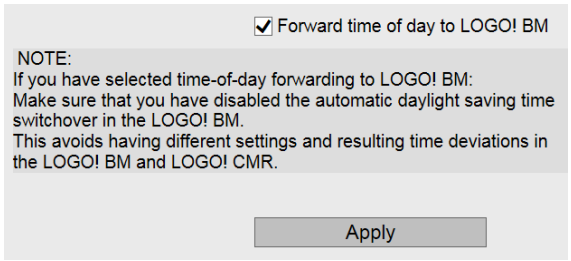
No.	Action
1.	Open your Web browser. enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “WAN > mobile wireless settings” and activate the data connection via the mobile wireless network. Enter your access details. These can be obtained from your provider. 

No.	Action
3.	Then go to the “System time” tab in “System > General”.  In the drop-down menu you select the “NTP” option. Select how frequently the clock shall be synchronized via the drop-down menu. Enter IP address or DNS name of the NTP server. Confirm the entry by clicking on “Apply”.  Depending on the used NTP server, it may be useful to activate the “Accept time of day from non-synchronized NTP servers” checkbox.
4.	The LOGO! CMR module now synchronizes its time-of-day via NTP. To forward the time to LOGO! BM as well, activate checkbox “Forward time to LOGO! BM”.  Confirm the entry by clicking on “Apply”.

Synchronization via mobile wireless network

Note If you wish to synchronize the time-of-day via the mobile wireless network, you must ensure beforehand that your provider provides the time-of-day synchronization via mobile wireless network.

Table 4-5

No.	Action
1.	Open your Web browser. Enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** • Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Then go to the “System time” tab in “System > General”.  In the drop-down menu you select the “Mobile wireless network” option.  Confirm the entry by clicking on “Apply”.
3.	When adopting the settings, the time-of-day synchronization is made via the mobile wireless network (see \4\ Chapter 6.4.4). To forward the time to LOGO! BM as well, activate checkbox “Forward time to LOGO! BM”.  Confirm the entry by clicking on “Apply”.

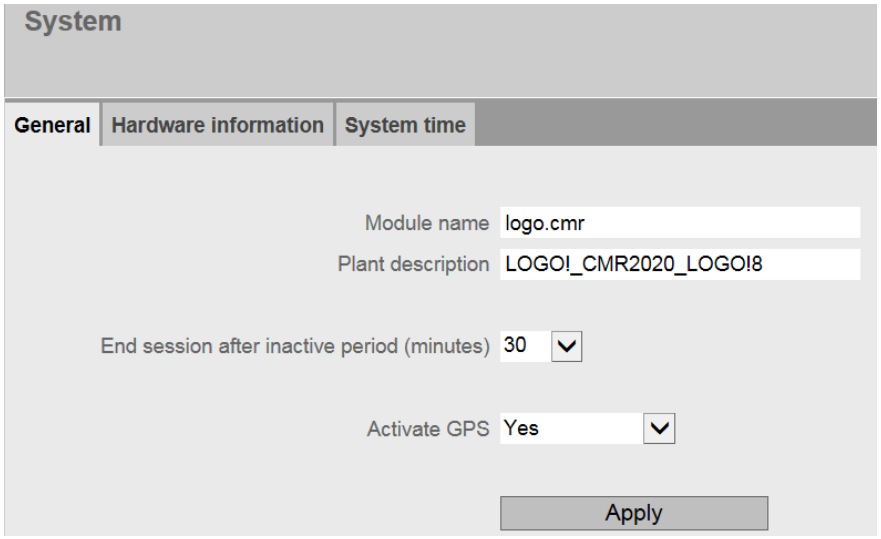
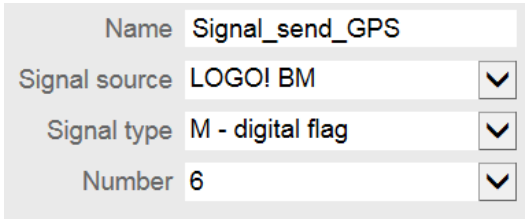
4.4 “GPS tracking” configuration

The following table describes the configuration at LOGO! CMR via WBM for recording the GPS data using the existing example project.

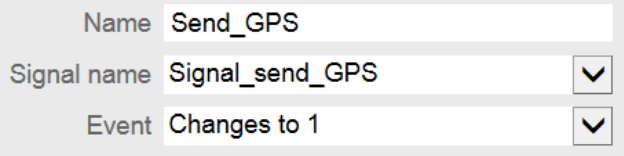
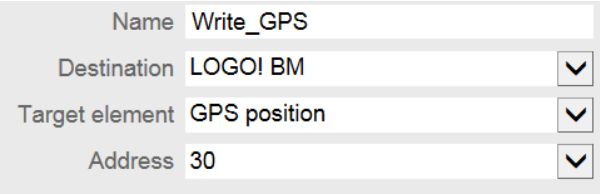
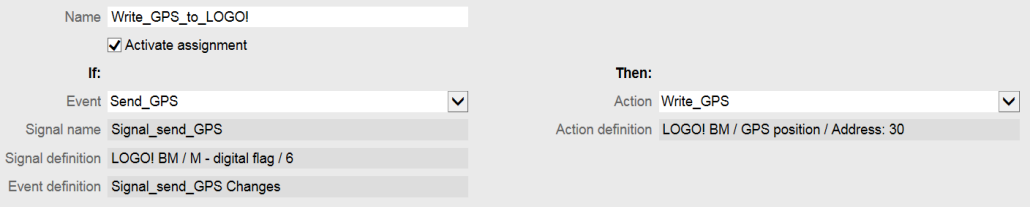
The following settings must be made:

- activate the GPS connection.
- define a trigger bit.
- if the trigger condition becomes true: write GPS data to LOGO! BM.

Table 4-6

No.	Action
1.	Open your Web browser. Enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “System > General” and activate GPS by selecting entry “Yes” in the drop-down menu. Confirm the entry by clicking on “Apply”. 
3.	Make the following settings in “Monitoring”, analog to Chapter 4.1. Signal definitions: 

4.4 “GPS tracking” configuration

No.	Action
4.	Make the following settings in the “Events” tab, analog to Chapter 4.1. Send_GPS: 
5.	Make the following settings in the “Actions” tab, analog to Chapter 4.1. Write_GPS: 
6.	Analog to Chapter 4.1 you make the following settings in the “Assignments” tab: When changing the “Signal_send_GPS” signal, the current GPS position is sent to LOGO! BM. 
7.	The GPS data is processed in the LOGO! BM user program and by means of the Excel macro also provided in the download.

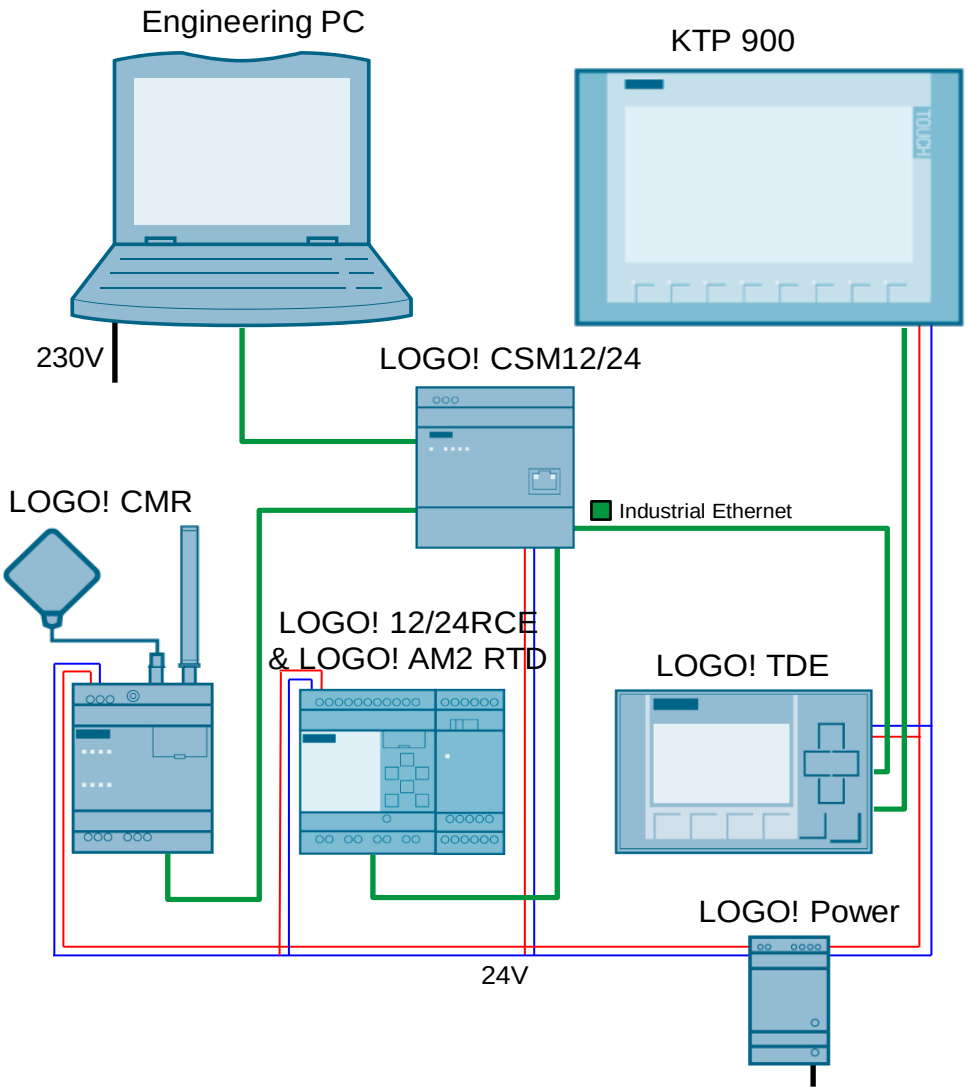
5 Installation and Commissioning

This chapter describes the steps necessary for starting the example using the code from the download and the hardware list.

5.1 Hardware installation

The figure below shows the hardware configuration of the application.

Figure 5-1



Note The setup guidelines for automation systems must generally be followed.

Table 5-1

No.	Action	Remarks
8.	Install the GSM antenna and the GPS antenna at the respectively provided antenna connections of the LOGO! CMR.	For the hardware setup of LOGO! CMR see also \4\.
9.	Insert the SIM card into the respective slot of the LOGO! CMR.	
10.	Insert your microSD card into the respective slot of the LOGO! CMR.	
11.	Connect the LOGO! BM with the LOGO! AM2 RTD.	
12.	Connect the LOGO! TDE and the KTP 700 with an Ethernet cable. Connect further modules (LOGO! TDE, LOGO! BM, LOGO! CMR, Engineering PC) with the LOGO! CSM12/24 via Ethernet.	Any other switch with a respective port number can also be used.
13.	Connect the individual components with the respective power supply.	
14.	If using a temperature sensor: Connect the LOGO! AM2 RTD with the temperature sensor.	Alternatively, you can also simulate the temperature directly via the LOGO! BM.
15.	Switch on the power supply at the devices.	

5.2 Software requirements

It is assumed, that the required software (LOGO!Soft Comfort V8 and optionally WinCC V13 Basic) has been installed on your PC, and that you are familiar with the basics of handling this software.

Also download the .zip-file provided in the entry (see \1\). Then you unzip the file on your PC:

Contains the following components:

- the LOGO!Soft Comfort project.
- the WinCC V13 Basic project.
- a configuration file for LOGO! CMR20X0.
- an Excel macro.
- an Excel file with GPS data as an example.

5.3 Commissioning

IP addresses

The factory settings for the used LOGO! devices are the IP addresses from the following table.

The subnet mask is 255.255.255.0.

Table 5-2

Name	IP address
LOGO! 8/LOGO! BM	192.168.0.1
LOGO! TDE	192.168.0.2
LOGO! CMR	192.168.0.3

Assigning the IP address to the engineering station

For the engineering station (the PC) a free address in the subnet must be selected.

For example:

IP address: 192.168.0.15

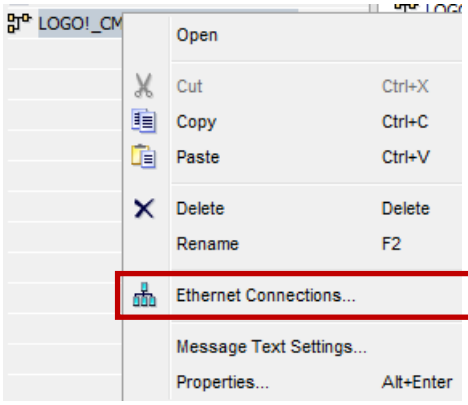
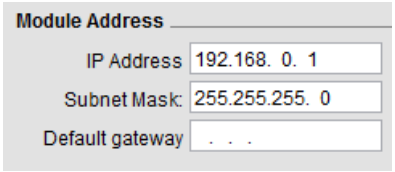
Subnet mask: 255.255.255.0

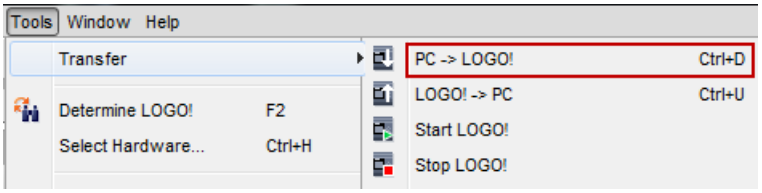
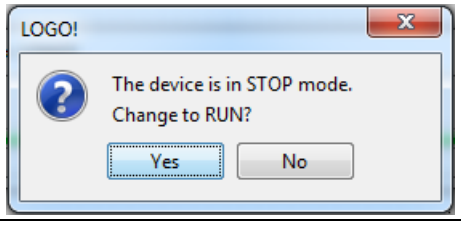
The procedure for changing the IP address is, for example, described in the Microsoft Knowledge Base (see \8\).

5.3.1 Commissioning LOGO! BM

The following table describes the procedure for commissioning the basis station LOGO! BM.

Table 5-3

No.	Action
1.	Open the downloaded LOGO!Soft Comfort project.
2.	Right-click on the “LOGO!_LOGO! CMR20X0_LOGO!_8_3_0” diagram. Select the “Ethernet Connections”. 
3.	Enter the IP address of the LOGO! BM module. 

No.	Action
4.	Load the diagram into the LOGO! BM via “Tools > Transfer > PC ->LOGO!” 
5.	Connect with IP 192.168.0.1 and acknowledge the dialog with OK. 
6.	After successful download you can restart the LOGO! BM via a dialog. 

5.3.2 Commissioning the LOGO! TDE

The LOGO! TDE is directly commissioned at the device.

Operating the LOGO! TDE with a LOGO! BM only requires a connection between both devices. The procedure is described in the following table.

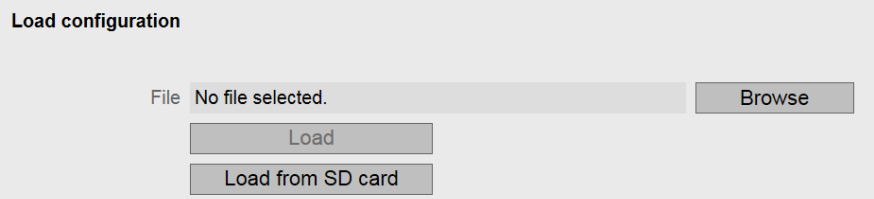
Table 5-4

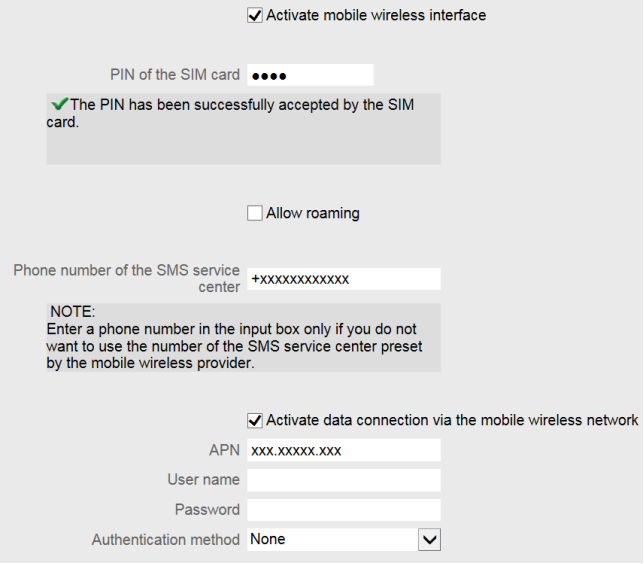
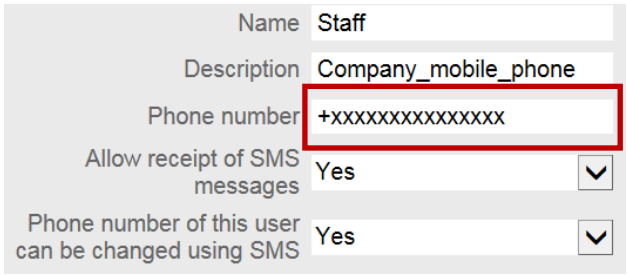
No.	Action
1.	First, check the IP address of the LOGO! TDE. Navigate to “TDE Settings > Network > IP Address” and select IP address 192.168.0.2.
2.	Navigate back to the start menu via the “ESC” button. Select “LOGO! Selection” and set the IP address to 192.168.0.1 (the IP address of the LOGO! BM). LOGO! TDE then connects with LOGO! BM.

5.3.3 Commissioning the LOGO! CMR

For commissioning the LOGO! CMR follow the instructions in the following table:

Table 5-5

No.	Action
1.	Open your Web browser. enter the IP address of LOGO! CMR and log on at the start page of WBM. Factory settings: • IP address: 192.168.0.3 • User name: admin • Password: admin For security reasons you need to assign your own password now. **Note** Make sure that LOGO! CMR20X0 can be reached from your PC via the network.
2.	Go to “Maintenance > Configuration” and click on “Browse”. Select the downloaded configuration file (“user.cfg”) and then click on “Load”.  **Note:** When loading the configuration, the password of the configuration file is also adopted. The “admin” password for the WBM then changes to “LOGO8cmr.”. For security reasons you need to assign your own password.
3.	The configuration described in Chapter 4 has now been performed. You only need to adjust your mobile wireless parameters.

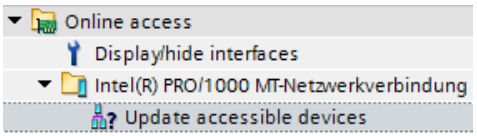
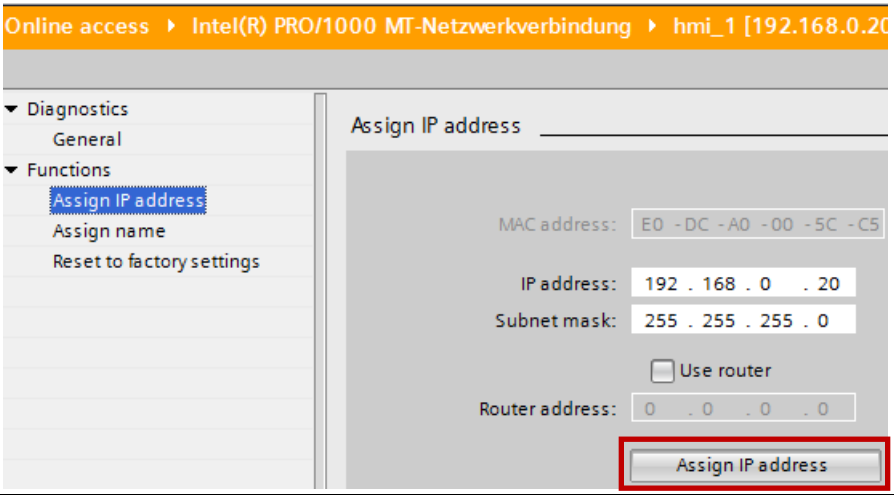
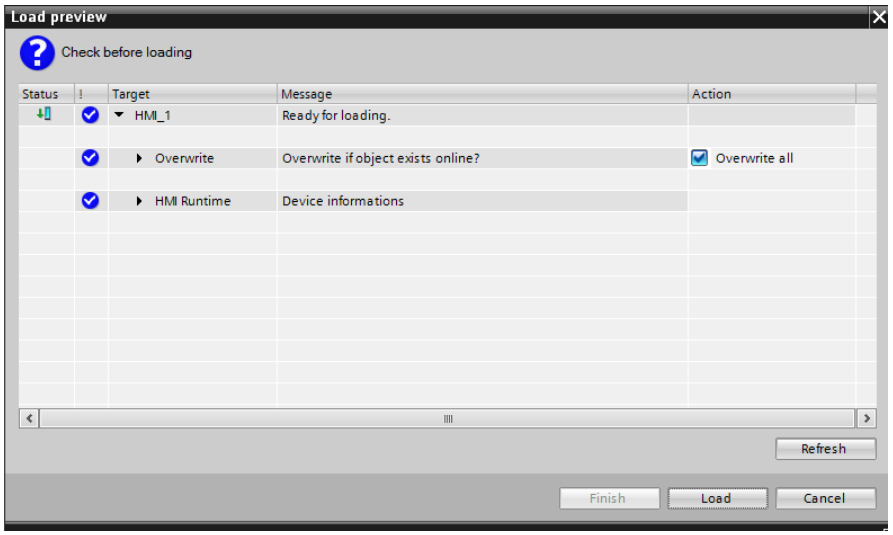
No.	Action
4.	Go to “WAN > Mobile wireless settings”.  Enter the following data: • PIN of your SIM card. • telephone number of the SMS service center, if necessary. • activate the data connection, if necessary (for example, for time-of-day synchronization with an NTP server). Enter your APN and, if necessary, user name, password, as well as authentication method. Confirm the entries by clicking on “Apply”.
5.	Go to “User/groups > User” and enter “Staff” as the user name as well as the telephone number of the mobile device. 

5.3.4 Commissioning the KTP 700

The following table shows the procedure for commissioning the KTP700 BASIC panel.

For the scenarios “Temperature monitoring with SMS alarm” and “Receiving SMS commands”, the panel is used for visualization, control and simulation. The respective functions are also realized via the LOGO! TDE.

Table 5-6

No.	Action
1.	Start the TIA Portal and open the downloaded project.
2.	In “Online Access” you select your interface and start the search for accessible nodes. 
3.	Select “Online & diagnostics” and assign the address 192.168.0.20 to the HMI via “Functions > Assign IP address”. 
4.	In the project tree you then click on the HMI and download the project into the device. 
5.	Search the device and confirm the dialog window. 
6.	WinCC Runtime then automatically starts on the panel.

6 Operation of the Application

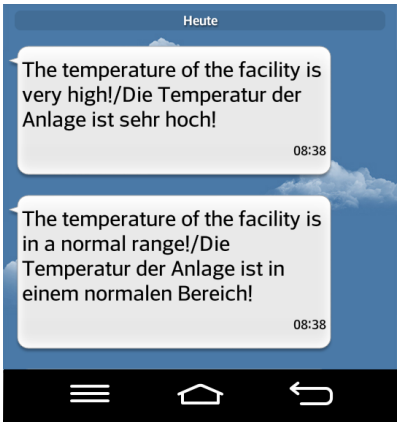
This chapter describes how you can operate the individual scenarios after commissioning.

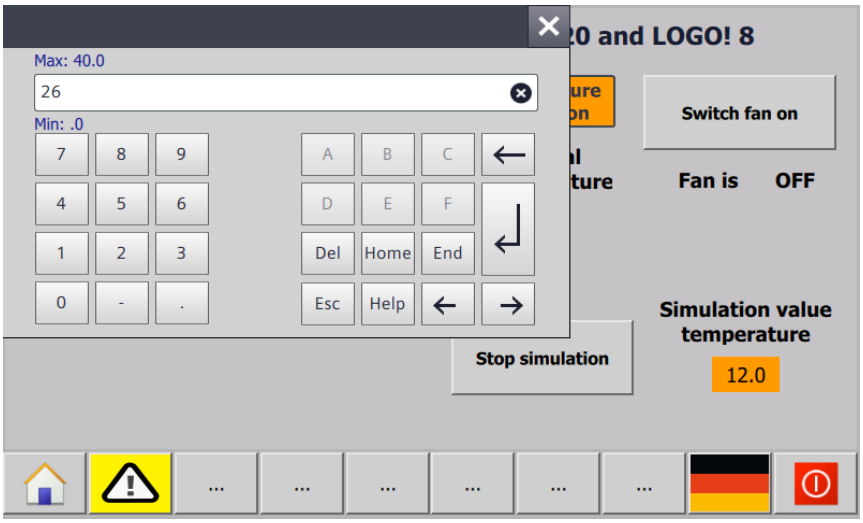
6.1 “Temperature monitoring with SMS alarm” scenario

When following the instructions of the following table, you realize the following sequence:

- simulating the temperature.
- sending an SMS to an already defined recipient address.

Table 6-1

No.	Action
1.	Commission the application as described in Chapter 5.
2.	Simulate the temperature value. Two options are available for this (step 3): simulation via LOGO! TDE or step 4: simulation via the WinCC panel).
3.	Simulation via LOGO! TDE • Start the simulation by clicking on the F1 button at LOGO! TDE. • Increase the temperature to 22°C by keeping the F2 button pressed. → The display takes on a red color and an SMS is sent. • Reduce the simulated temperature to under 19 °C by keeping F3 pressed. → The background lighting of the display turns white again and an SMS is also sent. 

No.	Action
4.	Simulation via WinCC-Panel KTP700 BASIC • Click on the “Start simulation” button. • Click on “Simulation value temperature” and enter a temperature value >22°C.  → The display takes on a red color and an SMS is sent. • Click on “Simulation value temperature” and enter a temperature value <19°C. → The background lighting of the display turns white again and an SMS is sent.

6.2 “Receiving SMS commands” scenario

Syntax of the SMS commands

The following figure shows the syntax for sending SMS commands. “Password” must be replaced by the password assigned via the WBM for sending SMS.

Figure 6-1

Syntax of the SMS commands and possible responses

What information would I like to have?	Example
Read diagnostics data from the CMR	DIAG?
Read GPS position from the CMR	GPSPOSITION?
Read process image (PI)	MONITOR?
Read status of the BM	STATUS?
Read current value	LOGO?VM125,WORD

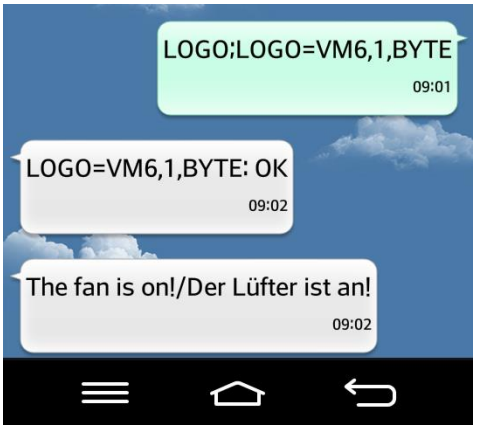
What do I want to influence?	Example
Set the status of the BM	Password;STATUS=RUN
Write current value	Password;LOGO=VM125,1,WORD
Set digital output of the CMR	Password;OUTPUT=O1,1
Change phone number of a user	Password;CHANGEUSER="Joe","01721234567"
Configure address of an NTP server	Password;NTPSERVER="217.13.75.19"
Query mobile wireless provider using a service code	Password;SERVICECODE="*100#"

When reading values, please note FAQ in \7\.

Switch fan on and off

The following table shows how you can switch on the fan of the example application via an SMS.

Table 6-2

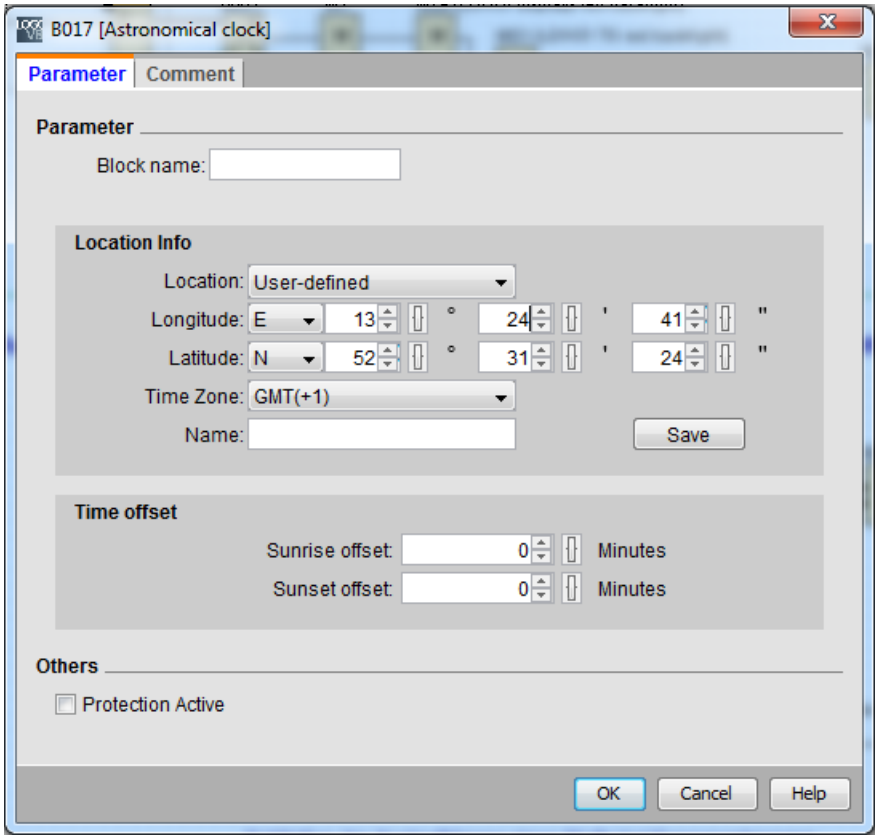
No.	Action
1.	Commission the application as described in Chapter 5.
2.	Send an SMS with the following content to the LOGO! CMR: “LOGO;LOGO=VM6,1,BYTE”. (“LOGO” is the password set by “user.cfg” for writing SMS)
3.	Byte VM6 is set to value ‘1’ by the command SMS. Output Q1 is set to ‘1’ via the user program and the fan switched on. LOGO! CMR confirms the command SMS. A further confirmation is sent by the application (see screenshot). 
4.	Visually, you can also monitor the successful execution of the command directly at the LOGO! BM, the LOGO! TDE and the KTP700. 

6.3 “Time-of-day synchronization” scenario

The “Time-of-day synchronization” scenario realizes the opening and closing of an outlet flap in animal breeding by means of the “Astronomical clock” depending on the position of the sun.

The “Astronomical clock” function sets your output to TRUE between sunrise and sunset. The data is calculated based on the current system time and the given geographical position.

Figure 6-2



The system can be synchronized according to one of the ways described in Chapter 4.3.

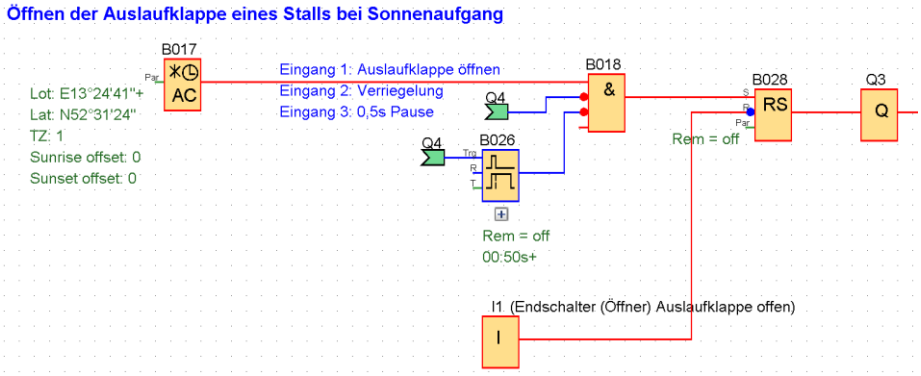
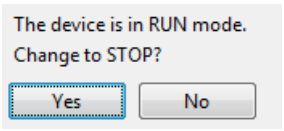
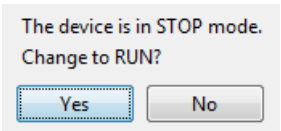
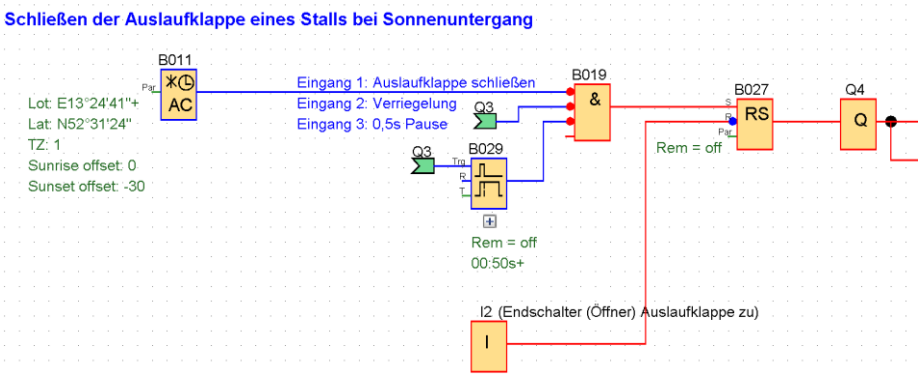
Note

The inputs for the end position switches of the outlet flap are realized as opener. If the input = FALSE, it is assumed that this state is currently true.

6.3 “Time-of-day synchronization” scenario

To test the scenario, please follow the instructions in the table:

Table 6-3

No.	Action
1.	Commission the application as described in Chapter 5.
2.	Interconnect inputs I1 and I2 of LOGO! BM with optional 24V, to simulate active end-position switches of the outlet flap via the hardware.
3.	Open the LOGO!Soft Comfort project.
4.	Press on the “Online Test” button above the function diagram and connect with IP 192.168.0.1. 
5.	Monitor the scenario. When currently between the configured sunrise and sunset, output Q3 will be active to open the outlet flap. 
6.	Go back offline. Change the system time of LOGO! BM. Go to “Tools > Transfer > PC → LOGO!”. Confirm the stopping of LOGO! BM. 
7.	Change the time to 0 h 1. Acknowledge by clicking on “Apply to LOGO!” and restart LOGO! BM. 
8.	Press on the “Online Test” button and connect with LOGO! BM. Since input I2 indicates that the outlet flap is not closed, output Q4 is set active. 

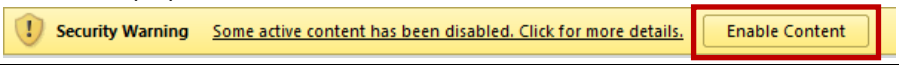
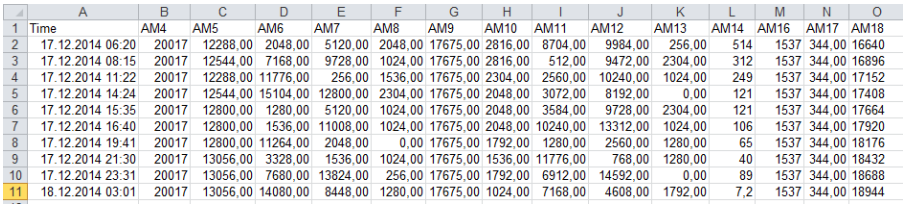
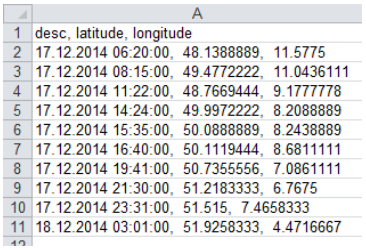
6.4 “GPS tracking” scenario

The application in the LOGO! BM logs the current GPS data every 5 minutes. In order to process the data stored on the microSD card in .csv-format, an Excel macro is provided for download.

The following table writes the procedure

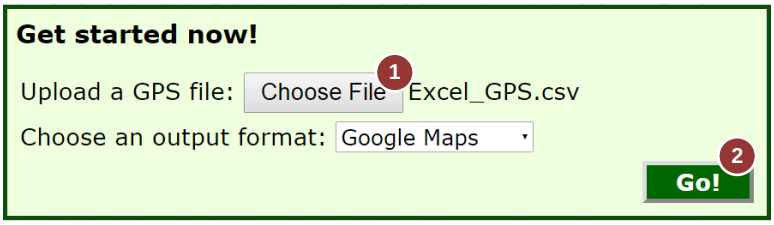
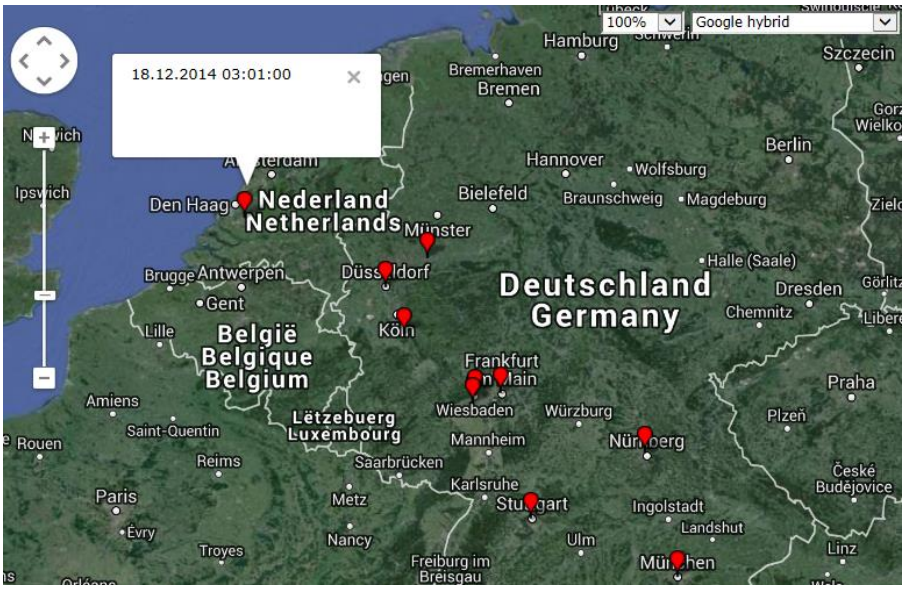
- for logging GPS data and storing it in the .csv file.
- Processing the .csv file using the Excel macro.
- Visualizing the created file via an online tool.

Table 6-4

No.	Action
1.	Commission the application as described in Chapter 5.
2.	Remove the microSD card after some time. **Note** Alternatively, you can also use the .csv file provided for download with a fictitious route.
3.	Since the data has been stored as words, yet originally they came as bytes, the .csv file must be prepared. Start the Excel macro and enable the execution. 
4.	Click on “load data” and enter the .csv file.  Clicking on “OK” automatically starts preparing the .csv file.
5.	Store the prepared file as .csv file. After preparation, the .csv file contains a time stamp as well as longitude and latitude. 

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Time	AM4	AM5	AM6	AM7	AM8	AM9	AM10	AM11	AM12	AM13	AM14	AM16	AM17	AM18
2	17.12.2014 06:20	20017	12288,00	2048,00	5120,00	2048,00	17675,00	2816,00	8704,00	9984,00	256,00	514	1537	344,00	16640
3	17.12.2014 08:15	20017	12544,00	7168,00	9728,00	1024,00	17675,00	2816,00	512,00	9472,00	2304,00	312	1537	344,00	16896
4	17.12.2014 11:22	20017	12288,00	11776,00	256,00	1536,00	17675,00	2304,00	2560,00	10240,00	1024,00	249	1537	344,00	17152
5	17.12.2014 14:24	20017	12544,00	15104,00	12800,00	2304,00	17675,00	2048,00	3072,00	8192,00	0,00	121	1537	344,00	17408
6	17.12.2014 15:35	20017	12800,00	1280,00	5120,00	1024,00	17675,00	2048,00	3584,00	9728,00	2304,00	121	1537	344,00	17664
7	17.12.2014 16:40	20017	12800,00	1536,00	11008,00	1024,00	17675,00	2048,00	10240,00	13312,00	1024,00	106	1537	344,00	17920
8	17.12.2014 19:41	20017	12800,00	11264,00	2048,00	0,00	17675,00	1792,00	1280,00	2560,00	1280,00	65	1537	344,00	18176
9	17.12.2014 21:30	20017	13056,00	3328,00	1536,00	1024,00	17675,00	1536,00	11776,00	768,00	1280,00	40	1537	344,00	18432
10	17.12.2014 23:31	20017	13056,00	7680,00	13824,00	256,00	17675,00	1792,00	6912,00	14592,00	0,00	89	1537	344,00	18688
11	18.12.2014 03:01	20017	13056,00	14080,00	8448,00	1280,00	17675,00	1024,00	7168,00	4608,00	1792,00	7,2	1537	344,00	18944

	A
1	desc, latitude, longitude
2	17.12.2014 06:20:00, 48.1388889, 11.5775
3	17.12.2014 08:15:00, 49.4772222, 11.0436111
4	17.12.2014 11:22:00, 48.7669444, 9.1777778
5	17.12.2014 14:24:00, 49.9972222, 8.2088889
6	17.12.2014 15:35:00, 50.0888889, 8.2438889
7	17.12.2014 16:40:00, 50.1119444, 8.6811111
8	17.12.2014 19:41:00, 50.7355556, 7.0861111
9	17.12.2014 21:30:00, 51.2183333, 6.7675
10	17.12.2014 23:31:00, 51.515, 7.4658333
11	18.12.2014 03:01:00, 51.9258333, 4.4716667

No.	Action
6.	For visualizing the GPS data, for example, open the web page in \9\.
7.	Select the file saved in 5. by clicking on the “Choose file” button. Then click on the “Go!” button. 
8.	A new window opens and your GPS data is visualized. 

No.	Action
9.	Alternatively, you can delete the time stamp in step 5. This gives you a “route” mapped out according to the GPS data. 

Note

The used freeware “GPS Visualizer” is a free converter for .csv files, for example into .gpx files. Siemens does not provide this service.

If necessary, check the respective license terms of the freeware tool for your application purpose.

7 Further Notes, Tips & Tricks, etc.

Time-of-day synchronization

When using GPS functions in an application, it is recommended to use the GPS signal for time-of-day synchronization.

Using the GPS signal for time-of-day synchronization is favorable for the following reasons:

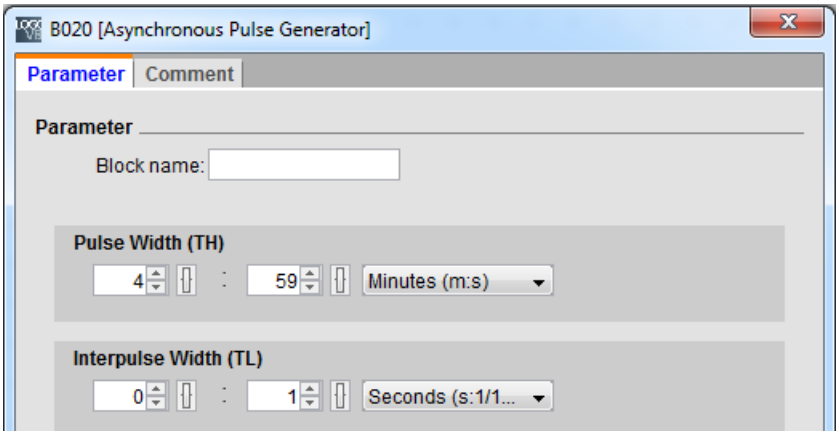
- synchronization via mobile wireless network is not provided by all provider services.
- no separate costs unlike for synchronization via NTP or mobile wireless network.

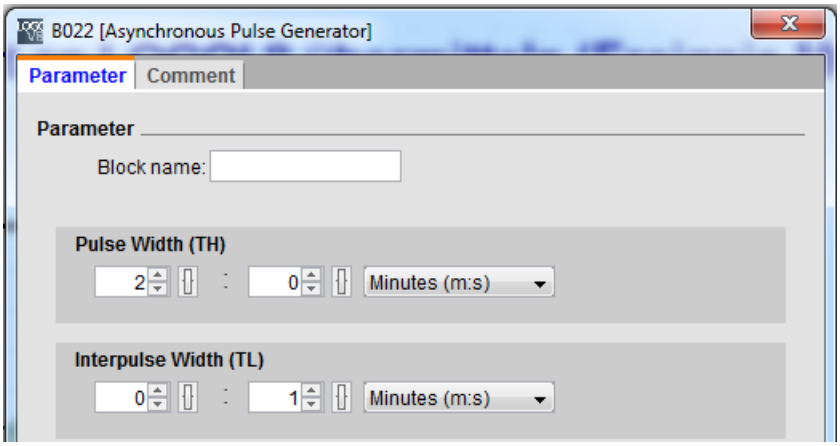
Adjusting the GPS log cycle

The following table shows the procedure of changing the time difference between log processes in the user program.

In the supplied program, data is polled every 5 minutes. A maximal array size of 20,000 entries enables data archiving over approx. 70 days.

Table 7-1

No.	Action
1.	Open the LOGO!Soft Comfort project.
2.	On the second page in “Data logging of GPS data” you click on the B020 block (pulse encoder) to change the given time cycle. 

No.	Action
3.	Change the given time cycle in “Transmit GPS data constantly to LOGO! 8”. The time cycle must be smaller or equal to the cycle in “Data logging of GPS data”. 
4.	Download the project into the LOGO! BM.

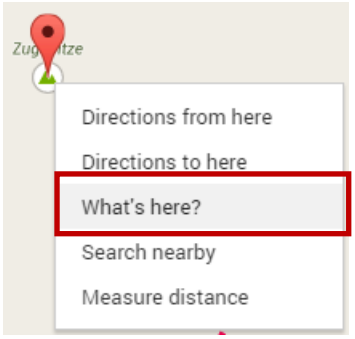
Note Note that the smallest polling interval of the process interval of the LOGO! BM at the LOGO! CMR is one second!

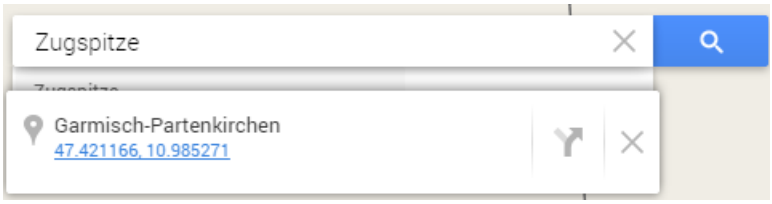
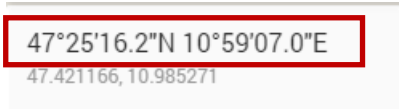
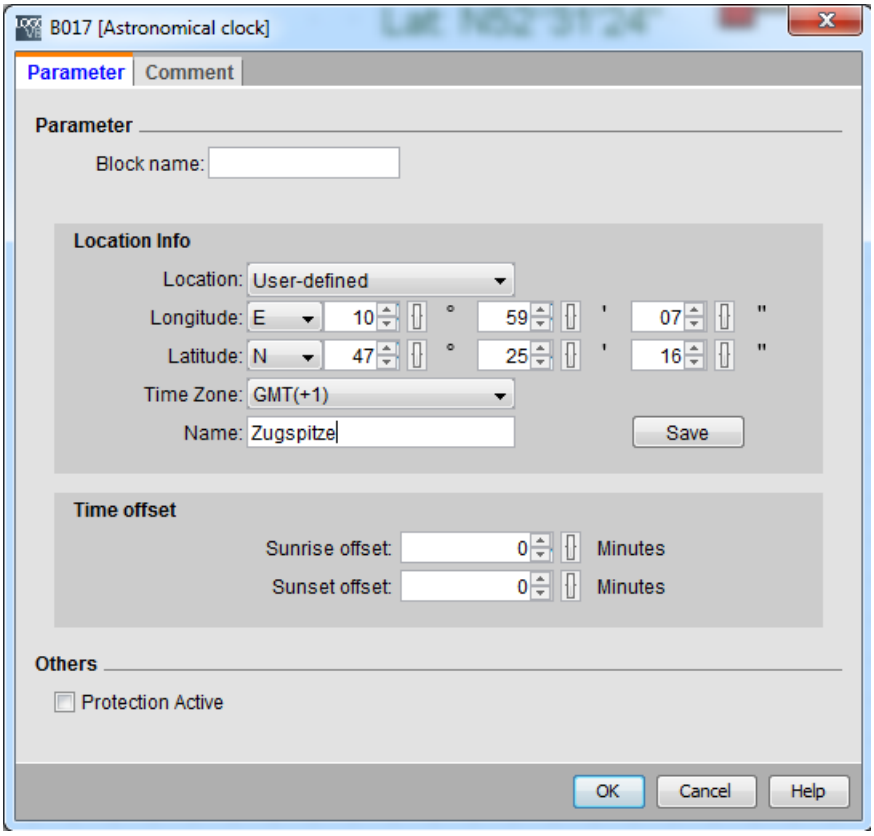
Adjusting longitude and latitude

Controlling an output depending on sunrise and sunset, the correct location must be sent to the “Astronomical clock” function.

The following table describes how to proceed using Google Maps.

Table 7-2

No.	Action
1.	Open Google Maps in your web browser (see \10\).
2.	Enter your address into the search bar and acknowledge by pressing the Return key. 
3.	Right-click on the desired position on the map and select “What’s here?” from the context menu. 

No.	Action
4.	Under the search bar you click on the decimal specification of the geo data to receive the specification in degrees, minutes, seconds.  Geo data in degrees, minutes, seconds format: 
5.	Open the LOGO!Soft Comfort project.
6.	Enter the coordinates contained in step 4 into both functions “Astronomical clock” (B11 and B17). Confirm the entry with “OK”. 
7.	Load the diagram into the LOGO! BM via “Tools > Transfer > PC → LOGO!”).

8 Related Literature

Table 8-1

	Topic	Title
\1\	Siemens Industry Online Support	http://support.automation.siemens.com
\2\	Download page of the entry	http://support.automation.siemens.com/WW/view/en/105074237
\3\	LOGO! Manual	http://support.automation.siemens.com/WW/view/en/100761780
\4\	LOGO! CMR20X0 Manual	http://support.automation.siemens.com/WW/view/en/103657268
\5\	LOGO! CMR20X0 delivery release	http://support.automation.siemens.com/WW/view/en/104507729
\6\	STEP 7 Basic V13.0	http://support.automation.siemens.com/WW/view/en/89336297
\7\	FAQ: What should you watch out for with communication by text message (SMS) between a LOGO! CMR2020 and a LOGO! 8 with values of the data type BYTE, WORD or DWORD?	http://support.automation.siemens.com/WW/view/en/107146628
\8\	Changing the TCP/IP settings	http://windows.microsoft.com/en-us/windows/change-tcp-ip-settings#1TC=windows-7
\9\	GPS Visualizer	http://www.gpsvisualizer.com/
\10\	Google Maps	http://www.google.com/maps

9 History

Table 9-1

Version	Date	Modifications
V1.0	01/2015	First version
V1.0.1	09/2015	Correction article number