SIEMENS

SIMATIC NET

# LOGO! - Industrial Ethernet
# LOGO! CMR2020, LOGO! CMR2040

Operating Instructions




03/2024
C79000-G8976-C356-09




## Legal information

### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

**⚠ DANGER**

indicates that death or severe personal injury **will** result if proper precautions are not taken.

**⚠ WARNING**

indicates that death or severe personal injury **may** result if proper precautions are not taken.

**⚠ CAUTION**

indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

### Proper use of Siemens products

Note the following:

**⚠ WARNING**

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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### Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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# Preface

## Validity of this manual

This document contains information on the following LOGO! products:

- LOGO! CMR2020
  Hardware product version: 2.0
  Firmware version: V2.2
  Article number: 6GK7 142-7BX00-0AX0
  Communications module for connection of LOGO! 8 to the GSM/GPRS network (2G)
- LOGO! CMR2040
  Hardware product version: 3.0
  Firmware version: V2.2
  Article number: 6GK7 142-7EX00-0AX0
  Communications module for connection of LOGO! 8 to the LTE network (4G)


Figure 1 LOGO! CMR2020

The two devices differ in the supported mobile wireless standards. The remaining range of functions of both devices is identical.

### Product names and abbreviations

- CMR or device
  In this document, the term "CMR" or "device" is also used instead of the full product name "LOGO! CMR2020" or "LOGO! CMR2040". CMR is the abbreviation for Communication Module Radio.
- BM or LOGO! BM
  Basic module: LOGO! 8
- WBM
  Web Based Management; Web user interface with which the CMR is configured.
- SD card
  Below, the term "SD card" is used instead of micro SD card.
- HW
  Hardware product version

### Purpose of the manual

This manual supports you during the configuration, installation, commissioning and operation of the communications modules LOGO! CMR2020 and LOGO! CMR2040.

A detailed example (Page 131) supports you during commissioning.

### New in this release

- Support of LOGO! BM V8.4

### Replaced documentation

This manual replaces the manual edition 06/2021.

### Current manual release on the Internet

You will also find the current version of this manual on the Internet pages of Siemens Industry Online Support at the following address:

Link: (https://support.industry.siemens.com/cs/ww/en/view/109477418)

### Cross references

In this manual there are often cross references to other sections.

To be able to return to the initial page after jumping to a cross reference, some PDF readers support the command <Alt>+<left arrow>.

## Sources of information and other documentation

You will find an overview of further reading and references in the Documentation references in this manual.

## Use of the device

Connection of a LOGO! BM to an LTE, UMTS or GSM/GPRS mobile wireless network and a GPS system.

**⚠ WARNING**

**Impairment of medical devices and data media**

The device contains a wireless transmitter that could, under certain circumstances, impair the functionality of electronic medical devices such as hearing aids or pacemakers. Do not use the device in places where the operation of wireless devices is prohibited. You can obtain advice from your physician or the manufacturer of such devices.

To prevent data media from being demagnetized, do not keep disks, credit cards or other magnetic data media near the device.

## See also

System Time (Page 76)

Link: (www.siemens.com/mobilenetwork-approvals)

Approvals (Page 157)

## License conditions

**Note**

**Open source software**

Read the license conditions for open source software carefully before using the product.

The license conditions for open source software are stored on the device and can be read out using the WBM: In the header line of the WBM you will find an icon with you can save the OSS license texts on the PC and then extract and open them.

## Cybersecurity notes

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
https://new.siemens.com/cert (https://www.siemens.com/cert).

## Firmware

The firmware is signed and encrypted. This ensures that only firmware created by Siemens can be downloaded to the device.

## Note on firmware/software support

Check regularly for new firmware/software versions or security updates and apply them. After the release of a new version, previous versions are no longer supported and are not maintained.

## Decommissioning

Shut down the device properly to prevent unauthorized persons from accessing confidential data in the device memory.

To do this, restore the factory settings on the device.

Also restore the factory settings on the storage medium.

## Recycling and disposal

The product is low in pollutants, can be recycled and meets the requirements of the WEEE directive 2012/19/EU "Waste Electrical and Electronic Equipment".

Do not dispose of the product at public disposal sites. For environmentally friendly recycling and the disposal of your old device contact a certified disposal company for electronic scrap or your Siemens contact.

Keep to the local regulations.

You will find information on returning the product on the Internet pages of Siemens Industry Online Support:
Link: (https://support.industry.siemens.com/cs/ww/en/view/109479891)

## SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary on the Internet at the following address:

Link: (https://support.industry.siemens.com/cs/ww/en/view/50305045)

## Training, Service & Support

You will find information on training, service and support in the multilanguage document "DC_support_99.pdf" on the Internet pages of Siemens Industry Online Support:

Link: (https://support.industry.siemens.com/cs/ww/en/view/38652101)

# Table of contents

# Application and functions

# 1

## 1.1 Application and communications functions

### Communications functions

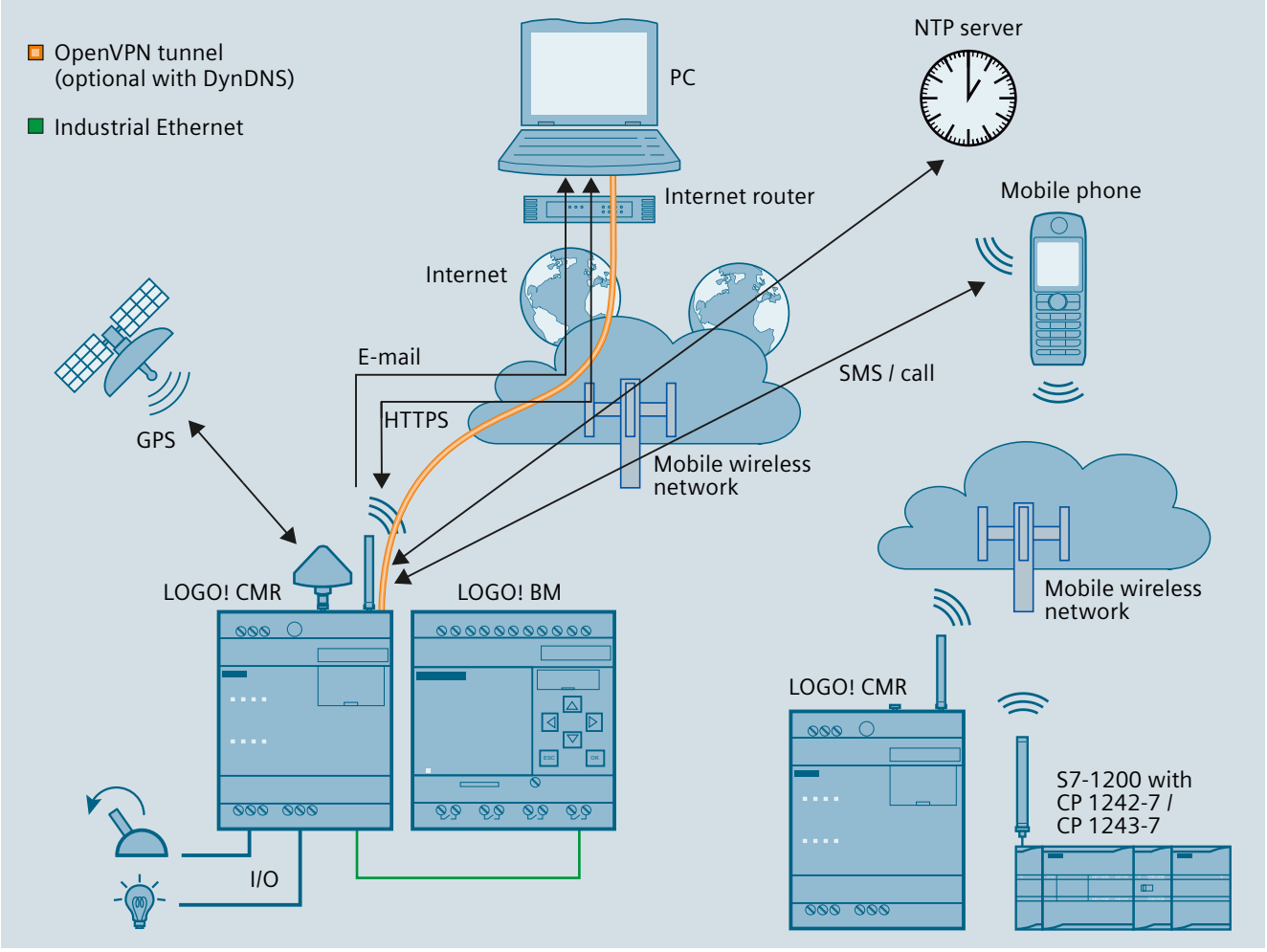



Figure 1-1 Overview of the communications functions for the LOGO! CMR

### Communication and process data access

#### Process data access

In a structure with BM you can use the CMR to access the process data: Process image, inputs/outputs, memory bits etc.

In stand-alone operation (see below) you can access the I/O via the inputs and outputs of the CMR

The information can be read out and transferred by SMS message or e-mail. An event-based notification via SMS message or e-mail is possible, see "Mobile wireless".

**Mobile wireless**

With the CMR, you establish a mobile data connection to a mobile wireless network: The following specifications are supported:

- **LOGO! CMR2020**
  Mobile wireless standards:
  - GSM/GPRS
- **LOGO! CMR2040**
  Mobile wireless standards:
  - 4G (LTE)
  - 3G (UMTS)
  - 2G (GSM/GPRS/EDGE)

  **Fallback strategy**:
  If the establishment of a connection from the CMR2040 to the LTE network fails, the dial-in falls back automatically to the next lower mobile wireless network (LTE > UMTS > GPRS).

You will find the supported frequencies in the section Technical specifications (Page 153).

You will find the country-specific wireless approvals in section Approvals (Page 157) and on the following Internet page;
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/cert)

**GPS**

The CMR can receive position data and the time of day of a GPS system.

**HTTPS**

On a configuration PC / smartphone / tablet you can use HTTPS to access the CMR. HTTPS is supported on both interfaces of the CMR: LAN and WAN (mobile wireless)

## Station structure with CMR

You can use the CMR with the following structures:

- **CMR with BM**
  The CMR is connected locally to a BM via Ethernet. The CMR establishes the connection to a mobile wireless network.
- **Stand-alone operation**
  You can also operate the CMR in stand-alone mode: in other words without a connected BM. To connect the I/O you use the two digital inputs and outputs of the CMR.

# 1.2 Further functions

## Functions

The CMR supports the following functions:

- **WBM**
  A Web user interface (WBM - Web Based Management) for the configuration of the CMR protected by user and password queries, see section "WBM" below.
- **OpenVPN**
  Tunnel technology OpenVPN for secure data transmission via mobile wireless, see section "OpenVPN" below.
- **GPS position**
  - Querying position by SMS
  - Forwarding position to the BM
- **DynDNS**
  Use of dynamic DNS on the WAN interface (mobile wireless)
- **Messages (SMS / e-mail)**
  - Sending and receiving SMS messages
  - Sending e-mail

  For information on the functions, refer to the section "Messages" below.
- **Calls**
  - Receiving calls
  - Outgoing calls as action (without language)

  For information on the functions, refer to the section "Messages" below.
- **Reading the process image**
  The process image of the BM can be read out by SMS message (command "MONITOR?").
- **Writing outputs**
  The two outputs of the CMR can be written by SMS.
- **Reading signals**
  With e-mail and SMS you can have read access to the process image of the BM, the variable memory of the BM and the process image of the CMR using configurable signals.
- **Access to variable memory (VM)**
  Via the variables memory, you have read and write access to the current values of function blocks of the BM.

- **Events / process image**
  Event configurations and reactions, for example an alarm SMS message if a value changes in the process image.
  The process image consists of the following elements that you can use for an event or alarm configuration:
  - Digital and analog inputs
  - Digital and analog outputs
  - Digital and analog bit memory
  - Shift register
  - Operator keys
  - Function keys
- **Time-of-day synchronization**
  - NTP
  - GPS
  - Mobile wireless network (depending on the mobile wireless provider)
  - As SNTP server at the local Interface
- **Forwarding the time of day to the BM**
- **SD card**
  As an option you can save the configuration data of the CMR and a copy of the diagnostics buffer on an SD card.

**WBM**

You configure the CMR locally using a Web user interface (WBM) that can be displayed with a Web browser. The WBM provides the following functions:

- Enabling receipt of GPS
- Setting the system time and synchronization of the BM
- Configuration of the CMR for sending and receiving messages
- Configuration of the LAN and WAN interface and their functions
- Configuration of the security functions
- Creation and management of users and groups
- Monitoring the CMR with a wide range of parameters and functions
- Upkeep functions such as firmware updates and restarts
- You will also receive a lot of status and diagnostics information via the WBM.

For more detailed information, refer to section Configuration (WBM) (Page 57).

## Notifications

### Sending SMS messages and e-mails

From internal events and events coming from the process reactions can be generated by the WBM that lead to information, diagnostics and alarm SMS messages or e-mails being sent.

### Receiving SMS messages

Using SMS messages, the outputs of the CMR and the BM can be written. The authorization is checked by comparing the phone number of the sender with the configured phone numbers. Password protection is optional.

Example of the SMS text for writing a single bit with the value zero:
<Password>;LOGO=VM115.1,0,BIT

Functions for simplifying SMS syntax:

- Alias SMS
  Configuration of symbolic names as placeholders for the entire SMS text
- Constants for values that are repeated
  Configuration of symbolic constants as placeholders for values to be written that are repeated
- Use of signal names as parameters in SMS messages
  Configuration of signals as placeholders for variables of the BM

You will find the relevant information in the following sections:

- Diagnostics > Notifications (Page 80)
- WAN > SMS (Page 96) and the following
- Users / groups > User (Page 111) and > User groups (Page 113)
- Monitoring > Constants (Page 121)
- Monitoring > Message texts (Page 122)
- Monitoring > Signals (Page 122)
  and
- Response of the CMR when receiving an SMS message/replying to SMS message (Page 171) and the following

## Calls

### Outgoing calls

Outgoing calls are configured as an action that informs a defined user group when the action is triggered.

### Receiving calls

Incoming calls are configured as an event and can be received as action triggers.

You will find the relevant information in the following sections:

- WAN > Calls (Page 101)
- Users / groups > User (Page 111) and > User groups (Page 113)

- Monitoring > Signals (Page 122)
- Monitoring > Actions (Page 126)

### OpenVPN

You can use the VPN technology of OpenVPN for the secure transfer of data via the mobile wireless connection of the CMR. A VPN tunnel is established between the CMR and the connection partner (mobile phone/tablet, PC). In this case the CMR is the OpenVPN server, the partner (mobile phone, PC) is the OpenVPN client.

In addition to this you can use OpenVPN for direct communication with the BM if the CMR is entered as a router with the BM. By using the "Port forwarding" function, the CMR can also be entered as router for other devices. The devices can be accessed via a VPN tunnel.

The CMR uses the OpenVPN version V2.4.10.

OpenVPN is implemented on the CMR as a TUN device (routing mode). The following security functions are supported:

- Encryption
  The data to be transferred is encrypted with the AES-128 CBC method.
- Authentication of the connection partner
  SHA-256 is used as hash algorithms for authenticating the user data.

You will find the requirements for the OpenVPN client on the VPN partner in the section Requirements for use (Page 18).

### Diagnostics via LAN and WAN

Using the WBM you can view a diagnostics buffer for diagnostics purposes. It is also possible to save the diagnostics buffer on the SD card or the PC.

You will find details in the section Diagnostics options (Page 141).

## 1.3 Requirements for use

### Requirements for operation

- **Mobile wireless contract with SIM card**
  To use the mobile wireless communication via the WAN interface of the CMR, you require a contract with a suitable mobile wireless network provider.
  For more information on the contract and SIM card see below.
- **Mobile wireless network**
  To be able to use the mobile wireless interface, there must be a mobile wireless network within the reach of the CMR.
- **Data contract**
  For the following data services you require a data contract with your mobile wireless network provider:
  E-mail, NTP, DynDNS, OpenVPN, HTTPS via mobile wireless

- **NTP**
  For time-of-day synchronization using NTP, apart from the requirements listed above (SIM card, data contract, mobile wireless network) you also require the address data of an NTP server.
- **OpenVPN**
  Apart from the requirements listed above (SIM card, data contract, mobile wireless network) you also require the following to use OpenVPN via the mobile wireless network:
  - A public IP address for the CMR
  - An OpenVPN client as communications partner (e.g. PC for access to the WBM of the CMR)
  - A key compatible with the OpenVPN client (pre-shared key)
    The key can be generated in the WBM of the CMR or generated by the communications partner and imported via the WBM of the CMR.

  The OpenVPN client in the Open VPN partner must support the following functions:
  - OpenVPN V2.4.10 or higher

  You can export the information of the Open VPN server of the CMR as a file for the client, see section OpenVPN-PSK (Page 104).
- **DynDNS**
  To use DynDNS, apart from the requirements listed above (SIM card, data contract, mobile wireless network) you also require the following:
  - A suitable service provider
  - A public IP address
  - Note the section "Time of day" below.
- **HTTPS**
  - For HTTPS via mobile wireless you require a public IP address for the CMR.
  - Note the section "Time of day" below.
- **Time of day**
  When you use certificates, for example, when using HTTPS, e-mail (secure), secure LOGO! V8.3 communication or DynDNS, you require the precise time of day and the precise date for checking the certificates.

## Antennas

Only use antennas from the accessories program for the CMR. For more information, refer to the section Antennas (Page 163).

- Mobile wireless
  To operate the CMR, you require an antenna that is adapted to the standard of the mobile wireless network you are using.
  For the fallback behavior when using an LTE network, refer to section Application and communications functions (Page 13).
  You will find the frequency bands supported by the CMR in the section Technical specifications (Page 153).
- GPS
  If you want to use GPS, you require a suitable GPS antenna, see section Antennas (Page 163).

## Power supply

You require a voltage source with a voltage between 12 V DC and 24 V DC that provides adequate voltage or current. For more information, refer to the section Technical specifications (Page 153).

## SIM card

You require a SIM card of your mobile wireless provider.

### Recommendations

Note the following recommendations for the mobile wireless contract or for the SIM card:

- Where possible, sign a mobile wireless contract with a provider that makes all required functions available.
  For example to use DynDNS a public IP address is required.
  To send SMS messages, the SIM card must be enabled this function and have a phone number.
- Avoid using a multi SIM card. This can lead to errors in time-of-day synchronization.
- Where possible sign a fixed mobile wireless contract and do not use prepaid cards.
  A flat rate for SMS and data can be recommended.
  If, however, you want to use a prepaid card note the following:
  - If your credit has been used up, the CMR does not send an automatic warning.
  - You can query your current credit with your provider.
- With the CMR2040 for faster data traffic a contract (with corresponding SIM card) is recommended that supports the mobile wireless standard LTE.
  The CMR2040 however also supports UMTS.
- Where possible, use a standard SIM card without an adapter.
- The provider often assigns a PIN (Personal Identification Number) for the SIM card.
  SIM cards that are only used for the data services (see above) can be almost always used without a PIN. You do not need to assign a PIN in the configuration of the CMR.
- The following access data for the mobile wireless network must be present:
  - Access Point Name (APN)
  - Depending on the service provider also name and password for the APN
  - The authentication method

For more information, refer to the section Mobile wireless settings (Page 91).

### Compatible cards

The card receptacle of the CMR for the SIM card is compatible with the following card formats:

- Mini SIM card, 25 x 15 mm (ISO/IEC 7810 ID-000)
- Micro SIM card, 15 x 12 mm (ETSI TS 102 221 V9.0.0) if an adapter exists.
- Nano SIM card, 12.3 x 8.8 mm (ETSI TS 102 221, TS 102 221 V11.0.0) if an adapter exists.

### Optional accessories: SD card

As an optional accessory you can use an SD card that is not supplied with the CMR. For supported SD cards, see the appendix SD card (Page 169).

The SD card makes the following functions available:

- Storing configuration files
  If you need to replace the CMR, you can also use the SD card to transfer the configuration data of the CMR stored there to the new device. See section Replacing the CMR (Page 148) for information on this.
- Saving diagnostics buffer entries
- Automatic saving of the entire diagnostics buffer if serious errors occur (can be configured)

## 1.4 Application examples

### Possible applications

The CMR has a wide variety of possible uses in various areas of application. Below, you will find several configuration examples for applications of the CMR.

### 1.4.1 Mobile wireless communication by call / SMS / e-mail without LOGO! BM

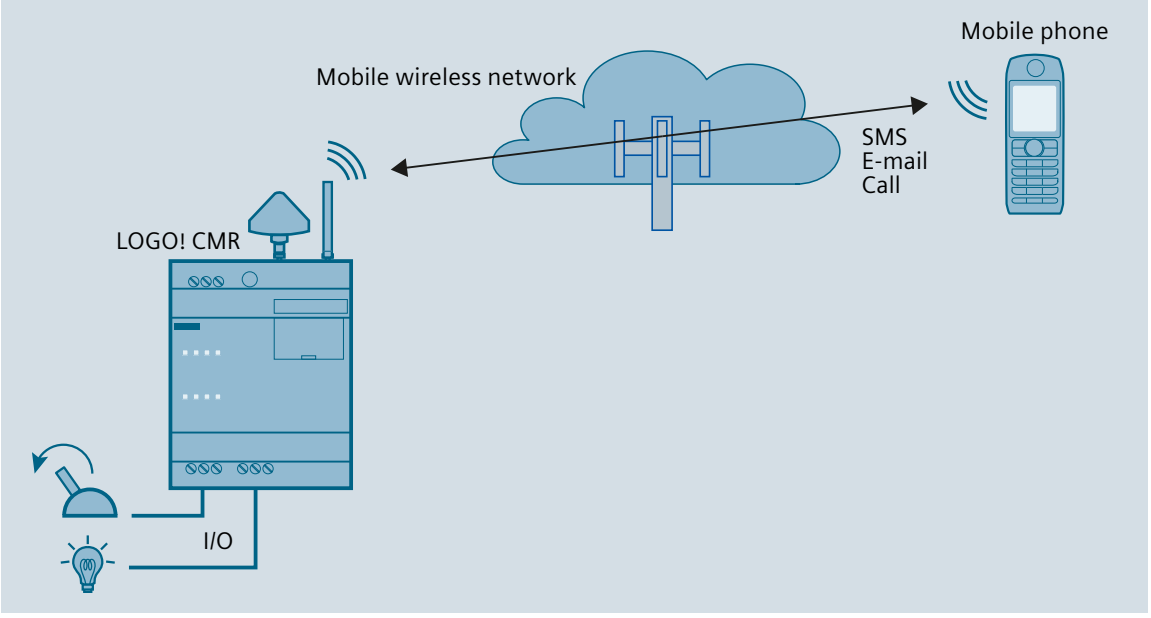



Figure 1-2 Mobile wireless communication without LOGO! BM

You can operate the CMR without a BM being connected. If the CMR is connected to a mobile wireless antenna, the following functions are available:

- Triggering a call, sending an SMS message or e-mail due to a signal at the input of the CMR
- Receiving a call / an SMS:
  - Setting an output of the CMR
  - Requesting a call / an SMS message with status information of the CMR

Using the WBM of the CMR, you can configure events such as changing of input signals as well as actions. The actions are triggered when configurable events occur.

### Requirements

- Installation, connecting up and commissioning have been completed.
- The antenna for receipt of mobile wireless is connected.

### Procedure

To configure access via the mobile wireless network, follow the steps below:

1. First establish a configuration connection between the CMR and a connected PC. To do this, use an Ethernet patch cable, see Establishing a connection to the CMR (Page 67).
2. Configure the mobile wireless connection, see Mobile wireless settings (Page 91).
3. Configure the device using the WBM.

## 1.4.2 Mobile wireless communication by call / SMS / e-mail with LOGO! BM

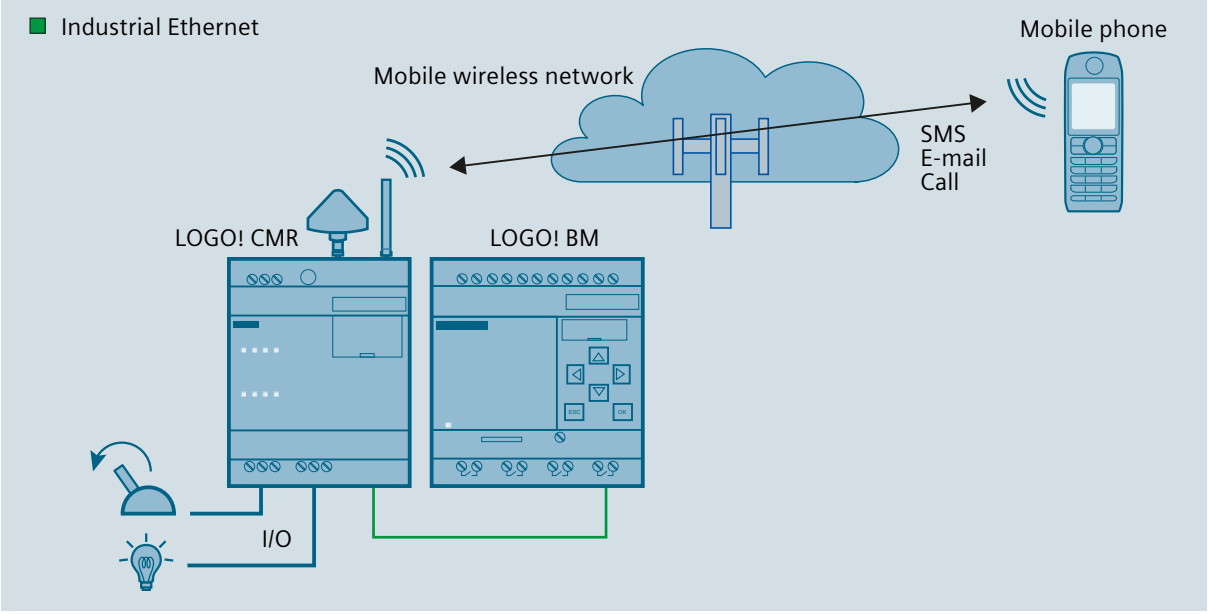



Figure 1-3 Mobile wireless communication with LOGO! BM

If the CMR is connected to the BM, and if you have a mobile wireless antenna connected, you can use all the functions available in operation without a connected BM. In addition to this, access to the LOGO! BM is expanded:

- Triggering a call, sending an SMS message or e-mail due to an event in the connected BM
- Receiving a call / an SMS:
  - Triggering an action in the connected BM
  - Requesting a call / an SMS message with status information of the CMR

Configuration using the WBM also includes access to the components of the BM.

## Requirements

- Installation, connecting up and commissioning have been completed.
- The antenna for receipt of mobile wireless is connected.

## Procedure

To set up access via the mobile wireless network and to establish a connection to the BM, follow the steps below:

1. First establish a configuration connection between the CMR and a connected PC. To do this, use an Ethernet patch cable, see Establishing a connection to the CMR (Page 67).
2. Configure the mobile wireless connection, see Mobile wireless settings (Page 91).
3. Configure the device using the WBM.
4. When configuration is completed, disconnect the CMR from the PC.

   **Note**

   **Using a switch**

   When using a switch, e.g. LOGO! CSM, do not disconnect the connections: BM, CMR and PC can be operated at the same time.

5. If you do not use a switch connect the CMR to the BM.

### 1.4.3 Access by the PC via the Internet and mobile wireless network

If your configuration is connected to the CMR via Internet and the mobile wireless network by using an OpenVPN tunnel you can access the CMR and the BM.

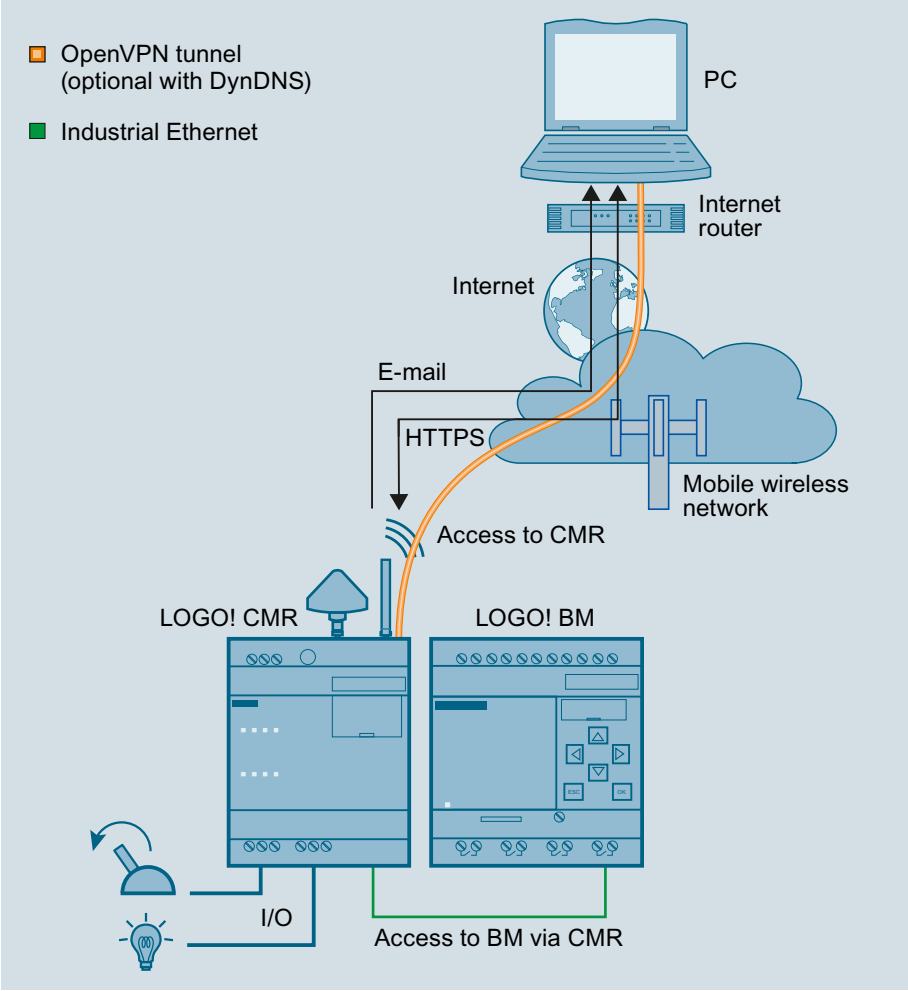



Figure 1-4 Access by the LOGO! via the Internet and mobile wireless network

You have the following options:

- Secure access from the PC to the CMR with OpenVPN
- Secure access from the PC to the BM with OpenVPN
  For this application the CMR must be entered as a router in the BM.
  In this way, you can for example reload the program of the BM.
- Access from the configuration PC to the CMR via mobile wireless network using HTTPS
  For the procedure, refer to the section Establishing a connection to the CMR (Page 67).
- Sending e-mails optionally encrypted via STARTTLS
- Optional: Use of dynamic DNS to simplify the connection via the publicly reachable IP address of the CMR

**Requirements**

- The services used are activated in the CMR via the WBM.
- You have contracts with suitable service providers.

## 1.4.4 Position detection (GPS)

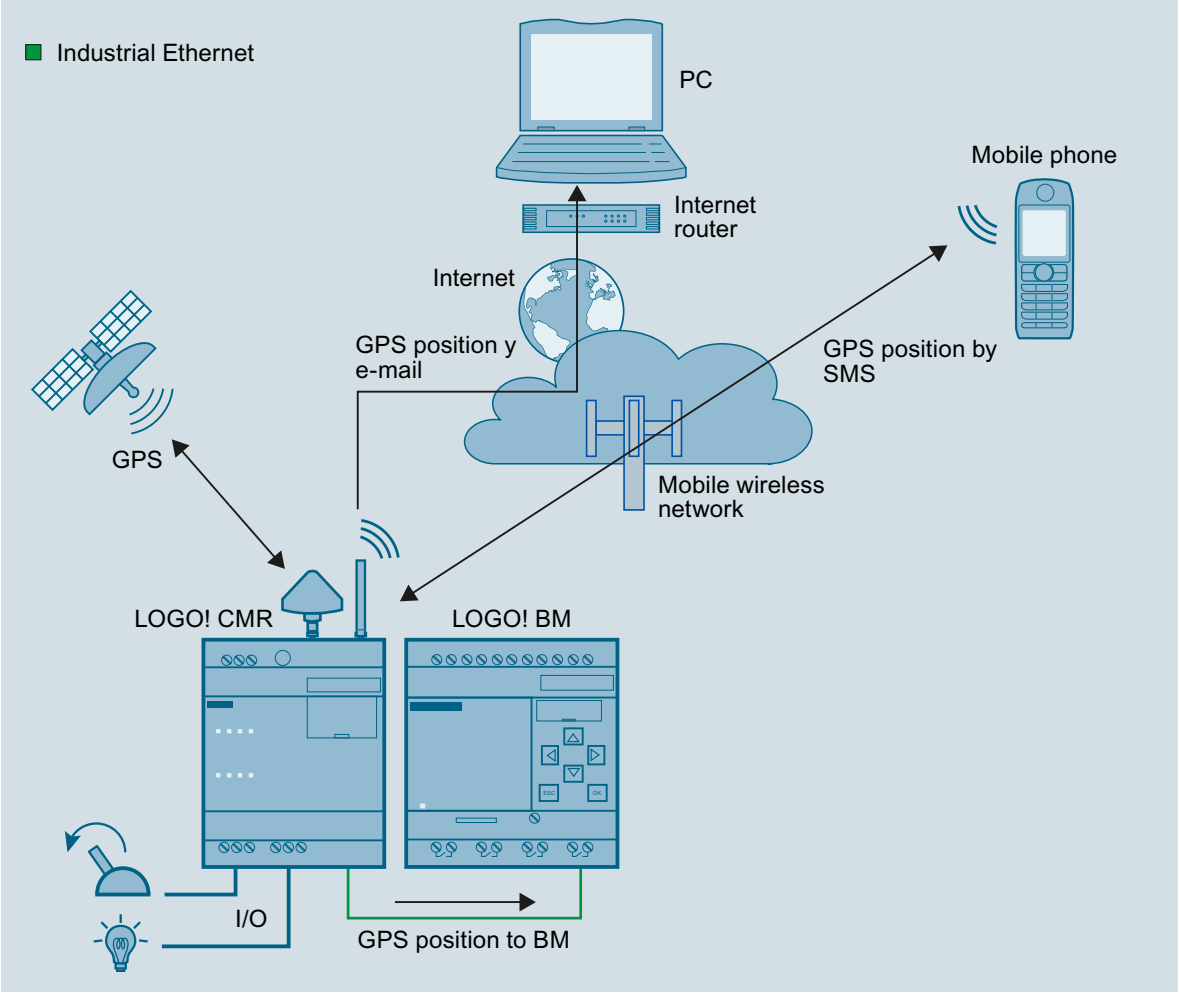



Figure 1-5 Position detection (GPS)

The CMR is equipped with a GPS interface via which the position data of the LOGO! station can be determined. If a GPS antenna is connected to the GPS interface, the following functions are available to you:

- Detecting position data:
  - Due to an event at an input of the CMR.
  - Due to an event from the BM.
  - Due to a received SMS message (with the mobile wireless antenna connected)
- Sending detected position data:
  - By SMS message or e-mail
  - To the BM

To be able to use the functions listed above, you first need to activate (Page 74) the GPS interface in the WBM of the CMR. For correct position detection, the GPS signals need to be received from three satellites.

## Requirements

- Installation, connecting up and commissioning have been completed.
- An GPS antenna is connected.

## Procedure

To set up access via the mobile wireless network and to establish a connection to the BM, follow the steps below:

**Note**

**Using the CMR for mobile wireless communication without BM**

If you use the CMR in Mobile wireless communication by call / SMS / e-mail without LOGO! BM (Page 21), the last two steps of the procedure described below can be omitted.

1. First establish a configuration connection between the CMR and a connected PC. To do this, use an Ethernet patch cable.
   See Establishing a connection to the CMR (Page 67)
2. Configure the mobile wireless connection:
   See Mobile wireless settings (Page 91)
3. Activate GPS reception (Page 74).
4. When configuration is completed, disconnect the CMR from the PC.

   **Note**

   **Using a switch**

   When using a switch, e.g. LOGO! CSM, do not disconnect the connections: BM, CMR and PC can be operated at the same time.

5. If you do not use a switch: Connect the CMR to the BM.

## 1.4.5 Time-of-day synchronization

The time-of-day of the CMR can be synchronized using the following methods:

- NTP
  Synchronization with an external NTP server accessible via the mobile wireless network.
- GPS
- Mobile wireless
  The availability of the time of day depends on the mobile wireless provider.

You set the method used for time-of-day synchronization via the WBM in the "System" tab, see section System Time (Page 76).

You can also have the CMR adopt the time of the configuration PC.

**Forwarding time to the BM**

If you enable the time of day in the WBM, you can also make a setting in the WBM so that the CMR also synchronizes the BM with the time of day (time-of-day forwarding). To do this enable "Forward time of day to LOGO! BM".

Even if time-of-day synchronization is disabled, the time of day is forwarded to the LOGO! BM. In this case, only the manual settings are transferred to the LOGO! BM.

**Note**

If you use time synchronization of the BM via the CMR, activate the standard/daylight saving changeover on the BM to ensure a consistent time.

The following figure provides an overview:

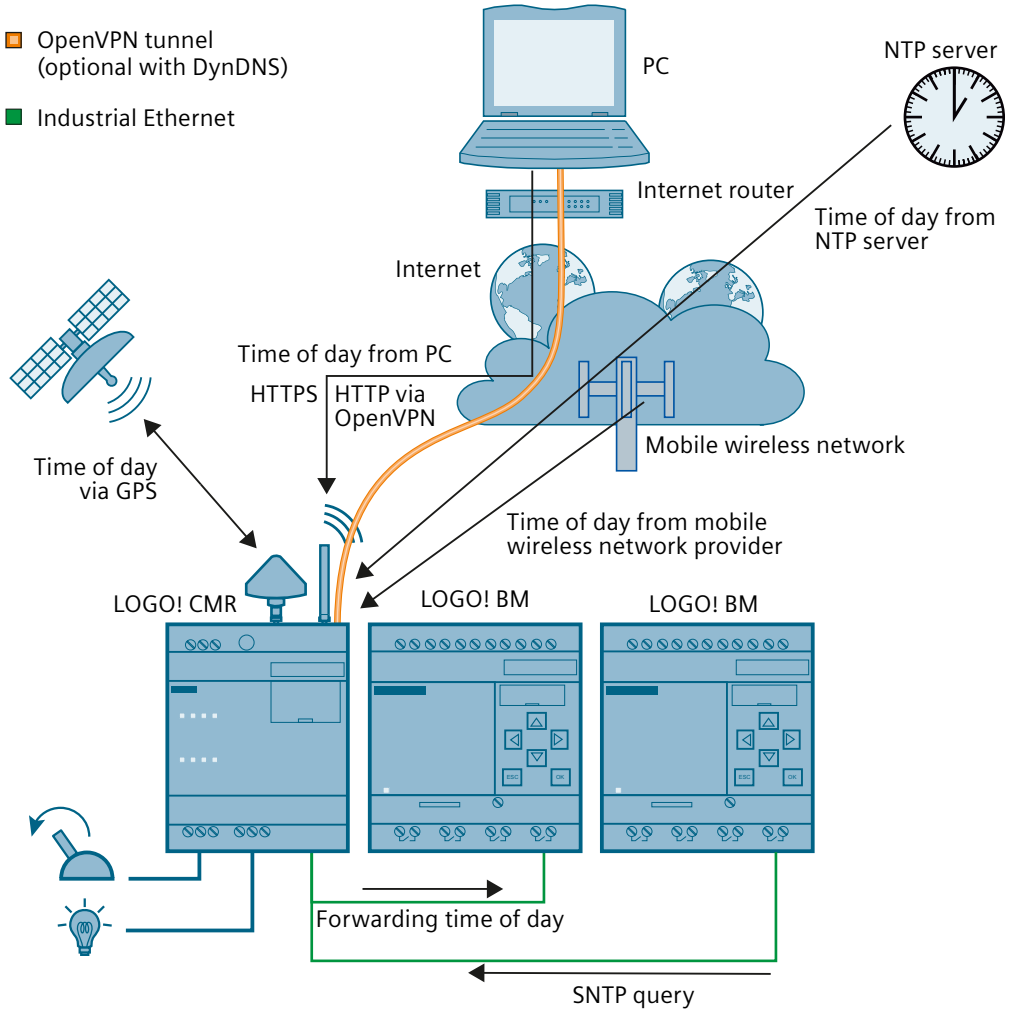



Figure 1-6 Time-of-day synchronization

**Time of day when using certificates**

If you use certificates for example for the e-mail or DynDNS services you need the precise time of day.

**Note**

**Precise time of day for certificates**

To check certificates, the precise time of day is required in the CMR. When using certificates enable time-of-day synchronization of the CMR.

## Requirements

- The CMR is mounted and connected.
- The antenna for receipt of mobile wireless is connected.

- The CMR is configured.
- Only if the time-of-day synchronization method using the GPS signal was configured: The antenna for receipt of GPS is connected.

### Procedure

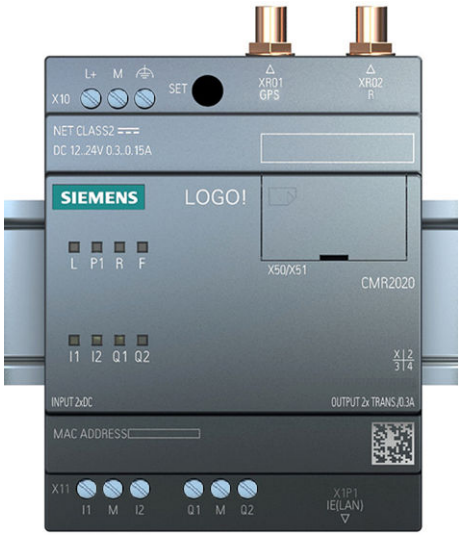
Follow the steps below to configure the time-of-day synchronization:

1. Establish a configuration connection between the CMR and a connected PC. To do this, use an Ethernet patch cable.
   For details, see section Establishing a connection to the CMR (Page 67).
2. Select the required method.

# LEDs, connectors, buttons, card slots

# 2

## 2.1 Appearance of the device




### Operator control/connector and display elements of the CMR

| Element | Function |
|---|---|
| X10 (L+, M) | Power supply connector |
| SET | SET button |
| XR01 | GPS antenna connector |
| XR02 | Mobile wireless antenna connector |
| LED "L" | Power supply indicator |
| LED "P1" | LAN interface indicator |
| LED "R" | Mobile wireless signal strength indicator |
| LED "F" | Error/fault indicator |
| X50/X51 | Slot for SIM and micro SD card |
| LED I1 | Input 1 indicator |
| LED I2 | Input 2 indicator |
| LED Q1 | Output 1 indicator |
| LED Q2 | Output 2 indicator |
| I1 | Input 1 connector |
| M | Ground |
| I2 | Input 2 connector |
| Q1 | Output 1 connector |
| M | Ground |

| Element | Function |
|---|---|
| Q2 | Output 2 connector |
| X1P1 | LAN connector |

## 2.2 LEDs to display operation

The LEDs on the CMR provide information about the operating status of the device and the two inputs/outputs.

### Meaning of the LEDs

| LED | Status | Meaning |
|---|---|---|
| All LEDs | Flashing | Fatal error |
| | Lit | Firmware being updated |
| | Not lit | • No voltage present or applied<br>• Device shut down |
| L<br>Power supply | Off<br>□ | No external power supply connected |
| | On<br>■ | Power supply connected |
| | Flashing<br>  | Initialization or change to the configuration |
| P1<br>LAN | Lit green<br>■ | Connection to Ethernet is established. |
| | Part flashes yellow and part lit green<br>  | Data |
| | Off<br>□ | No connection to Ethernet or no cable connected. |

| LED | Status | Meaning |
|---|---|---|
| R<br>Signal strength (mobile wireless) | Lit green<br>  | Very good |
| | Lit yellow<br>  | Medium |
| | Off<br>  | No or very bad signal |
| | Flashing<br>  | Data |
| F<br>Error | OFF<br>  | No error |
| | ON<br>  | Error, see also section Disruptions and their possible causes (Page 145). |
| | Flashing<br>  | Duplicate IP address detected. Ethernet interface unreachable. |
| I1<br>Input 1 | Off<br>  | U < 5 V |
| | Lit green<br>  | U > 8.5 V |
| I2<br>Input 2 | Off<br>  | U < 5 V |
| | Lit green<br>  | U > 8.5 V |
| Q1<br>Output 1 | Off<br>  | No voltage at output |
| | Lit green<br>  | Supply voltage at output |
| Q2<br>Output 2 | Off<br>  | No voltage at output |
| | Lit green<br>  | Supply voltage at output |

## 2.3 Interfaces

You will find information on connecting the interfaces and connectors in the section Connecting up the device (Page 44).

You will find detailed data of the interfaces and connectors in the section Technical specifications (Page 153).

### Connecting to the power supply

For connecting to the power supply terminal X10 is available.

### Connection to the local area network

Port X1P1 of the CMR is intended for LAN connection to the local network/PC and to connect to the BM. The IP address of port X1P1 can be configured.

### Connection to the mobile wireless network and GPS

For the wireless connection, the CMR has two SMA sockets:

- SMA socket XR02 for the mobile wireless network
- SMA socket XR01 for GPS reception

### Inputs and outputs

For the connection of I/O elements, the following inputs and outputs are available:

- Digital inputs
  I1 + I2
- Digital outputs
  Q1 + Q2

## 2.4 The "SET" button

### Operator control/connector and display elements of the CMR

The SET button has different functions depending on how long you hold it pressed.

| Operator input | Function |
|---|---|
| Press briefly (up to 5 s) | Restart |
| Keep pressed for 5 to 10 seconds | Shutting down the device to a safe status<br>Result:<br>• All LED indicators are off.<br>• The device can be disconnected from the power supply.<br>The CMR can no longer be woken out of the shutdown status. To restart you need to turn the power supply off and on again. |
| Keep pressed for longer than 10 seconds | Reset to factory settings<br>For information on the effects, refer to the section Resetting to factory settings (Page 147). |

## 2.5 Slots for SIM card and SD card

Both slots are on the front of the CMR behind cover.

### "X50": Slot for the SIM card

X50 is the slot for the SIM card that you receive from the network provider of your mobile wireless contract.

#### Compatible cards

For information on compatible SIM card formats, refer to section Requirements for use (Page 18).

#### Card errors / diagnostics

Card errors are indicated by the "SIM" LED and entries in the diagnostics buffer.

#### Inserting the card

Inserting the SIM card is described in the section Insert the SIM card and enter the PIN (Page 48).

### "X51": Slot for an optional SD card

You have the option of using an SD card as an exchangeable storage medium for storing configuration and diagnostics data.

An SD card does not ship with the CMR.

#### Compatible cards

You will find a list of compatible SD cards in the appendix SD card (Page 169).

#### Card errors / diagnostics

Card errors are indicated by entries in the diagnostics buffer.

#### Inserting the card

Inserting the SD is described in the section Inserting the SD card (Page 50).

### Retentive storage of important data on the SD card

The SD card is an exchangeable storage medium for storing various data safe from power failure.

The following data can be stored on the SD card.

- **Configuration data**
  The configuration data is backed up on the SD card following every change in a configuration file. Storing configuration data on the SD card serves the following purposes:
  - Copying configuration data to other CMRs of the same type
    The configuration file can be edited and can be used to copy configuration data to different CMRs via the WBM.
  - Device replacement without configuration PC
    If a CMRU needs to be replaced for maintenance purposes, by transferring the SD card from the old to the new CMR, the configuration data can be made available to the new CMR. In this case, you do not need a configuration PC.

  You will find information on storing the configuration data on the SD card in the section Configuration (Page 81).
  For information on device replacement refer to section Replacing the CMR (Page 148).
- **Diagnostics buffer entries**
  In the WBM you can configure that diagnostics buffer entries for serious events are saved on the SD card.
  The entire diagnostics buffer of the CMR can be saved manually on the SD card.

# Installation, wiring, commissioning, removal 3

## 3.1 Important notes on using the device

### Safety notices on the use of the device

The following safety notices must be adhered to when setting up and operating the device and during all associated work such as installation, connecting up or replacing devices.

### Overvoltage protection

| NOTICE |
| --- |
| **Protection of the external power supply**<br>If power is supplied to the module or station over longer power cables or networks, the coupling in of strong electromagnetic pulses onto the power supply cables is possible. This can be caused, for example by lightning strikes or switching of higher loads.<br>The connector of the external power supply is not protected from strong electromagnetic pulses. To protect it, an external overvoltage protection module is necessary. The requirements of EN61000-4-5, surge immunity tests on power supply lines, are met only when a suitable protective element is used. A suitable device is, for example, the Dehn Blitzductor BVT AVD 24, article number 918 422 or a comparable protective element.<br>Manufacturer:<br>DEHN+SOEHNE GmbH+Co.KG Hans Dehn Str.1 Postfach 1640 D-92306 Neumarkt, Germany |

### 3.1.1 Notices on use in hazardous areas

| ⚠ WARNING |
| --- |
| The device may only be operated in an environment with pollution degree 1 or 2 as described in EN/IEC 60664-1, GB/T 16935.1. |

| ⚠ WARNING |
| --- |
| **EXPLOSION HAZARD**<br>The device must not be opened. |

**⚠ WARNING**

**EXPLOSION HAZARD**

SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2 OR ZONE 2.

## External power supply

- Use only an external power supply that complies with EN 60950.
- The output voltage of the external power supply must not exceed 30 VDC.
- The output of the external power supply must be short-circuit proof.

**NOTICE**

**Power supply**

The power supply unit to supply the CMR must comply with the requirements for a limited power source according to IEC/EN 60950-1, section 2.5.

The external power supply for the CMR must meet the requirements for NEC class 2 circuits as specified in the National Electrical Code ® (ANSI/NFPA 70).

Note the information in this section and in the installation and operating instructions from the manufacturer of the power supply.

**⚠ WARNING**

**Power supply**

The device is designed for operation with a directly connectable safety extra low voltage (SELV) from a limited power source (LPS).

The power supply therefore needs to meet at least one of the following conditions:

- Only safety extra low voltage (SELV) with limited power source (LPS) complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 or IEC 62368-1 / EN 62368-1 / VDE 62368-1 may be connected to the power supply terminals.
- The power supply unit for the device must meet NEC Class 2 according to the National Electrical Code (r) (ANSI / NFPA 70).

If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

**⚠ WARNING**

**EXPLOSION HAZARD**

DO NOT CONNECT OR DISCONNECT EQUIPMENT WHEN A FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT.

**⚠ WARNING**

When used in hazardous environments corresponding to Class I, Division 2 or Class I, Zone 2, the device must be installed in a cabinet or a suitable enclosure.

### Connectors with LAN (Local Area Network) marking

**⚠ WARNING**

**Safety notice for connectors with LAN (Local Area Network) marking**

A LAN or LAN segment, with all its associated interconnected equipment, shall be entirely contained within a single low-voltage power distribution and within single building.
The LAN is considered to be in an "environment A" according IEEE802.3 or "environment 0" according IEC TR 62102, respectively.

Never make direct electrical connection to TNV-circuits (Telephone Network) or WAN (Wide Area Network).

## 3.1.2 Notes on use in hazardous areas according to ATEX, IECEx, UKEX and CCC Ex

### 3.1.2.1 Requirements for the cabinet EN 60529 (ATEX), UKEX, IECEx and CCC-Ex

**⚠ WARNING**

**Requirements for the cabinet**

To comply with EU Directive 2014/34 EU (ATEX 114), UK Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.8.

**⚠ WARNING**

**Suitable cables at high ambient temperatures in hazardous area**

Use heat-resistant cables with an ambient temperature ≥ 60 °C; these cables must be rated for an ambient temperature that is at least 20 °C higher. The cable entries used on the housing must comply with the IP degree of protection required by EN IEC 60079-0 / GB 3836.1.

**⚠ WARNING**

**Transient overvoltages**

Take measures to prevent transient overvoltages of more than 40% of the rated voltage (or more than 119 V). This is the case if you only operate devices with SELV (safety extra-low voltage).

### 3.1.3 Safety instructions for use in hazardous locations according to UL/FM HazLoc

**⚠ WARNING**

**EXPLOSION HAZARD**

DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.

**⚠ WARNING**

**EXPLOSION HAZARD**

Do not press the SELECT/SET button when there is an explosive atmosphere.

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

This equipment is suitable for use in Class I, Zone 2, Group IIC or non-hazardous locations only.

## 3.2 Installation, removal and repairs in hazardous areas

**⚠ WARNING**

**Unsuitable cables or connectors**

Risk of explosion in hazardous areas

- Only use connectors that meet the requirements of the relevant type of protection.
- If necessary, tighten the connector screw connections, device fastening screws, grounding screws, etc. according to the specified torques.
- Close unused cable openings for electrical connections.
- Check the cables for a tight fit after installation.

**⚠ WARNING**

**Lack of equipotential bonding**

If there is no equipotential bonding in hazardous areas, there is a risk of explosion due to equalizing current or ignition sparks.

- Ensure that equipotential bonding is available for the device.

**⚠ WARNING**

**Unprotected cable ends**

There is a risk of explosion due to unprotected cable ends in hazardous areas.

- Protect unused cable ends according to IEC/EN 60079-14.

**⚠ WARNING**

**Improper installation of shielded cables**

There is a risk of explosion due to equalizing currents between the hazardous area and the non-hazardous area.

- Ground shielded cables that cross hazardous areas at one end only.
- Lay a potential equalization conductor when grounding at both ends.

**⚠ WARNING**

**Insufficient isolation of intrinsically safe and non-intrinsically safe circuits**

Risk of explosion in hazardous areas

- When connecting intrinsically safe and non-intrinsically safe circuits, ensure that the galvanic isolation is performed properly in compliance with local regulations (e.g. IEC 60079-14).
- Observe the device approvals applicable for your country.

**⚠ WARNING**

**Unauthorized repair of devices in explosion-proof design**

Risk of explosion in hazardous areas

- Repair work may only be performed by personnel authorized by Siemens.

**⚠ CAUTION**

**Hot surfaces**

Risk of burns during maintenance work on parts with a surface temperature above 70 °C (158 °F).

- Take appropriate protective measures, for example, wear protective gloves.
- Once maintenance work is complete, restore the touch protection measures.

**⚠ WARNING**

**Impermissible accessories and spare parts**

Risk of explosion in hazardous areas

- Only use original accessories and original spare parts.
- Observe all relevant installation and safety instructions described in the manuals for the device or supplied with the accessories or spare parts.

**⚠ WARNING**

**Cleaning the housing**

- **In hazardous areas**
  Only clean the outer parts of the housing with a damp, but not wet, cloth.
- **In non-hazardous areas**
  Only clean the outer parts of the housing with a dry cloth.

Do not use any liquids or solvents.

**⚠ WARNING**

**Improper disassembly**

Improper disassembly may result in a risk of explosion in hazardous areas.

For proper disassembly, observe the following:

- Before starting work, ensure that the electricity is switched off.
- Secure remaining connections so that no damage can occur as a result of disassembly if the system is accidentally started up.

## 3.3 Installing the device

| NOTICE |
| --- |
| **Improper mounting**<br>Improper mounting may damage the device or impair its operation.<br>• Before mounting the device, always ensure that there is no visible damage to the device.<br>• Mount the device using suitable tools. Observe the information in the respective section about mounting. |

The CMR is suitable for rail mounting on a 35 mm DIN EN 50 022 rail. On the rear of the device there is a locking mechanism with a spring catch.

### Installing on a DIN rail / removing from a DIN rail

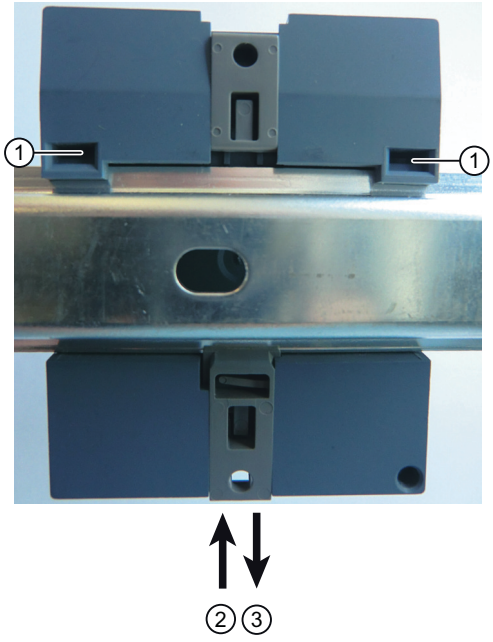



Figure 3-1 Installing on a DIN rail / removing from a DIN rail

**Mounting**

To mount the CMR on a DIN rail, follow the steps below:

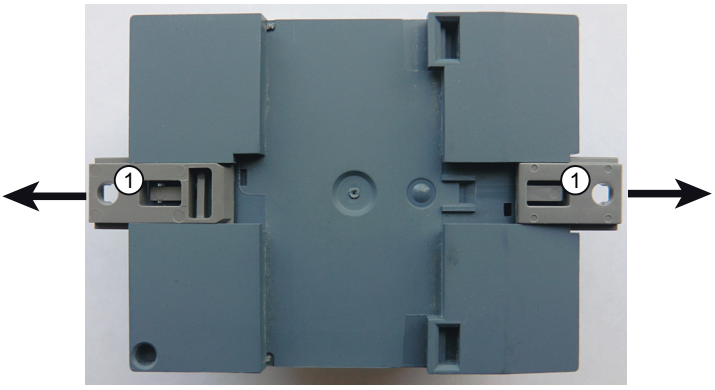
1. Fit the upper part of the locking mechanism ① of the device on to the DIN rail.
2. Press the device down against the DIN rail until the spring catch ② locks in place.

**Removal**

To remove the CMR from a DIN rail, follow the steps below:

1. Using a screwdriver, pull down the spring catch on the rear of the device ③.
2. Remove the device from the DIN rail.

### Wall mounting




To mount the CMR on a wall, follow the steps below:

1. Using a screwdriver, pull the two spring catches ① on the rear of the device towards the outside.
2. Feed the screws through the openings in the catches and secure the device to the wall.

## 3.4 Connecting up the device

### 3.4.1 X1P1 (LAN) interface

#### Connecting the X1P1 (LAN) interface

Connect your local area network, the PC or the BM to interface X1P1 (LAN connection) of the CMR.

The interface supports autonegotiation and autocrossing. For the connection, use a patch cable with an RJ-45 plug. For the requirements and for information on grounding see below.

You will find the properties of the X1P1 interface in the technical specifications.

#### Requirements for the cable

Requirements for the network cable:

- Use a shielded Ethernet cable for connection to the Ethernet interface.
- To minimize electromagnetic disturbances use a shielded, twisted Ethernet cable (category 5) and a shielded RJ-45 plug at both ends.
- To prevent mechanical movement of the Ethernet cable that can cause contact interruptions, fasten the cables to a cable guide or rail at short intervals.

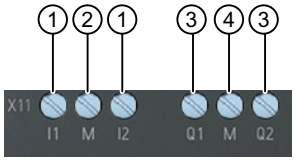
## 3.4.2 Inputs and outputs

Refer to the technical specifications for the load capabilities of the inputs and outputs.

Ideally, use a debounced switch to connect to a LOGO! CMR input.

### Inputs and outputs

The CMR has two digital inputs and two digital outputs. The connecting terminals are on the underside of the device.




① Inputs I1 and I2
② Reference potential inputs
③ Outputs Q1 and Q2
④ Reference potential outputs

#### Inputs I1 and I2

The connecting terminals of the inputs are labeled I1 and I2. The reference potential for both inputs is "M".

Using the Web user interface, you can assign any function to each input, for example triggering an alarm SMS message, see section Monitoring (Page 114).

The status of an input can also be read using SMS.

#### Outputs Q1 and Q2

The connecting terminals of the outputs are labeled Q1 and Q2. The reference potential for both outputs is "M".

You can assign any function to each output using the Web user interface see section Monitoring (Page 114). The outputs can be set and reset using SMS messages.

**Note**

Remember the electrical load capacity of the output.

You will find the electrical values for the inputs and outputs in the section Technical specifications (Page 153).

### 3.4.3 Connecting the antenna

**⚠ WARNING**

**Risk of lightning strikes when installed outdoors**

If you install an antenna outside, you need to ground the antenna to protect it from lightning strikes. This work must only be carried out by qualified personnel.

**NOTICE**

**Damage to devices due to incorrect accessories**

Select the antenna suitable for your frequency band from the accessories. Other antennas could interfere with product characteristics or lead to defects.

**Note**

**Maximum length of the antenna cable**

The maximum permitted length of the antenna cable is 15 m.

The CMR has two antenna sockets of the type SMA for connecting the antennas. The antennas must have an impedance of approx. 50 Ω.

Follow the operating instructions of the antennas used. See also section Antennas (Page 163).

You will find configuration images with antenna cables for different structures in the section Antenna cable (Page 165).

#### Frequency bands in Europe and other regions

Select the antenna suitable for your frequency band. See section Antennas (Page 163).

You will find the frequency bands supported by the CMR in the section Technical specifications (Page 153).

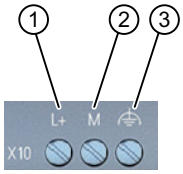
#### Signal strength

During installation make sure that there is a good signal strength: You will find the meaning of the statuses of the "R" LED in the section LEDs to display operation (Page 32).

If the LED is lit green, the signal strength is very good. Lit yellow signals medium quality.

Large metallic objects in the vicinity of the antennas, for example reinforced concrete, impair the signal strength.

## Screw terminals for the power supply




① L+ = live wire, positive pole of the DC voltage 12/24 VDC
② M = negative pole/ground of the DC voltage 12/24 VDC
③ Functional ground

- Serves to improve electromagnetic compatibility and to specify a common reference potential for all signals.
- Is achieved efficiently by a connection to the DIN rail.

**Note**

**Power supply unit of the CMR is not electrically isolated**

No electrical isolation means that the input and output circuits are not galvanically isolated.

The CMR operates with a DC voltage of 12 to 24 VDC, nominally 24 VDC. The nominal current consumption is a maximum of 250 mA at 12 V.

- Connect a suitable power supply to the screw terminals.
- Use copper wires only.
- Use only cables that are approved for at least 70 °C.

| | |
|---|---|
| Wire: | 0.5 to 3 mm² (20 to 18 AWG) |
| Stranded wire: | 0.5 to 2.5 mm² |
| Tightening torque for screw terminals: | 0.6 to 0.8 Nm |

## Turning off the CMR

| **NOTICE** |
|---|
| **Only switch off the power supply in the safe state**<br>Shut the CMR down to the safe status before turning the power supply off. |

1. Hold down the SET button for 5 to 10 seconds.
   The CMR shuts down to the safe status: All LED indicators are off.
2. Disconnect the CMR from the power supply.

You can also shut down the CMR to the safe status via the WBM.

The CMR can no longer be woken out of the shutdown status. To restart you need to turn the power supply off and on again.

# 3.5 Commissioning the device

## 3.5.1 Steps in commissioning

To commission the CMR, follow the steps below:

### Overview of commissioning

1. Note the requirements for operating the CMR, refer to the section Requirements for use (Page 18).
2. SIM card: Before you insert the SIM card, note the information in Insert the SIM card and enter the PIN (Page 48) regarding the two different methods:
   - Method 1: For a new device
   - Method 2: Replacing the SIM card in a device that has already been in use.
3. Connect a PC with a Web browser to the local interface X1P1 of the CMR, refer to the section Establishing a connection to the CMR (Page 67).
4. Insert the SIM card, see section "Insert the SIM card and enter the PIN (Page 48)".
5. Connect the antennas.
6. Connect the CMR to the power supply.
7. Enter the PIN of the SIM card via the Web user interface of the CMR, refer to the section Mobile wireless settings (Page 91).
8. Align the antenna, refer to the section "Wireless cell (Page 95)".
9. Set up the CMR according to your requirements, refer to the section Configuration (WBM) (Page 57).

## 3.5.2 Insert the SIM card and enter the PIN

| **NOTICE** |
| --- |
| **Disconnecting the CMR from the power supply before inserting or removing the SIM card** |
| Do not remove the SIM card during operation.<br>1. Shut the device down to a safe status.<br>2. Disconnect the CMR from the power supply before inserting or removing the SIM card. |


Figure 3-2 Compartment for the SIM card (red rectangle)

The compartment for the SIM card is located on the front of the CMR.

### Status of the CMR before inserting/removing the SIM card

The CMR is brand new or has been reset to the factory settings:

- A SIM card is inserted for the first time.

The CMR is or has already been in operation:

- Only a different SIM card is inserted.

### Inserting/removing the SIM card

1. In the WBM in "WAN", "Mobile wireless settings" tab, deselect the "Activate mobile wireless interface" check box:
   The mobile wireless interface is turned off.
2. Shut the CMR down to the safe status: "Turning off the CMR" (Page 46).
3. Disconnect the CMR from the power supply.
4. Only if the CMR is or was in operation: Remove the SIM card and close the compartment.
   To remove the SIM card, press the left-hand sunken ejector button with a sharp object.
5. Insert the SIM card into the compartment until you can feel the card lock in place.
6. Restart the CMR by connecting up the power supply.
7. In the WBM, in "WAN", "Mobile wireless settings" tab, select the "Activate mobile wireless interface" check box:
   The mobile wireless interface is once again ready for operation.
8. Enter the PIN of your SIM card in WBM in the "WAN", "Mobile wireless settings" tab.

   **Note**

   **Entry of an incorrect PIN**

   The last entered (incorrect) PIN is saved. This means that when changing the configuration (except the PIN) or when restarting the CMR, no further PIN entry attempt is used up.

   For this reason, do not change the PIN of the SIM card to the previously stored incorrect PIN outside the CMR.

9. Click the "Apply" button: the PIN of your SIM card is adopted.
10. Make the appropriate settings, see section Configuration (WBM) (Page 57).

### Unlocking the SIM card

If you enter the PIN incorrectly three times, the SIM card will be locked.

Unblock the SIM card as follows:

1. Shut the CMR down to the safe status: "Turning off the CMR" (Page 46).
2. Disconnect the CMR from the power supply.
3. Remove the SIM card and close the compartment.
   To remove the SIM card, press the left-hand sunken ejector button with a sharp object.
4. Insert the removed SIM card in a mobile phone.
5. Unblock the SIM card by entering the PUK or the SuperPIN.
   You will have received the PUK or SuperPIN from your mobile wireless provider along with the SIM card.

Result: The SIM card is unblocked and can be used again.

## 3.5.3 Inserting the SD card


Figure 3-3 Slot for the micro SD card (yellow rectangle)

You will find the SD cards supported by the CMR in the appendix SD card (Page 169).

| NOTICE |
| --- |
| **Do not remove/insert an SD card during operation** |
| You can only remove or insert the SD card when the CMR is turned off/shut down. |
| If you remove or insert the SD card during operation, data on the card can be damaged. |

Inserting the micro SD card

1. Insert the SD card into the compartment until you can feel the card lock in place.

Removing the micro SD card

1. By pressing, unlock the card.
2. After unlocking it takes the card out of the slot.

# Operation: Access to BM

# 4

## 4.1 Overview

### Read and write access

From a mobile phone or tablet, you have read and write access to the CMR or the BM by SMS.

For an overview of the functions, refer to the section Further functions (Page 15).

### Monitoring the LOGO! BM

**Functions**

To monitor the CMR and a connected BM various functions are available that are configured in the WBM.

The section Monitoring (Page 114) describes the following functions:

- Monitoring of the values of the BM.
- Creating an action depending on the value change of an event
  This can, for example, be the sending of an SMS message to the configured phone number due to an alarm.
- Creating users and user groups for messages of the CMR
- Notification of a user group with freely writable SMS and e-mail texts when events occur
- Calling a user group

**Example**

You will find out how to configure monitoring quickly in the section Example of a monitoring configuration (Page 131).

There based on an example you will read how to configure events, actions and recipients.

Following this you will see how to link events, actions and recipients in a list.

## 4.2 Reading and writing values

### Reading / writing "current values" via the BM variables memory (VM)

"Current values" (e.g. flags, counters) are read and written only via the BM variables memory (VM).

For reasons of security, setting or reading of current values of the function blocks of the BM (e.g. counters) is possible only via their address in the BM variables memory.

All components of the LOGO! switching program must therefore initially be transferred to the BM-internal variables memory using the "LOGO! Soft Comfort" program. Only then are the components visible with their start addresses and length (type) for the CMR in the BM variables memory.

### Data types and range of values when reading and writing

To set individual bits, the data types available must be used.

LOGO! CMR and LOGO! BM interpret all values of the data types BYTE, WORD and DWORD as being signed.

Remember this when transferring values using SMS messages.

| Data type | Length in the variables memory: | Range of values |
|---|---|---|
| BIT | 1 bit | 0, 1 |
| BYTE | 1 byte | -128 ... 127 |
| WORD | 2 bytes | -32 768 ... 32 767 |
| DWORD | 4 bytes | -2 147 483 648 ... 2 147 483 647 |

### Reading and writing values in the variables memory (VM) of the LOGO!! BM using SMS messages

With the LOGO! CMR, values can be written to and read from the variables memory (VM) of a LOGO! BM using SMS messages.

The parameters to be specified in SMS commands are the address and type (<address>, <data type>, refer to the section SMS commands (Page 174).

In the WBM of the LOGO! CMR, a limit this or a threshold value for a value from the LOGO! 8 can be specified on the "Monitoring" > "Events" page. If the threshold of the value in the LOGO! 8 is exceeded or fallen below, the sending of an SMS message to one or more recipients can, for example, be configured.

Note the signed interpretation of the values also in the following applications:

- Setting threshold/limit values for values in the LOGO! BM via the WBM of the LOGO! CMR
- Display of values in the LOGO! BM via the WBM of the LOGO! CMR
- Reading/writing values in the LOGO! BM using SMS messages with the LOGO! CMR

### Reading and writing directly using LOGO!Soft Comfort (without CMR)

**Note**

**Access only to the first 128 bytes of the VM (Variable Memory)**

In LOGO!Soft Comfort the VM goes to address 850. Via the CMR, however, only the first 128 bytes can be accessed.

For security reasons the address in the VM can only be read or written using SMS if the address was created earlier as a signal using the WBM.

Table 4-1 Overview of the options for accessing the LOGO! BM

| **Value of the LOGO! BM** | **Read access** | **Write access with action** | **Write access using SMS** |
|---|---|---|---|
| Digital inputs (I) | x | - | - |
| Digital flags (M) | x | - | - |
| Digital outputs (Q) | x | - | - |
| Analog inputs (AI) | x | - | - |
| Analog flags (AM) | x | - | - |
| Analog outputs (AQ) | x | - | - |
| Cursor keys (C) | x | - | - |
| Function keys (F) | x | - | - |
| Shift register bits (S) | x | - | - |
| Variables memory (VM) | x | x [1)] | x |
| Program status (PS) | x | x | x |
| Communication status (CS) | x | - | - |

[1)] You can have write access the variable memory of the LOGO! BM using the action "Forward GPS position":

### Example of writing a value using LOGO!Soft Comfort

Below you will find an example of the procedure for writing a value using LOGO! Soft Comfort. You can then access the written value by SMS via the CMR.

1. In the program "LOGO! Soft Comfort" click "Tools" > "Parameter VM Mapping":

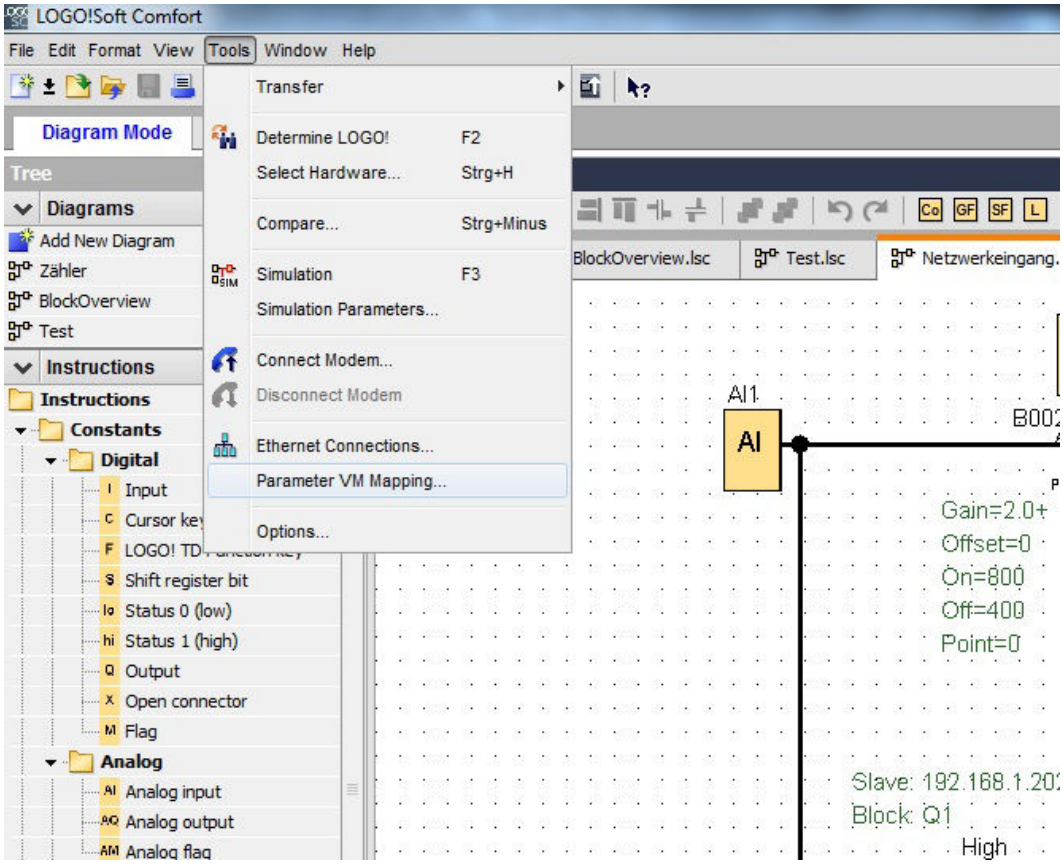



Figure 4-1 LOGO! Soft Comfort - tools

2. Select a block from your control program that you want to transfer to the VM memory. In the following figure, select the block B007 from your control program with the stopwatch function.

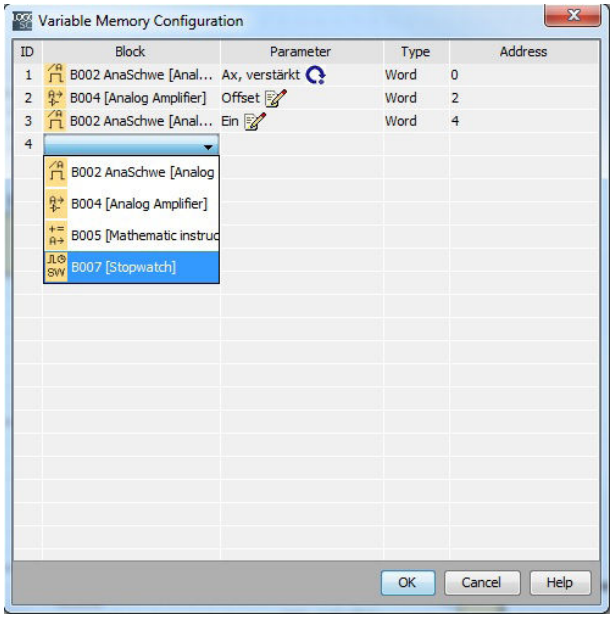



Figure 4-2 Variable Memory Configuration

3. Within the B007 block then select a variable to be monitored.
4. By clicking the "OK" button, you confirm your selection.
   The selected variable is transferred to the VM.

The "Type" and "Address" of the selected variable are displayed in the VM.

For further details, refer to the LOGO! Soft Comfort description.

### Reading variables from the CMR by SMS

With the keywords "Address", "Value" and "Data type" you can read and write the value of a variable by SMS, see also section SMS commands (Page 174).

# Configuration (WBM) 5

## 5.1 Security recommendations

Keep to the following Security recommendations to prevent unauthorized access to the system.

### General

- You should make regular checks to make sure that the device meets these recommendations and other internal security guidelines if applicable.
- Evaluate your plant as a whole in terms of security. Use a cell protection concept with suitable products.
- Do not connect the device directly to the Internet at the LAN interface. Operate the device at the LAN interface within a protected network area.
- Check regularly for news on the Siemens Internet pages.
  - You can find information on Industrial Security here:
    Link: (http://www.siemens.com/industrialsecurity)
  - You can find information on security in industrial communication here:
    Link: (https://support.industry.siemens.com/cs/ww/en/view/92651441)
- Keep the firmware up to date. Check regularly for security updates of the firmware and use them.
  Information regarding product news and new firmware versions is available at the following address:
  Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/dl)

### Physical access

Restrict physical access to the device to qualified personnel.

### Security functions of the product

Use the options for security settings in the configuration of the product. These include among others the following Security function of the communication:

- Enable the Security functions of the device.
  Think about the services you want to allow access to the station via public networks.
- Use secure protocol variants such as HTTPS or STARTTLS.
- Use the secure communication via OpenVPN.

### Passwords

- Define rules for the use of devices and assignment of passwords.
- Regularly update the passwords to increase security.

- Only use passwords with a high password strength. Avoid weak passwords for example "password1", "123456789" or similar.
- Make sure that all passwords are protected and inaccessible to unauthorized personnel.
- Do not use one password for different users and systems.

## Protocols

**Secure and non-secure protocols**

- Only activate protocols that you require to use the system.
- Use secure protocols when access to the device is not prevented by physical protection measures.
  The HTTP protocol provides a secure alternative with HTTPS.

## Port tables

The following tables provide you with an overview of the open ports on this device.

- **Protocol / function**
  Protocols that the device supports.
- **Port number (protocol)**
  Port number assigned to the protocol.
- **Default of the port**
  - Open
    The port is open at the start of the configuration.
  - Closed
    The port is closed at the start of the configuration.
- **Port status**
  - Open
    The port is always open and cannot be closed.
  - Open after configuration
    The port is open if it has been configured.
  - Closed after configuration
    The port is closed because the device is always client for this service.
- **Authentication**
  Specifies whether or not the protocol authenticates the communications partner during access.

Table 5-1 Ports of the LAN interface

| Protocol / function | Port number (protocol) | Default of the port | Port status | Authentication | Encryption |
|---|---|---|---|---|---|
| **HTTP** | 80 (TCP) | Closed | Open after configuration | Yes | No |
| **HTTPS*** | 443 (TCP) | Open | Open | Yes | Yes |
| **LOGO! up to 8.2** | 10005 (TCP) | Closed | Open (outgoing) after configuration | No | No |
| **LOGO! as of 8.3** | 8443 (TCP) | Closed | Open (outgoing) after configuration | Depending on configuration | Yes |
| **NTP** | 123 (UDP) | Closed | Open after configuration | No | No |

* forwarding to port 443 (HTTPS)

Table 5-2 Ports of the WAN interface

| Protocol / function | Port number (protocol) | Default of the port | Port status | Authentication | Encryption |
|---|---|---|---|---|---|
| **HTTPS** | 443 (TCP) | Closed | Open after configuration | Yes | Yes |
| **OpenVPN** | 1194 (UDP) configurable | Closed | Open after configuration | Yes | Yes |
| **NTP** | 123 (UDP) | Closed | Open (outgoing) after configuration | No | No |
| **SMTP** | 25 (TCP) configurable | Closed | Open (outgoing) after configuration | Yes | Depending on configuration |
| **DynDNS** | 443 (TCP) | Closed | Open (outgoing) after configuration | Yes | Yes |
| **DNS** | 53 (UDP) | Closed | Open (outgoing) after configuration | No | No |

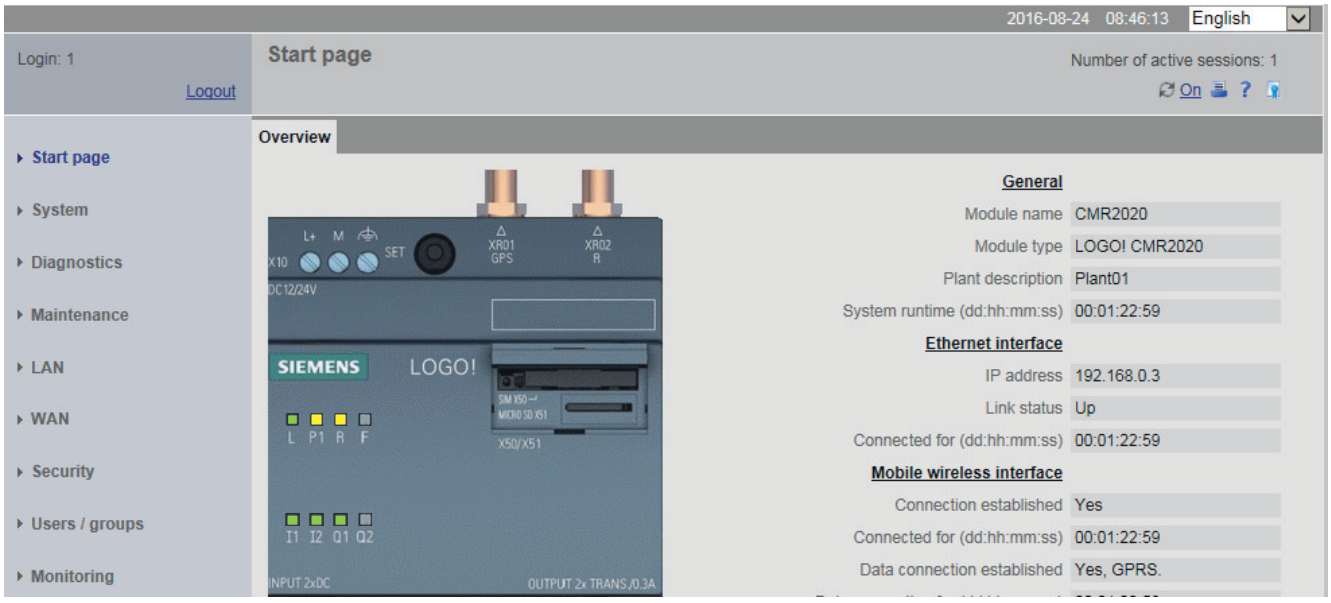
Table 5-3 Ports in the tunnel of the VPN interface

| Protocol / function | Port number (protocol) | Default of the port | Port status | Authentication | Encryption |
|---|---|---|---|---|---|
| **HTTP*** | 80 (TCP) | Closed | Open after configuration | Yes | No |
| **HTTPS** | 443 (TCP) | Open | Open | Yes | Yes |

* forwarding to port 443 (HTTPS)

## 5.2 General functions of the WBM

To configure the CMR, a Web-based administration user interface (WBM - Web Based Management) is available to you.




- At the left-hand page you will find a navigation panel.
- By clicking on a main entry (group) in the navigation the tabs belonging to this group will be displayed on the right of the title bar.
- The display and input boxes of the parameters are available on the individual pages of the tabs.

### Symbols of the title bar

The symbols in the title bar have the following function:

| Symbol | Function |
|---|---|
| 2015-01-28 14:30:37 | Date and time of the last page update of the WBM in the local time of the CMR (yyyy-mm-dd hh:mm:ss) |
| English | Drop-down list for setting the WBM language |
| User: 1 | Name of the currently logged in user |
| Log out | Logout of the user |
| Number of active sessions: 1 | Number of connections to configuration PCs |
| Stop | Monitoring of BM and execution of the active assignments are turned on.<br>Active BM connection is built up.<br>Monitoring of BM and execution of the active assignments are stopped by clicking on the text. |

| Symbol | Function |
|---|---|
| Start | Monitoring of BM and execution of the active assignments are turned off.<br>Active BM connection is not built up.<br>Monitoring of BM and execution of the active assignments are started by clicking on the text. |
|  | The automatic update of the WBM display is enabled. The data is called up at 5 second intervals. |
|  | The automatic update of the WBM display is disabled. |
| Turn on | Switches on the automatic update of the WBM display. |
| Turn off | Switches off the automatic update of the WBM display. |
| Update | Updates the current WBM display on the "Configuration" pages. |
|  | Opens the Internet page of the CMR in the Siemens Industry Online Portal.<br>Here, you will find all entries for the product. |
|  | Open / save Open Source software license conditions of the CMR |

## Language selection

The WBM of the CMR is available in German and English.

### Default

If, for example, the Web browser is set to the English language, the WBM of the CMR is automatically displayed in English.

If the language setting of the Web browser is not supported, the WBM of the CMR is displayed in English.

### Changing the language setting

At the top right you will see a drop-down list for the language selection. You can change the language setting at any time.

- From the drop-down list at the right top select the required language.
  The language setting is saved for the next access.
- If the language is not changed immediately, update the display in your Web browser, generally using the function key F5.

## Configuring

You configure the individual parameters on the pages of the various tabs. The following are available:

- Input boxes for entering numbers and texts
- Drop-down lists for selecting parameters
- Check boxes for enabling and disabling functions

- Buttons for executing page-specific actions and for saving the entries ("Apply")
- Notifications and information

### Incorrect entries in the configuration

In many input boxes of the WBM, the content is checked for missing content or consistency when you save. Boxes with detected errors or illegal characters are marked with a red border.


Figure 5-1 Example of an input box with a detected incorrect entry

With some incorrect entries an additional message is also displayed. The settings are only applied after the error has been corrected.

### Adding, changing and deleting ("Users / groups", "Monitoring")

On the pages of these two parameter groups, you can create new elements and delete existing ones. Elements are:

Users, user groups, message texts, signals, events, actions, assignments

The already configured elements are shown at the top of the page in a table.

- **Add**
  To create a new element, click the "Add" button.
  An empty input box id displayed where you enter the name of the new element.
  Then configure the parameters of the element.
- **Change**
  Select an element in the table on the relevant page and make your changes in the parameter boxes at the bottom.
- **Delete**
  You can only delete elements that are not used. If for example a text for a message, a user in a recipient group or a signal in an event, is used you cannot delete the element.
  In the table, select the row with the element you want to delete and click the "Delete" button.
  A prompt for confirmation appears.
  If you confirm this by clicking the "Delete" button the selected element is deleted and removed from the list.

### Saving

Confirm all your entries by clicking the "Apply" button. Your settings are then adopted by the device. With some parameters this can take a few seconds. If you make changes to the mobile wireless configuration this can also take several minutes.

Grayed out boxes are preset by the system and cannot be changed.

**Note**

**Data loss when changing the WBM page without saving**

If you do not save your input with the "Apply" button, your input will be discarded without a prompt for confirmation when you change WBM pages.

### Saving configuration files

You can save your settings i for configuring a device in a configuration file. This file can, when necessary, then be reloaded or transferred to other devices of the same type. For information on this, refer to section Configuration (Page 81).

## 5.3 Performance data and configuration limits

| You can define... | Maximum number / Comment |
|---|---|
| User | 50 |
| User groups | 25; each user group can be assigned a maximum of 10 users. For Group type "Outgoing call" max. 2 users. |
| Password | 1 |
| Phone numbers | 50 |
| E-mail addresses | 50 |
| Message texts | 20; maximum of 160 characters per message. Message text can be used for text messages (SMS) and email. |
| Signals | 32 |
| Events | 32 |
| Actions | 32 |
| Alias SMS commands | 20 |
| Constants | 10 |
| Connections | |
| • to the LOGO! BM | 1 |
| • via HTTP | 1 |
| • via HTTPS | 2; HTTP and HTTPS can be combined (maximum of two connections cannot be exceeded). A maximum of 1 connection via HTTPS is possible at the mobile wireless interface. |
| • as e-mail client | 1 |
| • as VPN server | 1 |
| • as SNTP server | 1 |

## 5.4 Permitted characters and string lengths

**Note**

**Correct reception of SMS messages**

SMS messages can only be correctly received if the messages correspond to the character sets GSM 03.38 or UCS-2.

**Note**

**Leading and following spaces**

Leading and following spaces are not permitted in names. These result in an error message in the WBM indicating an incorrect entry. Exception: Descriptions and SMS message texts.

**Use of special characters**

When using special characters, the maximum character length cannot be guaranteed.

Below you will find the characters and string lengths permitted for configuring user names, passwords, parameters and texts. ASCII character sets are often specified. Below you will find ASCII character sets with their hexadecimal code and the corresponding character.

**Standard characters**

- **0x30 .. 0x39**
  0 1 2 3 4 5 6 7 8 9
- **0x41 .. 0x5A**
  A B C D E F G H I J KL M N O P Q R S T U V W X Y Z
- **0x61 .. 0x7A**
  a b c d e f g h i j k l m n o p q r s t u v w x y z

**Special characters**

- **0x21 .. 0x2F**
  ! " # $ % & ' ( ) * + , - . /
- **0x3A .. 0x40**
  : ; < = > ? @
- **0x5B .. 0x60**
  [ \ ] ^ _ `
- **0x7B .. 0x7E**
  { | } ~

**Special characters ≥ 0x80**

- **0x80, 0xA3, 0x8A, 0x9A, 0x8E, 0x9E, 0xB5**
  € £ Š š Ž ž µ
- **0xC0 .. 0xFF**
  À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ð Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã ä å æ ç è é ê ë ì í î ï ð ñ ò ó ô õ ö ÷ ø ù ú û ü ý þ ÿ

Table 5-4 **Characters and string lengths permitted and not permitted**

| Input box | Minimum string length | Maximum string length | Permitted characters | Non permitted characters |
|---|---|---|---|---|
| **General** | | | | |
| • Names except for modules and server names (NTP, e-mail, DynDNS) | 1 | 20 | All characters | |
| • Description except for Plant description | 0 | 50 | | |
| **System** | | | | |
| • Module name<br>• NTP server name | 1<br>1 | 20<br>63 | DNS name according to RFC 1035 and RFC 1123:<br>• Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters: dash (0x2D), period (0x2E) | |
| • Plant description | 0 | 20 | All characters | |
| **WAN** | | | | |
| • SIM PIN [1)] | 4 | 8 | 0 ... 9 | a ... z, A ... Z |
| • Security code for calls<br>– One digit<br>– Four digits | <br>1<br>4 | <br>1<br>4 | | |
| • APN | 1 | 63 | DNS name according to RFC 1035 and RFC 1123:<br>• Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters: dash (0x2D), period (0x2E) | |
| • Name<br>• Password | 0<br>0 | 20<br>20 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters 0x21 .. 0x2F, 3A .. 40, 0x5B .. 0x60, 0x7B .. 0x7E | |
| • SMS password | 1 | 8 | • 0x21 .. 0x2F<br>• 0x30 .. 0x39<br>• 0x41 .. 0x5A<br>• 0x61 .. 0x7A<br>• 0x3A<br>• 0x3C .. 0x40 | ; [ \ ] ^ ` { \| } ~ ° ´ € |
| **E-mail** | | | | |
| • Mail server | 1 | 63 | DNS name according to RFC 1035 and RFC 1123:<br>• Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters: dash (0x2D), period (0x2E) | |

| Input box | Minimum string length | Maximum string length | Permitted characters | Non permitted characters |
|---|---|---|---|---|
| • E-mail address | 1 | 127 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters 0x21 .. 0x2F, 0x3D, 0x3F .. 0x40, 0x5B .. 0x60, 0x7B .. 0x7E:<br>– ! " # $ % & ' ( ) * + , - . /<br>– = ? @<br>– [ \ ] ^ _ ` { \| } ~ | |
| • Name of the e-mail user | 1 | 127 | All characters | |
| • Password | 1 | 32 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters 0x21 .. 0x2F, 3A .. 40, 0x5B .. 0x60, 0x7B .. 0x7E | ß ä ö ü Ä Ö Ü § ´ € é è |
| **DynDNS** | | | | |
| • Host name | 1 | 63 | DNS name according to RFC 1035 and RFC 1123:<br>• Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters: dash (0x2D), period (0x2E) | |
| • Name of the DynDNS user | 1 | 127 | All characters | |
| • Password | 1 | 32 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>• Special characters 0x21 .. 0x2F, 3A .. 40, 0x5B .. 0x60, 0x7B .. 0x7E | ß ä ö ü Ä Ö Ü § ´ € é è |
| **Users / groups** | | | | |
| • Phone numbers | 0 | 20 | Format: +<country code><target phone number><br>Digits and the following special characters:<br>• 0x22 ... 0x7E<br>• 0x2B (Plus character: Placeholder for the trunk prefix before the country code)<br>• 0x2A (asterisk at the end: Placeholder for extension numbers)<br>• 0x2F, 0x28, 0x29 ( / ( ) as the delimiter)<br>• 0x32 (Space) | |
| • User name | 1 | 20 | 0 ... 9, a ... z, A ... Z<br>, - @ _ . | ß ä ö ü Ä Ö Ü § ´ € é è |
| • Password<br>Note:<br>If the option "Do not use password rules" is enabled no password rules are used and the minimum length is reduced to zero. | 8 | 20 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>0 ... 9, a ... z, A ... Z<br>• Special characters 0x21 .. 0x2F, 3A .. 40, 0x5B .. 0x60, 0x7B .. 0x7E<br>! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [ \ ] ^ _ ` { \| } ~ | ß ä ö ü Ä Ö Ü § ´ € é è |

| Input box | Minimum string length | Maximum string length | Permitted characters | Non permitted characters |
|---|---|---|---|---|
| **Monitoring** | | | | |
| SMS message texts including up to 16 placeholders for process values with formatting instructions.<br>• Note:<br>The placeholders are replaced with real values prior to sending. The text length can then exceed the limit of 160 characters. If the maximum number of characters is exceeded, up to 2 SMS messages are generated and sent. | 0 | 160 | • Standard characters 0x30 .. 0x39, 0x41 .. 0x5A, 0x61 .. 0x7A<br>0 ... 9, a ... z, A ... Z<br>• Space 0x32<br>• Special characters 0x21 .. 0x2F, 0x3A .. 0x40, 0x5F, 0xA7<br>! " # $ % & ' ( ) * + , - . / : ; < = > ? @ _ §<br>• Umlauts (ä, ü etc) and ß: 0xC4, 0xE4, 0xD6, 0xF6, 0xDC, 0xFC, 0xDF, 0xE8, 0xE9<br>Ä ä Ö ö Ü ü ß è é<br>The square brackets [ and ] (0x1B and 0x1D)are reserved for placeholders.<br>The following formats are permitted for the placeholders of the process values; V stands for a configured signal name. The signal names must not include the characters [ and ]:<br>• [V] decimal value of the signal<br>Other placeholders:<br>• [DATE] current date<br>Format: yyyy-mm-dd<br>• [GPS] value is GPS position<br>Format: ddd:mm:ss.hs N/S<br>ddd:mm:ss.hs W/E Alt m<br>• [GPS.A] Age of the last GPS position in seconds<br>Format: Age s<br>• [GPS.C] Number of active satellites<br>• [TIME] current time<br>Format: hh:mm:ss<br>• [DEVNAME]Module name | [ \ ] ^ ` { \| } ~<br><br>Names for signals and constants must not contain ";" (semicolon) and "," (comma). |

[1] No PIN is also permitted.

## 5.5 Establishing a connection to the CMR

For the configuration of the CMR, you require a PC with the following web browser:

- Microsoft Edge: Version 44.17763.1.0 or higher
- Firefox Quantum: Version 65.0 or higher
- Firefox: Version 28.0 or higher
- Google Chrome: Version 72.0 or higher
- Apple Safari: iOS V 9.0 or higher

You configure using the Web user interface (WBM) of the CMR.

At the same time a maximum of 2 sessions are possible (2 users logged in). Both sessions have full write access.

**Note**

Via mobile wireless / HTTPS only one session is possible.

A second session can be established via the local LAN interface.

### Configuration via the local interface

The following requirements for configuration via the local interface X1P1 must be met:

- The PC must be connected to the Ethernet socket X1P1 of the CMR or have direct access to the CMR via the local network.
- The network adapter of the PC must have the following IP configuration:
  - Same subnet: 255.255.255.0
    The address of the PC must be located in the subnet of the LAN interface of the CMR.
  - IP address (as an example): 192.168.0.4

## 5.5.1 Establishing the configuration connection

To configure the CMR, you must first establish a connection to the device with a Web browser. Follow the steps outlined below:

### Setting up the Web browser

1. Start the Web browser on the PC.
2. Set the browser so that it does not automatically select a connection when it is started. For example in Microsoft Internet Explorer, make the settings as follows:
   - Select the "Tools" > "Internet Options" menu command.
   - Select the "Connections" tab.
   - To delete the entries in "Dial-up and Virtual Private Network settings", click the "Remove" button.
   - Click the "Never dial a connection" radio button.

### Calling up the start page of the CMR

In the address line of the browser, enter the IP address of the CMR in full.

In the factory setting, the IP address is: https://192.168.0.3

Press the Enter key.

**Note**

**Warning about the certificate (HTTPS)**

When you establish the connection via HTTPS when you log in a warning message is displayed indicating that the Web page is unsafe or that the certificate is not trustworthy. If you are sure that you have entered the correct address, ignore the message. Also add the connection to the exceptions in your Web browser (depending on the browser).

## Entering the user name and password

You will be prompted to enter the user name and the password. The factory settings are as follows:

| User data | Default values set in the factory |
|---|---|
| User name | admin |
| Password | admin |

After you log in the first time, you will be prompted to change your password. Keep to the basic rules for a secure password (refer to the notes in the WBM)

**Note**

**Changing standard user data**

For security reasons, it is recommended that you create another user after the first login. You will find the description in the section Users / groups (Page 111).

**Note**

**Loss of changed standard user data**

Note changed or newly assigned user names and passwords.

If you change user data of the standard user, lose the changed user data and have not created a second user, you no longer have access to the WBM of the CMR. In this case, you can only access the WBM of the CMR after resetting to the factory settings. When you reset the configuration data is lost.

## The start page is displayed

After entering the user name and password, the start page of the CMR opens in the Web browser. The start page provides an overview of the operating status of the device.

## The start page is not displayed

If, after several attempts, the browser still reports that the page cannot be displayed, try the following:

**Checking the hardware connection**

1. Open the DOS command prompt by selecting the menu command "Start" > "Programs" > "Accessories" > "Command Prompt".
   Result: The "Command Prompt" window appears.
2. Enter the command "ping 192.168.0.3".
   When operating correctly, you will receive four replies within a few seconds.

If you do not receive four feedback messages within a few seconds, check whether the network cable, the connectors and the network adapter are correctly connected.

**Do not use a proxy server**

Follow the steps outlined below depending on the operating system:

1. Select the "Tools" > "Internet Options" menu command.
2. Select the "Connections" tab.
3. Click the "LAN settings" button.
   The "Local Area Network Settings" dialog opens.
4. Under the "Proxy server" entry, disable the "Use a proxy server for your LAN" check box.

**Disable other LAN connections**

If other LAN connections are active on the PC, disable these LAN connections while you are setting the configuration.

Follow the steps below if working with Windows 7:

1. In the Start menu, select the command "Start" > "Control Panel" > "Network and Internet" > "Network and Sharing Center"
2. In "View your active networks" you will see the current LAN connections.
3. In "Access type: Connections", left-click on the relevant connection names.
   The dialog box associated with the connection opens.
4. Click the "Disconnect" button.
   The dialog closes, you have deactivated the required LAN connection.

## Changing the interface of the CMR after configuration

It is possible that after configuring the CMR, you may need to adapt the LAN interface of the CMR for the connected computer or adapt the local network.

Follow the steps outlined below:

1. Select the page "LAN > Configuration" in the navigation panel.
2. Make the address changes there.
3. Click the "Apply" button.

Result: Your settings are then adopted by the CMR.

## 5.6 Start page

After successfully logging in, the start page of the CMR appears.

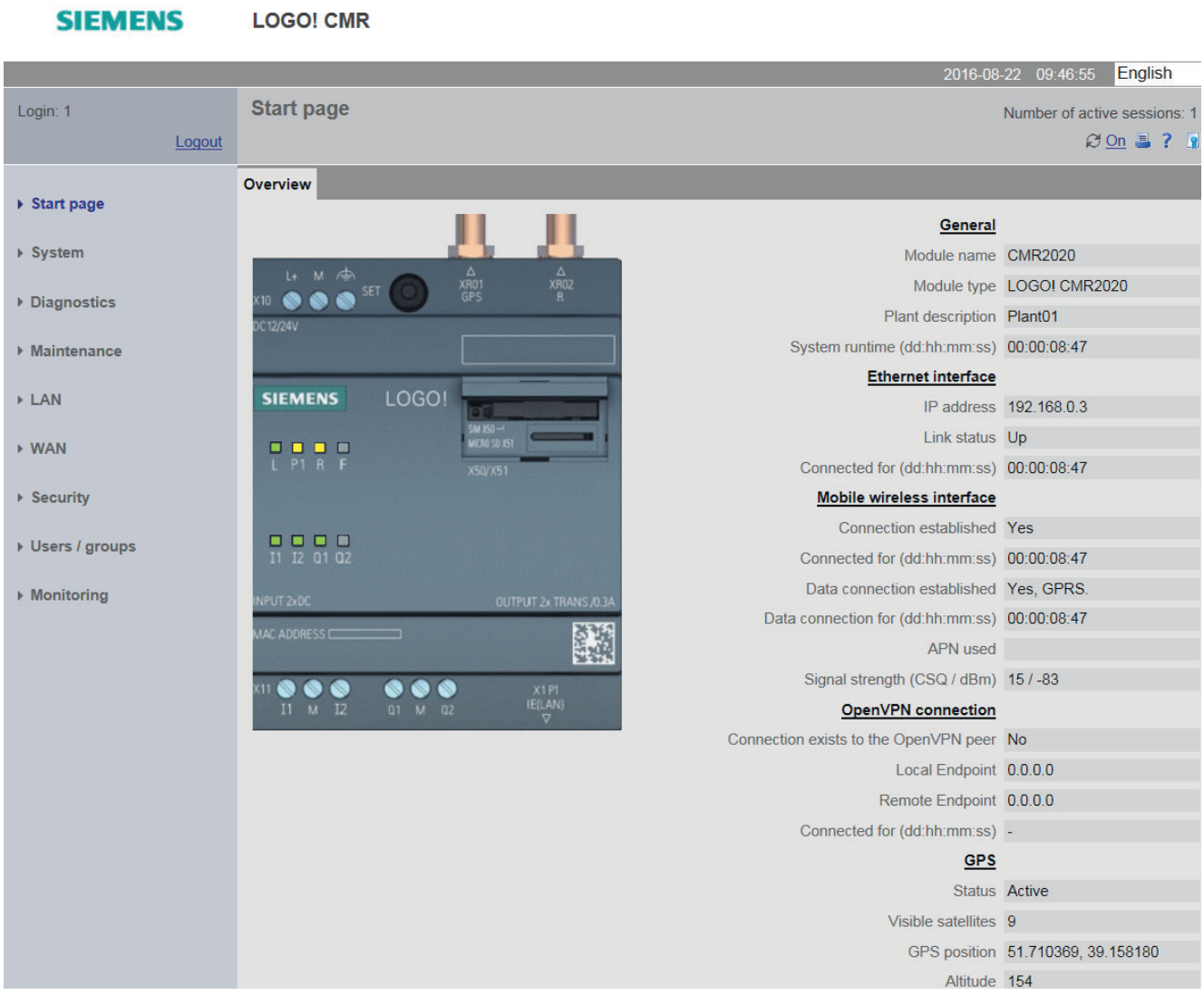



Figure 5-2 Start page – "Overview" tab

The start page shows an overview of the current operating status of the CMR.

By clicking on the bold and underlined main entries you jump directly to the relevant WBM configuration page.

### Display of the current operating status

| General | |
|---|---|
| Module name | Display of the device name you assigned on the "System" > "General" (Page 74) page. |
| Module type | Display of the device type |
| Plant description | Display of the name of the plant you assigned |

| | | |
|---|---|---|
| System runtime (dd:hh:mm:ss) | Display of the system runtime of the CMR since the last restart. | |
| **Ethernet interface** | | |
| IP address | IP address of the CMR | |
| Connection status | Display of the connection status between the PC and the CMR | |
| Connected since (dd:hh:mm:ss) | Display of the time of the connection between the PC and the CMR. | |
| **Mobile wireless interface** | | |
| Connection established | Display of the connection status in the mobile wireless network | |
| Connected since (dd:hh:mm:ss) | Display of the duration of the connection to the mobile wireless network since the last book in | |
| Connection to data service established | Display of the duration of the connection to the data service of the mobile wireless network since the last book in<br>In brackets the type of the data service, for example:<br>• LOGO! CMR2020: (GPRS)<br>• LOGO! CMR2040: (LTE) | |
| Data connection since (dd:hh:mm:ss) | Display of the time since the last data connection. | |
| APN used | Display of the name of the access point (APN) from the mobile wireless network into the Internet | |
| Signal strength | Display of the signal strength of the mobile wireless network at the location of the CMR<br>• ≤ -113 dBm: No connection to the mobile wireless network<br>• ≥ -111 dBm: Bad signal strength<br>• ≥ -79 dBm: Medium signal strength<br>• ≥ -65 dBm: Good signal strength<br>• ≥ -51 dBm: Very good signal strength | |
| **OpenVPN connection** | | |
| Connection exists to the OpenVPN client | Display of the status to the connection partner | |
| Local endpoint | IP address of the OpenVPN server (CMR) | |
| Remote endpoint | IP address of the OpenVPN client | |
| Connected since (dd:hh:mm:ss) | Duration of the existing connection to the partner | |
| **GPS** | | |
| Status | Display of the status of the GPS reception of the CMR<br>You enable GPS reception on the "System" > "General" (Page 74) page. | |
| Visible satellites | If GPS reception is active, the number of satellites from which signals are being received is displayed. | |

| | |
|---|---|
| GPS position | Current position: <latitude>, <longitude><br>Conversion o sexagesmal coordinates:<br>• Places before the point Degree<br>• 1. + 2. Decimal place: Minutes<br>• 3. + 4. Decimal place: Seconds<br>• 5. + 6. Decimal place: Hundredths of seconds<br>Display of the hemisphere and the position to the Meridien:<br>• Latitude: Positive values for north, negative values for south<br>• Longitude: Positive values for east, negative values for west |
| Altitude (m) | Height (m above sea level) |
| Age of the last item | Age of the last GPS position |

**Note**

**Update of the displayed GPS satellites with the CMR2040**

If GPS reception deteriorates, for example due to position change or removing the antenna, with the CMR2040 the satellites are displayed with a delay of up to 10 minutes.

## Updating the displayed values

If you enable automatic updating of the display at the top right on the start page, the displayed values are updated every 5 seconds.

For manual updating, with some Web browsers you can use the F5 key.

# 5.7 System

## 5.7.1 General

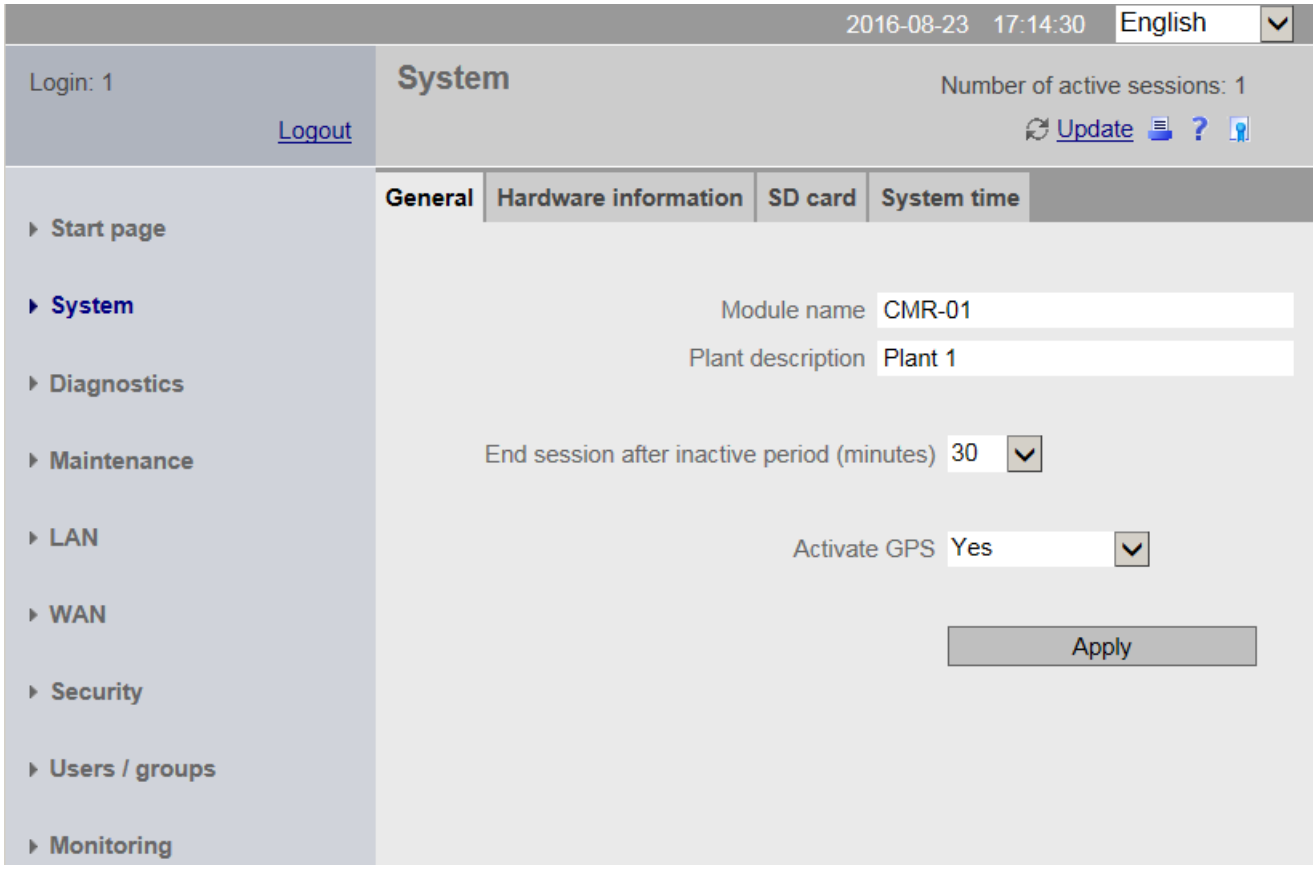



Figure 5-3 System – "General" tab

### Module name

Enter any name for your module.

Only use a DNS-compliant name as the module name. DNS-compliant names are, for example, used for diagnostics.

### Plant description

Enter any text for your plant.

### End session after inactive period (minutes)

Period without input after a session is ended.

You then need to log in again with a user name and password.

### Activate GPS

Activate/deactivate GPS reception.

Make sure that an antenna is connected to the GPS input:

- To activate GPS, select the entry "Yes" from the "Activate GPS" drop-down list.
- To deactivate GPS, select the entry "No" from the "Activate GPS" drop-down list.

With the CMR2040 note the information on updating the displayed GPS satellites in the section Start page (Page 71).

### "Apply" button

If you click the "Apply" button, all the settings you made in the "General" tab are adopted.

## 5.7.2 Device info

### System

Display of the following parameters:

- System runtime since the last restart.
- Article number of the CMR
- Serial number of the CMR
- Hardware product version of the CMR

## 5.7.3 SD card

### SD card

**Displayed data**

- **SD card inserted**
- **Total free memory space (kB)**
  Here the free (still available) and the entire memory on the SD card that can be used by the user are displayed.

**Savable files below the parameter area**

Below the parameter area, the names of the files saved on the SD card are displayed. By clicking on the file name, you can open the file from the SD card and save it to the file system of your PC.

### Naming conventions for the file names ad file system

**File system**

Files written from the CMR to the SD card meet the DOS or 8.3 format. File names are structured according to the following pattern:
<1...8 characters>.<1...3 characters>

Directories are also displayed in the DOS format (up to 8 characters). Note that when saving files with more than 8 letters that the name is truncated after 8 characters.

**Naming conventions for the file names**

The file names are structured according to the following scheme:

- **Configuration files**
  Files with configuration data of the CMR:
  *.CFG
  - The file "default.cfg" is created automatically by the CMR and updated with every change to the configuration.
  - The file "user.cfG" is a configuration data file that you saved manually.

  For information on saving and the meaning of the files refer to the section Configuration (Page 81).
- **Diagnostics buffer file**
  File with diagnostics buffer entries of the CMR:
  diagbuf.txt
- **Other files**
  Files that you yourself save on the SD card:
  *.*

## 5.7.4 System Time

In this tab, you make the basic setting for the time of day and specify the following:

- The time-of-day synchronization method and the intervals at which the time of day is synchronized.
- The automatic daylight saving time switchover
- The forwarding of the CMR time of day to the BM
- Enabling the SNTP server functionality

**Note**

The time of day is reset during a restart. To have the current time, you always need to use a time-of-day synchronization method.

When using certificates, note the information on the time-of-day in the section Requirements for use (Page 18).

### Methods and requirements

The following requirements must be met for the various methods of time-of-day synchronization:

- **NTP**
  - The CMR is connected to the mobile wireless network and the mobile wireless interface is enabled.
    The connection to the NTP server can only be established via the mobile wireless interface and not via the Ethernet interface.
  - The option "Enable data service in the mobile wireless network" in the tab WAN > Mobile wireless settings (Page 91) is enabled.
  - An antenna is connected.
  - Reception is adequate.
- **GPS**
  - GPS is enabled: System > General (Page 74)
  - An antenna is connected.
  - Reception is adequate.
- **By mobile wireless network**
  - The service is supported by your mobile wireless provider. Check this with your mobile wireless provider.
  - An antenna is connected.
  - Reception is adequate.

  With this method note that the time when the time of day is synchronized can be very variable. The first time the device books into the mobile wireless network, the time of day is transferred by the mobile wireless provider. After booking in, the intervals of the next time-of-day synchronization points can deviate considerably depending on the mobile wireless provider. Under certain circumstances the intervals may be several days.

### Local time zone

- Select the time zone to match your location from the drop-down list.
  You can also set the local time zone manually.

If you click the "Apply" button, the settings you have made for the local time zone are adopted.

- **Automatic daylight saving time switchover**
  If you select the "Automatic daylight saving time switch" check box, the daylight saving time switchover is performed automatically.
  You can only change the date and time for the time-of-day switchover manually. In the drop-down lists, you select the valid dates and times for the time switchover.
  The settings are fixed for the UTC time zones and cannot be changed.

### Time-of-day synchronization

- **Active**
  With this option you enable time-of-day synchronization of the CMR.
- **Time-of-day synchronization method**
  Select a time-of-day synchronization method.
- **Last time-of-day synchronization (dd:hh:mm:ss) ago**
  Shows when the last time-of-day synchronization was performed.
- **Now synchronize**
  If you have selected "NTP" or "GPS" as the time-of-day synchronization method if you have an existing mobile wireless connection of thee CMR, you can synchronize the time of day spontaneously.

### NTP settings

- **Accept time of day from non-synchronized NTP servers**
  If the option is enabled, the CMR also accepts the time-of-day from non-synchronized NTP servers with stratum 16.
- **IP address or DNS of the NTP server**
  In this box enter the FQDN (URL format) or the IP address of the SNTP server.
- **Update interval**
  Using the drop-down list, you specify the intervals at which the time is synchronized.
  With the "Via mobile wireless" method you can specify the update interval because the time-of-day is sent actively by the provider.
- **Forward time of day to LOGO! BM**
  With this option you enable forwarding of the time of day of the CMR to LOGO! BM. The time of day is forwarded to the BM at the intervals you have set.
  If the time of day is synchronized via a mobile wireless network, the time of day is forwarded as soon as a new time of day is received by the CMR. The time of day is also transferred when establishing the connection to the BM.

**Note**

**Avoid having different settings on the BM and CMR**

If you have different settings on the BM and CMR and want to avoid time deviations resulting from this, you need to enable time-of-day forwarding to the BM:

Enable the automatic daylight saving time switchover in the BM This ensures that blocks such as the astronomic clock work correctly.

**Note**

**Second-precise time-of-day synchronization with LOGO! BM**

When synchronizing the time of day of LOGO! BM by the CMR time-of-day synchronization to the second is possible with the following firmware versions:

- LOGO! BM: V1.81.01 (FS:04) or higher
- LOGO! CMR: As of V2.0

With older firmware versions there may be small deviations between the CMR and BM.

- **Enable SNTP server**
  With this option you enable the processing of SNTP queries at the LAN interface of the CMR. The time that the CMR receives via GPS or mobile wireless network, for example, is forwarded to the nodes in the LAN.
- If you click the "Apply" button, time-of-day synchronization is started if the parameters have been changed.

### Set system time manually

You can get the system time for the CMR from your PC or enter it manually.

- **New system time**
  To set the time manually, entered the required system time manually in the input box.
- **Adopt new system time**
  By clicking the button, the time is written to the CMR.
- **Adopt PC time**
  By clicking the button, the system time of the PC is read and written to the CMR.

## 5.8 Diagnostics

### 5.8.1 Diagnostics buffer

### The diagnostics buffer

The diagnostics buffer receives diagnostics messages for internal events and errors. It can hold a maximum of 200 entries. When the maximum number is exceeded, the oldest entries are overwritten.

The table in this tab shows a maximum of the last 20 entries. Using the drop-down list in the header of the tab you can display older entries.

The entries in the diagnostics buffer contain a consecutive number, a classification, a time stamp and the message text.

Below you will find several examples of events that are entered in the diagnostics buffer:

- Startup of the CMR
- Change to the configuration
- Establishment/abort of the communications connection
- Establishment/abort of a data connection
- Establishment/abort of the connection to the BM
- Warnings when reading in the configuration from an SD card or from the PC
- Time-of-day synchronization
- Power failure

The diagnostics messages are classified as follows:

- INFO
  Information about a special event
- WARNING
  Warning of a possibly unwanted event
- ERROR
  Internal error. Thee CMR continues to run.
- FATAL
  Serious error that impairs or interrupts the operation of the CMR.
  If the CMR restarts due to a fatal error, the outputs are briefly set to be free of voltage.

### Copy of the diagnostics buffer

With the buttons described below, you can save the entire diagnostics buffer.

The file name for the diagnostics messages of the diagnostics buffer is fixed: diagbuf.txt

- **Save on SD card**
  Manual saving on the SD card
- **Save to PC**
  Manual saving in the file system of the configuration PC
- **Save a copy of the diagnostics buffer automatically on SD card if serious errors occur**
  By activating the option you can ensure that if errors of the class FATAL occur, the diagnostics buffer is automatically backed up on the SD card.

### Sending the diagnostics buffer

In the "Notifications" tab you can configure that the diagnostics buffer is sent by e-mail depending on the class of the entries occurring.

## 5.8.2 Notifications

**Note**

To send SMS messages and e-mails you require configured users and groups.

- **Send notifications**
  Here, you set whether the CMR RTU sends a notification by SMS message or e-mail if an event (message) occurs.
  In the message, the plain text of the message, the class and time stamp are sent.
  The subject in e-mails is "Diag Notification From: <module name>"
- **Message class**
  Here, you set the message class.
  The message is sent depending on the class of the entries occurring.
- **Recipient group**
  Here you specify configured groups as recipients of the notification in "Users / groups".
  If no recipient group has been configured yet, the notifications cannot be activated.

Only with when sending e-mails:

- **Attachment**
  Here, select the attachment that will be sent with the e-mail. You have the following options:
  - Current process image
  - Entire diagnostics buffer

# 5.9 Maintenance

## 5.9.1 Configuration

### Load Configuration

**Load configuration from PC**

With this function a configuration created previously and saved on the PC is loaded on the CMR.

Configuration files have the file extension ".cfg".

1. To search for configurations on the PC, click the "Browse" button.
2. Double-click on the required configuration file.
3. To load the configuration on the CMR, click the "Load on device" button.
   Result: The configuration loaded from the PC is now used.

**Load configuration from SD card**

With this function a configuration created previously and saved on the SD card is loaded on the CMR.

The name of the stored configuration file is "user.cfg".

1. To load the configuration on the CMR, click the "Load from SD card" button.
   Result: The configuration loaded from the SD card is now used.

## Save configuration

**Saving a configuration on PC**

You can save the currently used configuration of the CMR as a file "user.cfg" on the PC. To do this, click the "Save to PC" button. Select the relevant storage location.

A saved configuration file can, when necessary, be transferred to other devices of the same type, see the next section.

**Save configuration on SD card**

---

**Note**

**Only one configuration file of a type**

You can only save a single configuration file with the name "user.cfg" or "default.cfg" on the SD card.

---

You can save the currently used configuration of the CMR as a file "user.cfg" on the SD card. To do this, click the "Save on SD card" button.

## Configuration files for device replacement and further CMRs

If an SD card is inserted, the configuration file "default.cfg" is automatically saved on the SD card during startup of the device. If there are changes to the configuration, the file is automatically updated when you click the "Apply" button.

The configuration files saved with the functions described above can be used for device replacement as well as a template for other devices of the same type.

- **Device replacement**
  With the aid of the configuration files you can continue to use a configuration if you replace a device without needing to create the configuration of the new device.
  If the SD card with the "default.cfg" file is inserted in a brand-new CMR or in a CMR that has been reset to the factory settings, the "default.cfg" file will be loaded. The new device can be used immediately with the configuration data of the old device.
- **Transfer of the configuration to other devices**
  With the aid of a configuration file "user.cfg"you can use a configuration as the template for other CMRs of the same time.
  If you use several CMRs with a similar configuration, you can save the configuration of the first configured device as a configuration file "user.cfg" on the PC.
  You can now make copies of the stored configuration file and adapt the special parameters such as IP address, plant name etc. for each device to be used using an editor (see below). If you save the adapted configuration files on SD cards and insert them in the relevant devices, after device start-up the file will be loaded on the device from the SD card. This saves you time for the full configuration of each individual device.

### Editing configuration files

The configuration files "*.cfg" can be edited with the usual text editors.

**Note**

**Editing configurations with a text editor**

Note the following when editing configuration files with a text editor:

- Do not change the structure of the file.
- Only enter correct parameters.
- Sensitive data must not be changed since this is stored encrypted.
  This includes passwords and keys, e.g. for HTTPS and OpenVPN.
- Save the file either in UTF-8 format or do not use any special characters, in other words only ASCII characters from the number range (decimal) 32 .. 126.

## 5.9.2 Firmware

### Firmware status

The following information is shown:

- Module name that you configured on the "System" Web page
- Activated firmware version
- Activated on (date)
- Bootstrap version
- IfMobile wireless module version
  The version of the mobile wireless module of the CMR.
- Modem software version (CMR2040 HW 3)
  The version of the certification-relevant modem software.

### Firmware update

| **NOTICE** |
| --- |
| **Digitally signed and encrypted firmware prevents manipulation by third parties**<br>To be able to check the authenticity of the firmware, the firmware is digitally signed by Siemens. This allows manipulation by third parties to be detected and prevented. The encryption of the firmware is intended to prevent re-engineering. |

**Note**

During the time between unpacking the firmware and the actual update through to the restarting the CMR, the administration user interface is not blocked.

- During this time, do not make any settings in the Web user interface otherwise you cannot be certain that these settings will be adopted correctly.

Do not turn off the CMR during the update.

To load a new firmware version on the CMR, follow the steps below:

1. Before you start the update: Read the notes in "Firmware update".
2. Click the "Browse" button.
3. Select the relevant firmware file, for example "CMR1427BX00EX00_V2.2.x.sfw".
4. Click the "Load" button.
5. After successful transfer, the updated firmware version is displayed.
6. Then click the "Activate and restart" button.
7. The CMR restarts.
8. Following the restart, the firmware is updated. During this time all the LEDs light up for several seconds before the CMR starts.

**Display boxes with additional information on the firmware**

- Status
  Indicates errors while loading the firmware: For example format error if you load a file different from the required firmware.
- Signature status
  Shows you the result of the signature check.
- Description
  Shows you the name of the firmware.
- Version
  Shows you the version of the loaded firmware.

### 5.9.3 Operating status

In the "System" tab, you can do the following:

- Change the device to the safe status
- Run a restart
- Reset to factory defaults

## Change to the safe status

There are two ways in which you can change the CMR to the safe status:

- Using the WBM
- With the SET button on the front of the device

If you change the CMR down to the safe status the CMR books out of the mobile wireless network.

Then you can disconnect the device from the power supply.

**Change to the safe status using the WBM**

In the "Maintenance" > "System" tab, click the "Change to the safe status" button to change the CMR to the safe status.

**Change to the safe status using the SET button**

Press the SET button with a suitable object. Hold down the button for between 5 and 10 seconds.

## Run restart

There are two ways of running a restart with the CMR:

- Using the WBM
  In the "Maintenance" > "System" tab, click the "Run a restart".
- Using the SET button of the CMR
  Press the SET button with a suitable object briefly (< 5 seconds).

Effects:

- The CMR restarts.
- The settings of the current configuration do not change.
  The CMR continues to work using these settings after the restarting.
- When restarting, existing connections are interrupted.
- When restarting the outputs of the CMR are briefly reset.

You should therefore only run a restart when this is necessary.

## Reset to factory settings

There are two ways in of resetting the device to the factory settings:

- Using the WBM
- With the SET button on the front of the device

Note the following instructions before you reset the CMR to the factory settings.

| **NOTICE** |
| --- |
| **Deleting data**<br>If you reset to factory settings, all the configuration data of the CMR will be deleted. Deleting involves the following data:<br>• User names and passwords<br>• Configured PIN<br>• Diagnostics buffer<br>• If an SD card is inserted:<br>– The automatically backed up configuration (default.cfg)<br>– The manually backed up configuration (user.cfg)<br>Following this, the CMR is restarted. After the restart, the CMR can be reached via the Ethernet interface using the default IP address 192.168.0.3. |

**Note**

**Backing up configuration data on PC or SD card**

If you do not want to discard the configuration data you have entered, you can back up the data externally and load it again after resetting to factory settings.

For information on this, refer to section Configuration (Page 81)

After saving the configuration data on an SD card, note the following:

- Before resetting to factory settings, remove the SD card: see "Reusing a configuration of a CMR".
- Remove the SD card only when the power supply is disconnected.

**Resetting using the WBM**

In the "Maintenance" > "System" tab, click the "Reset to factory settings" button to reset the CMR.

After the reset to factory settings, the CMR will perform a restart.

Put the device back into operation as described in Steps in commissioning (Page 48) and Configuration (WBM) (Page 57).

**Resetting using the SET button**

Press the SET button with a suitable object. Hold down the button for longer than 10 seconds.

After the reset to factory settings, the CMR will perform a restart.

Put the device back into operation as described in Steps in commissioning (Page 48) and Configuration (WBM) (Page 57).

## Reusing a configuration of a CMR

You can transfer the configuration of a CMR any number of times to other CMRs:

Requirement: The CMR is brand-new or was reset to the factory settings (without SD card).

If the SD card of another CMR is inserted before starting the CMR, the automatically backed up configuration (default.cfg) of the other CMR is used.

## 5.9.4 Online support

Here you can call up the Internet pages of Siemens Industry Online Support.

### Online support

**Link to the Internet portal of Siemens Industry Online Support**

Click on "Siemens Industry Online Support" to connect to the Internet pages of Siemens Online Support.

There, you can search for information on the product or send a query to product support.

**Configuration of the logging**

In some cases, product support can send you a logging file of the type *.sup to log events. You save this logging file in the file system of the configuration PC. On this WBM page you download the file to the CMR.

For logging you require an SD card with at least 8 MB free space.

- **File**
  After selecting a logging file stored on the configuration PC with the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a log file saved there that is intended to be downloaded to the CMR.
- **Load on device**
  By clicking the button you download the selected log file to the CMR.
- **Standard settings**
  Loads the default logging file preset in the factory instead of a file for logging made available by Product Support.
- **Delete**
  Deletes a no longer required log file from the CMR.
  After deleting the logging file, logging is disabled again.

**Enable logging**

After loading the logging file, logging must be actively enabled.

- **Enable logging and save the file on the SD card**
  By enabling the option logging is started as soon as you click the "Apply" button.
  The log file is saved on the SD card and updated during operation if relevant events occur.

### Use of the logging

You should only use logging of events. If you have problems with the CMR that you cannot solve yourself.

**Note**

**Protecting the SD card by disabling logging**

To avoid shortening the working life of the SD card too much, logging should be disabled during normal operation of the CMR.

When logging is enabled, during runtime the CMR continuously saves information about important events that have occurred. The saved data contains information on the configuration, active procedures and error situations.

The data is saved on the SD card in a log file with the name "support.bin". The information in this file is encrypted and can only be read by Siemens Industry Online Support. On completion of logging sent the log file back to your contact at Siemens Industry Online Support.

## 5.10 LAN

### 5.10.1 Configuration

#### Function of the LAN interface X1P1

- The X1P1 interface (Ethernet RJ-45) of the CMR is used to connect a local PC for the configuration.
- After completed configuration, the X1P1 interface serves to connect to the BM if the CMR is not being operated in standalone mode.
  For information on the operating options, refer to the section Mobile wireless communication by call / SMS / e-mail without LOGO! BM (Page 21).

You will find the properties of the X1P1 interface in the section Technical specifications (Page 153).

By using autonegotiation and autocrossing, the transmission properties of the interface are detected automatically and set.

### Configuration of the Ethernet interface

**Note**

**IP address and subnet mask according to RFC 1918**

The factory-set IP addresses and subnet masks can be changed as required, but must keep to the specification RFC 1918. The CMR does not run any strict checks of the address bands.

Do not set an IP address that is already assigned in your LAN, for example for other BMs.

If a duplicate IP address is detected, the red error LED starts to flash. The CMR is no longer reachable via the Ethernet interface. No other functions are affected: e.g. sending an SMS message due to events.

**Fixed parameters**

- MAC address
- Connection status
- Transmission properties (options: 10/100 Mbps; half/full duplex)
- Connected since (dd:hh:mm:ss)

**Changeable parameters**

- IP address
- Subnet mask
- Default router
  The default router is intended for direct connection of the CMR to the Internet via the LAN interface.

## 5.11 WAN

### 5.11.1 Overview

### Mobile wireless connection

The following information on the mobile wireless interface is displayed in the Overview:

- **Connection established**
  Connection status to the mobile wireless network
- **Connected since (dd:hh:mm:ss)**
  Duration of the existing mobile wireless connection
- **Connection to data service established**
  Status of the connection to the data service GPRS / UMTS / LTE
- **Data connection since (dd:hh:mm:ss)**
  Duration of the existing connection to the data service

- **Signal strength CSQ (dbm)**
  - CSQ = 0 .. 8 (-112 .. ≤ -97 dBm): No reception possible
  - CSQ = 9 .. 16 (-95 .. -81 dBm): Medium signal quality
  - CSQ = 17 .. 31 (≥ -79 dBm): Good signal quality
  - CSQ = 99 (≤ -113 dBm): No signal detectable
- **SMSC number**
  Number of the SMS center
- **APN used**
  Name of the APN
- **IMEI**
  International Mobile Equipment Identity of the mobile wireless network provider
- **IMSI**
  International Mobile Subscriber Identity of the mobile wireless network provider
- **IP address**
  IP address of the CMR assigned by the mobile wireless network provider.
  To be able to reach the CMR via mobile wireless, the CMR requires a public IP address.
- **DNS server**
  IP address of the DNS server assigned by the mobile wireless network provider

### Statistics

The figures apply to the period since the CMR was last restarted.

- **SMS sent**
  Number of SMS messages sent successfully by the CMR
- **Sending the SMS failed**
  Number of SMS messages that the CMR could not send (with diagnostics buffer entry).
- **SMS received**
  Number of SMS messages received and processed by the CMR
- **SMS discarded**
  Number of SMS messages received that the CMR discarded.
  In the following situations SMS messages are discarded:
  - The option "SMS received" in the "SMS" tab is disabled.
  - The phone number of the sending partner is not configured among the users.
- **Data sent (kB)**
  Number of data (kilobytes) sent by the CMR.
- **Data received (kB)**
  Number of data (kilobytes) received by the CMR.
- **E-mails sent**
  Number of e-mails sent successfully by the CMR

- **E-mails sent unsuccessfully**
  Number of e-mails that could not sent successfully by the CMR.

  **Note**

  **Number of attempts to send**

  If the CMR cannot send an e-mail, it attempts twice more to send the e-mail. Following this, the e-mail is deleted

- **Outgoing calls made**
  Number of outgoing calls successfully made by the CMR.
- **Outgoing calls failed**
  Number of outgoing calls that failed or could not be made (for example, too many outgoing calls pending).
- **Incoming calls processed**
  Number of incoming calls that were processed as an event.
- **Incoming calls discarded**
  Number of incoming calls that were discarded.
- **Reset statistics**
  With the button, you reset all counters for statistics in the CMR to zero.

## 5.11.2 Mobile wireless settings

The mobile wireless interface of the CMR connects the device to the mobile wireless network.

**Note**

**Costs of a mobile data connection**

Remember that both when establishing or when attempting to establish a mobile data connection and to maintain a mobile data connection, frames are exchanged that are subject to charges.

### Access parameters

You configure your mobile wireless connection in the "Mobile wireless settings" tab.

For access to the GSM mobile wireless network and to the HSPA, UMTS, GPRS or LTE services, you require the following parameters:

- The PIN protects the SIM card against unauthorized use.
- APN is the name of the transition point from the mobile wireless network to other connected IP networks, with the CMR to the Internet.
  "Name" and "password" are used to keep APN access secure.

You will receive these access parameters from your mobile wireless provider.

The mobile wireless network is selected automatically.

**Note**

**Dial-in in mobile wireless network with LOGO! CMR2020**

LOGO! CMR2020 only dials into a GSM/GPRS network.

**Dial-in in mobile wireless network with LOGO! CMR2040**

As first choice, LOGO! CMR2040 attempts to establish a connection to an LTE network.

If the connection to the LTE network fails, the CMR attempts to establish a connection to a UMTS network.

If the connection to the UMTS network fails, the CMR attempts to establish a connection to a GSM/GPRS network.

By selecting the “Activate mobile wireless interface" check box, you make the mobile wireless interface operational.

If the check box is not selected, the mobile wireless interface cannot be used. The mobile wireless interface is turned off.

### PIN of the SIM card

**Note**

**SIM card without PIN**

The CMR also works with SIM cards without a PIN. In this case, do not make an entry in the "PIN of the SIM card" input box.

**Entry of an incorrect PIN**

The last entered (incorrect) PIN is saved. This means that when changing the configuration (except the PIN) or when restarting the CMR, no further PIN entry attempt is used up.

For this reason, do not change the PIN of the SIM card to the previously stored incorrect PIN outside the CMR.

**Locking if the PIN is entered correctly**

Enter the PIN correctly. If you enter the PIN incorrectly three times, the SIM card will be locked. You should also refer to the information in the section Insert the SIM card and enter the PIN (Page 48).

**Unlocking the SIM card**

Unlocking the SIM card is described in the section Insert the SIM card and enter the PIN (Page 48).

You have received a PIN for your SIM card from your mobile wireless provider.

1. Enter the PIN for your SIM card in the input box.
   If you use a SIM card without a PIN, do not make an entry in the box.
2. By clicking the "Apply" button, you save the PIN with the other settings.
   - A green check mark below the input box indicates that the PIN was saved successfully on the device.
   - A red dot with a white cross below the input box indicates that the configuration is not correct and an error message to this effect is displayed.
     No mobile wireless connection is established.

### Allow roaming

Roaming means that the mobile wireless network of your mobile wireless provider is no longer reachable and another mobile wireless provider takes over the CMR in its mobile wireless network.

If the specified mobile wireless network is no longer reachable, specify whether or not the CMR should log in to another mobile wireless network.

- Select the "Allow roaming" check box.
  If the specified mobile wireless network is not available, the device logs in to an available mobile wireless network.
  Logging in to another mobile wireless provider can lead to higher connection costs.
- Disable the "Allow roaming" check box.
  If the specified mobile wireless network is not available, no connection is established to other mobile wireless networks.

## 5.11.2.1 Selection of the mobile wireless standard

### Selection of the mobile wireless standard (CMR 2040 HW3)

Here you specify the mobile wireless standard that the CMR is to use. The following options are available:

- Automatic
  The mobile wireless network with the higher standard (UMTS or LTE) is selected automatically.
  Fallback behavior of the CMR:
  If the establishment of a connection via a mobile wireless network with UMTS or LTE standard fails, the CMR attempts to dial in to an available network with the next lower mobile wireless standard (GSM).
- Only GSM/GPRS
  The CMR attempts to establish a connection only in a GSM network (GPRS).
- Only UMTS
  The CMR attempts to establish a connection only in a UMTS network.
- Only LTE
  The CMR attempts to establish a connection only in an LTE network.

### SMSC number

The phone number of the SMSC of the mobile wireless provider cannot be changed via the CMR. If you want to change the number, take the SIM card out of the CMR, insert the SIM card in a mobile phone and change the number of the SMSC with the functions of the mobile phone.

### Enable data service in the mobile wireless network

**Note**

**Enabling mobile data connections**

Arrange for the required mobile data connections to be enabled by your mobile wireless provider.

You can turn the mobile data connection on or off for your device.

- Select the check box "Enable data service in the mobile wireless network":
  If you also want to use IP-based data services of your mobile wireless provider in addition to sending and receiving SMS messages, for example time-of-day synchronization using NTP.
- Deselect the check box "Enable data service in the mobile wireless network":
  The CMR can only send and receive SMS messages.

### APN / User name / Password

- **APN**
  Enter the APN of your mobile wireless provider in the input box.
  The APN (Access Point Name) is the DNS host name of the access point from a mobile wireless network to an external packet data network (LTE/UMTS/GPRS).
  You can obtain information about this access data from your mobile wireless provider or from the Internet.
- **Authentication method**
  From the "Authentication method" drop-down list, select a method with which the name and the password for the APN will be transferred to the communications partner:
  CHAP has the higher priority. If the communications partner does not support CHAP, the name and password are transferred using PAP.
  - None
    no authentication
  - CHAP
    Encrypted transfer of name and password using the Challenge Handshake Authentication Protocol.
  - PAP
    Unencrypted transfer of name and password using the Password Authentication Protocol .

  The two following parameters are only required when authentication is enabled.

- **Name**
  In the input box, enter the name given to you by your mobile wireless provider.
  Some mobile wireless providers do without the access check with a name. In this case, leave the input box empty.
- **Password**
  In the input box, enter the password of the relevant provider.
  Some mobile wireless providers do without the access check with a password. In this case, leave the input box empty.

## 5.11.3 Wireless cell

### Optimum antenna alignment

To allow you to find the optimum alignment of the antenna connected to the SMA socket, you can use the "Wireless cell" tab. The "Wireless cell" tab allows you to test the signal strength at various antenna positions.

The information is updated at intervals of a few seconds. To be able to find the optimum position, you receive immediate information about the signal strength at the test positions.

### Status of the wireless cells

Display of parameters of the mobile wireless cell where the CMR is currently booked in:

- Wireless cell identifier (CI)
- Signal strength (CSQ / dBm)
  Signal strength of the mobile wireless network as CSQ (Cell Signal Quality) and as received signal strength RSSI [dBm]
  CSQ and RSSI correspond as follows:
  - CSQ = 0 .. 8 (-112 .. ≤ -97 dBm): No reception possible
  - CSQ = 9 .. 16 (-95 .. -81 dBm): Medium signal quality
  - CSQ = 17 .. 31 (≥ -79 dBm): Good signal quality
  - CSQ = 99 (≤ -113 dBm): No signal detectable
- Signal quality
  Signal quality in percent
- Location Area Code
  Location identifier
- Mobile wireless standard of the wireless cell
- Network type

- Network name
- PLMN
  Public Land Mobile Network
  Worldwide unique identifier of mobile wireless networks consisting of:
  - MCC (Mobile Country Code)
  - MNC (Mobile Network Code) of the network provider

  Example: PLMN 26276 is made up of MCC = 262 and MNC = 76.

### 5.11.4 SMS

In this tab you can allow or block receipt of SMS messages by the CMR.

You will find information on writing data in the appendix Additional information on SMS (Page 171).

- **Allow receipt of SMS messages**
  - If the option is enabled the CMR can receive SMS messages and evaluates them.
  - If the option is disabled the CMR can receive SMS messages but does not evaluate them. The CMR does not evaluate received SMS messages regardless of the SMS rights you have assigned for the users on the Users / groups (Page 111) page.

  **Note**

  **Roaming cost with the option disabled**

  Even if the option is disabled the CMR receives SMS messages. For this reason roaming costs can also result in even if receipt of SMS messages is blocked.

- **Enable SMS password**
  With this option you optionally assign a password for write commands transferred by SMS. By assigning a password write access to the CMR is better protected.
  If the option is enabled, the CMR only evaluates SMS messages that contain the configured password.
  Note that if the option is disabled, SMS messages must not contain a password.

- **Password for writing commands**
  Here, enter the password that needs to be transferred with writing SMS messages.
- **Send positive acknowledgments**
  After receiving an SMS message with which an error occurs, the CMR always sends an acknowledgment with the relevant error message to the sender. This may be the result of invalid parameters or an incomplete SMS configuration.
  After receiving an SMS message with writing data that could be transferred to the destination module, the behavior is as follows:
  - If the option is enabled, the CMR always sends a positive acknowledgment to the sender of the SMS message when the job has been handled.
  - If the option is disabled the CMR reacts as follows:
    After receiving an SMS message with writing data that could be transferred to the destination module, the CMR does not send an acknowledgment to the sender of the SMS message.
    After receiving an SMS message with read commands (for example "STATUS?") the CMR always sends a reply.

### Test SMS

To check the selected settings and the connection, you can have the CMR send a test SMS message to a configured recipient module.

- **Recipient group**
  User group that is to receive the test SMS message.
- **Text**
  Configured text that will be sent in the test SMS message.
- **Send test SMS**
  The button triggers the sending of the test SMS with selected text block (previously configured in "Message texts").

## 5.11.5 SMS alias

### SMS alias configuration

In the table configure up to 20 values for the alias texts of SMS that the CMR is to receive. These are SMS messages with writing access or SMS messages with a read command, for example "DIAG?" to request a diagnostics SMS message.

You configure symbolic names as placeholders for the entire SMS text.

- Name
  Symbolic name of the text
- Content
  Suitable text of the alias SMS message with the correct syntax.

Example:

- The alias name is as follows: Lamp3ON
  (This text will be transferred as the SMS message text.)
- The configured content is <password>;LOGO=VM125,1,WORD
  (The variable VM125 of the type WORD is linked to the output for Lamp 3.)

When it receives an SMS message with the text "Lamp3ON", the CMR first checks the configured password.

Then according to the configuration in the table the CMR translates remaining text in "LOGO=VM125,1,WORD" and sets the variable VM125 of the type WORD to 1.

## 5.11.6 E-mail

In this tab you can configure the data for the sending of e-mails by the CMR.

If you do not want the CMR to send e-mails, leave this page unedited.

- **SMTP server name**
  Name of the SMTP server. You will receive the data from your service provider.
- **Port number**
  Port number of the SMTP server. You will receive the data from your service provider.
- **Connection security**
  Here, select from the following options:
  - Only STARTTLS
    With this setting, e-mails are only sent when STARTTLS is supported by the service provider.
    For this option a CA certificate from the service provider needs to be imported, see below.
  - STARTTLS, if possible
    With this setting, e-mails are also sent when STARTTLS is not supported by the service provider.
- **Own e-mail address**
  E-mail address of the CMR. You will receive the data from your service provider.
- **Name**
  Name required by the SMTP server. You will receive the data from your service provider.
- **Password**
  Password required by the SMTP server. You will receive the data from your service provider.

**Root certificate**

Here, you have the option of importing the CA certificate of the service provider for sending e-mail with STARTTLS.

- **Currently used file**
  Display of the file name of the currently used file
- **Delete**
  With the button, you delete the currently used file.
  The file is deleted only after you click the "Apply" button.

- **File used after applying**
  After loading the certificate, the name of the loaded file is displayed here.
- **Load new file**
  After selecting a file stored on the configuration PC using the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a certificate file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the button "Load on device" load the selected file on the CMR.

**Test e-mail**

Here you can check the settings and the connection establishment by sending a test e-mail.

The requirements for this are that the following parameters (Recipient, Subject, Text) are configured in "Users / groups" or "Monitoring" and that the configuration PC is connected to the Internet.

- Recipient group
- Subject
- Text
- Send test e-mail
  By clicking the button, the test e-mail is sent.

## 5.11.7 DynDNS

In this tab you can enable the use of address assignment by dynamic DNS (DynDNS) on the mobile wireless interface. To do this you require one of the service providers that can be selected below and the corresponding access data.

DynDNS is recommended when using OpenVPN and HTTPS.

**Note**

**DynDNS only with a public IP address**

DynDNS can be used only with a public IP address. Check this with your network provider.

If you log the CMR on to a DynDNS service, the device can be reached from the Internet under a host name, for example "myName.dyndns.org".

Generally the CMR will not have a fixed IP address on the mobile wireless interface and will not be registered under a host name. By using a dynamic domain name system (DynDNS) it can however be reachable on the Internet. The public IP address is then made known by the DynDNS service.

With each dial in to the data network and if the IP address is changed on the mobile wireless interface, the DynDNS server is informed of the received IP address via HTTPS. An entry with the IP address is written to the diagnostics buffer.

The reachability of the IP address from the Internet must be enabled by the service provider.

- **Active**
  - If the option is enabled, the use of DynDNS is enabled.
  - If the option is disabled, the use of DynDNS is not enabled.
- **DynDNS provider**
  You can select the following service providers:
  - DynDNS
    Address: http://www.dyndns.org/
  - No-IP
    Address: http://www.noip.com/
- **Host**
  Host name of the CMR that you agreed with your service provider (DynDNS) or that you select yourself (No-IP).
- **User name**
  User name assigned by the service provider (DynDNS) or that you select yourself (No-IP).
- **Password**
  Password assigned by the service provider (DynDNS) or that you select yourself (No-IP).

**CA certificate**

Here you import the file of the CA certificate of the DynDNS service provider. The certificate serves to authenticate the service provider with the CMR.

Certificates are not absolutely necessary for operation.

Depending on the service provider, the following certificate is required:

- DynDNS
  DigiCert CA
- No-IP
  Geo Trust Global CA

Request the relevant valid certificate from your provider.

**Parameter**

- **Currently used file**
  Display of the file name of the currently used file
- **Delete**
  With the button, you delete the currently used file.
  The file is deleted only after you click "Apply" button.
- **File used after applying**
  After loading the certificate, the name of the loaded file is displayed here.
- **Load new file**
  After selecting a file stored on the configuration PC using the "Search" button, the file name is displayed here.

- **Search**
  Searches the file system of the configuration PC for a certificate file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the button "Load on device" load the selected file on the CMR.

## 5.11.8 Calls

In this tab you can allow or block incoming calls and configure the duration of outgoing calls.

### Incoming calls

Incoming calls are configured as signals.

- **Incoming calls allowed**
  - When the option is enabled, the CMR can receive calls, check them and evaluate them. To do so, the option "Allow calls" must be activated for the user on the page "User / groups > User". The user must also be assigned to a user group for incoming calls that is used in an event of an active assignment.
  - When the option is disabled, the CMR hangs up immediately on incoming calls without any further actions.
- **Positive acknowledgment by SMS**
  - For incoming calls that meet all criteria and checks, the following behavior applies:
    When the option is enabled, the CMR ends the call, executes the active assignment and sends a positive acknowledgment via SMS to the calling number with the following content: "Call successfully received".
    When the option is disabled, the CMR ends the call, executes the active assignment and does not send an SMS.

**Security setting**

Select which code the caller must enter in addition to the phone number for calls on the CMR so that an action is executed. The code is transferred as DTMF signals and configured in the "Monitoring > Signals" tab.

- **Call without code**
  Security: None
  After successful authentication of the calling number, the CMR accepts the call, ends it immediately and executes the action.
- **One-digit code**
  For CMR2040: Only from HW 3
  Security: Low
  After successful authentication of the calling number, the CMR accepts the call and sends a signal tone. Then enter the one-digit code.
- **Four-digit code**
  For CMR2040: Only from HW 3
  Security: Higher
  After successful authentication of the calling number, the CMR accepts the call and sends a signal tone. Then enter the four-digit code.

**Rules for the input**

- Time for input: 5 s per digit; otherwise, the CMR ends the call.
- For input using the keypad of a smartphone: Pause of at least 1 s between input of the digits.
- Disable the mailbox function on the SIM card that is used for calls. Otherwise, calls that are rejected by the CMR will result in mailbox SMS to the CMR that cannot be evaluated.

**Requirements so that the configured action is triggered by a call:**

- The calling number must be assigned to a user.
- The user has been assigned the right "Make call".
- The calling user is a member of a user group of the type "Incoming calls".
- The user group is configured in an event which is part of an active assignment.
- For calls with code: When the entered code matches the configured code of the active event.

**Protection from brute force attacks**

- When an incorrect code is entered, the user who has been assigned the calling number is saved in a list (max. 12 entries). If multiple users use a wildcard character (*) in the number, then all users who match the calling number are saved in the list.
- If the code is entered incorrectly three times, the respective user is blocked for 10 minutes, and a diagnostic buffer entry is created. Afterward, the entry is removed from the list again.
- If the list of entries is full, all incoming calls are blocked for 10 minutes, and a diagnostic buffer entry is created.

### Outgoing calls

Outgoing calls are configured as actions. To do so, you specify a user group whose assigned users are called one after the other when the action is triggered.

- **End calls after (seconds)**
  - Period of time in seconds (value range of minimum duration: 1 ... 12) after which an outgoing call is ended by the CMR.

**Enable mailbox**

Enable the mailbox when a number cannot be reached; otherwise, the missed call of the CMR will be lost.

### Test call

To check the selected settings and the connection, you can have the CMR send a test call to a configured user group.

- **User group**
  User group that is to receive the test call. A maximum of two users can be saved in a user group for outgoing calls. Each member of the group is called one after the other.

## 5.12 Security

### 5.12.1 Overview

**OpenVPN connection**

- **Connection to the OpenVPN partner exists**
  Connection status to the OpenVPN client
- **IP address of the OpenVPN partner**
  Shows the public IP address of the OpenVPN client.
- **Local endpoint**
  Shows the IP address of the OpenVPN server (CMR).
  The IP address of the OpenVPN server within the VPN tunnel is fixed at 10.8.0.2.

**Note**

**Network settings when using OpenVPN**

If you use OpenVPN, make sure that the LAN subnet of the CMR and the OpenVPN subnet do not overlap otherwise no connection can be established to the CMR via OpenVPN.

For information on the LAN settings, refer to the section LAN (Page 88).

- **Remote endpoint**
  Shows the IP address of the OpenVPN client.
  The IP address of the OpenVPN client within the VPN tunnel is fixed at 10.8.0.1.
- **Connected since (dd:hh:mm:ss)**
  Duration of the existing connection to the OpenVPN client

**Statistics of the current connection**

The numbers apply to the currently established connection.

For the meaning of the parameters, see below.

**Statistics since restart**

The numbers apply to all connections that were established since the last restart of the CMR.

- **Bytes received**
  Number of bytes received by the CMR.
- **Frames received**
  Number of frames received by the CMR.
- **Received frames lost**
  Number of frames received by the CMR that it could not process.
- **Bytes sent**
  Number of bytes sent by the CMR.
- **Frames sent**
  Number of frames sent by the CMR.
- **Frames to be sent lost**
  Number of frames, which were ready to send on the CMR that could, however, not be sent.

## 5.12.2 OpenVPN-PSK

For information on the functions and requirements, refer to the following sections:

Further functions (Page 15)

Requirements for use (Page 18)

**Note**

**DynDNS when using OpenVPN**

To simplify connection establishment when using OpenVPN, the use of DynDNS is recommended.

### Application examples

You can use the OpenVPN tunnel for the following purposes:

- Connection from the mobile phone or configuration PC to the CMR via HTTP
  You can reach the CMR via the mobile wireless interface using HTTP (not HTTPS). To do this, use the following tunnel IP address of the CMR:
  http://10.8.0.2
- Connection with BM via the tunnel
  You can reach LOGO! BM directly via the configured IP address. e.g. 192.168.0.1. In this case, the CMR serves as a router for the data exchange. To do this enter the CMR in the BM as a router.
  After checking the connection establishment you can monitor the BM (via the Web or a mobile app) and configure it using LOGO!Soft Comfort.

### Setting up an OpenVPN connection

Below you will find an overview of the steps for setting up an OpenVPN connection.

1. Configure and check the mobile wireless connection.
2. Optional: Configure and check DynDNS.
3. Generate the pre-shared key on the CMR or OpenVPN client.
   If you generate the pre-shared key on the OpenVPN client, load it on the CMR (see below).
4. On the CMR adapt the port and the inactivity monitoring time.
   Make sure that the port on the partner (OpenVPN client) is enabled or that port forwarding is enabled on the router to which the partner is connected.
5. Load the standard server configuration ("vpnpeer.conf") on the configuration PC. Rename the file "vpnpeer.conf" to "vpnpeer.ovpn" and place it on the OpenVPN client. If necessary, adapt the file: IP address, DNS address, PSK in Unified format
6. Enable OpenVPN o the CMR
7. Enable the OpenVPN client and check the connection status in the WBM: "Security > Overview", if applicable, diagnostic buffer.

### OpenVPN-PSK

- **Active**
  Select the option to enable secure communication via OpenVPN.
- **Port number**
  Here you configure the number of the OpenVPN port of the CMR. As default the port is preset with the number 1194.

- **Inactivity monitoring time (s)**
  Time without frame traffic after which the CMR sends a keepalive frame to the OpenVPN client.
  This parameter is, for example, useful when the partner has a dynamic IP address and a DNS name is used for it.
  Range of values (seconds): 60...65535
- **Save standard server configuration**
  The CMR provides the option of exporting its own standard settings (OpenVPN server) for the OpenVPN client to the file system of the connected PC using the file "vpnpeer.conf". The file contains settings that ensure that a connection from the CMR to the OpenVPN client is established. The file can be imported into the OpenVPN client (mobile phone or PC). Rename the file "vpnpeer.conf" to "vpnpeer.ovpn".
  The way the file is handled depends on the method of address assignment of the CMR:
  - If you use DynDNS, you can use the file directly for the OpenVPN client.
  - If you do not use DynDNS, you need to adapt the address data in the file. To do this, the file can be edited with a text editor, see section below,

### Pre-shared key

In this block, you can generate a new key or you can load a key file from the file system of the connected configuration PC. This can, for example, be a pre-shared key generated by the OpenVPN client.

The following functions are available:

- **Generate new key**
  With the button, you generate a new pre-shared key on the CMR.
  (The function corresponds to the "genkey" function of an OpenVPN client.)
  For information on saving the key refer to the entry "Save standard server configuration for client" below.
- **Currently used file**
  Display of the file name of the currently used key file
- **File used after applying**
  After loading a key file from the file system, the name of the loaded file is displayed here.
- **Load new file**
  After selecting a file stored on the configuration PC using the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a key file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the buttons load the selected file on the CMR.
- **Save standard server configuration for client**
  With this entry you can save the configuration file of the CMR in the file system of your configuration PC. The file has the name "vpnpeer.conf" and, among other things, contains the pre-shared key generated by the CMR.

### Additional port forwarding

By default, the TC ports 8443, 10005, 80 and 443 are open in the VPN tunnel of the CMR.

This means the CMR can be used to set up a VPN connection from the LOGO! Soft Comfort to the LOGO! BM or to access the WBM.

To set up a VPN connection via the CMR to a different device, you can enable up to four additional ports.

To do so, enable the UDP and/or TCP protocol and enter the corresponding port number. To confirm, click "Apply".

The telegrams are then forwarded by the VPN interface to the LAN interface via the respective port.

### File "vpnpeer.conf"

- **Download recommended client configuration**
  With this entry you can save the configuration file of the CMR in the file system of your configuration PC. The file has the name "vpnpeer.conf" and, among other things, contains the pre-shared key generated by the CMR.

Below you will find the content of the configuration file exported from the CMR for the OpenVPN client (communications partner of the CMR).

**Note**

**Unencrypted configuration file: Encrypted transfer**

The configuration file for the OpenVPN client is not encrypted. The pre-shared key is located unencrypted in the file.

Only transfer the file encrypted to the partner, e.g. using HTTPS.

Table 5-5 Content of the configuration file "vpnpeer.conf"

| Original file | Adapted file |
|---|---|
| dev tun0<br>proto-force udp4<br>disable-occ<br># Please update your OpenVPN peer's address on the next line<br>remote vpn.example.com 1194<br>ifconfig 10.8.0.1 10.8.0.2<br>nobind<br>keepalive 15 60<br>route 192.168.0.0 255.255.255.0<br>tun-mtu 1500<br>fragment 1371<br>mssfix 1282<br>persist-key<br>replay-window 512 15<br>cipher AES-128-CBC<br>auth SHA256<br>auth-nocache<br>comp-lzo<br>verb 4<br>#key-direction 1<br>#<secret><br># Please insert your key here and uncomment these lines<br>#</secret> | dev tun0<br>proto-force udp4<br>disable-occ<br>remote 192.168.229.29 1196<br>ifconfig 10.8.0.1 10.8.0.2<br>nobind<br>keepalive 15 60<br>route 192.168.0.0 255.255.255.0<br>tun-mtu 1500<br>fragment 1371<br>mssfix 1282<br>persist-key<br>replay-window 512 15<br>cipher AES-128-CBC<br>auth SHA256<br>auth-nocache<br>comp-lzo<br>verb 4<br>key-direction 1<br><secret><br>#<br># 2048 bit OpenVPN static key<br>#<br>-----BEGIN OpenVPN Static key V1-----1a17c9b9737c0fd0b33eb540ba845340e2dad229b8d6fd9b82f934563d8169843021d0bc1fcec0862d560b0917685cbe03157aa9cb952de7566dd43f120d7278c1d672dad724457eaed3c6412a14434d9da2f97158465e95b711e68f1b80d681ca4e3f3f6d7cdac38cc6dddfb74f23b175becbb6125093d41a3af1456824760db3e46e0bc8d20539c7fc1a4111c7cdb571552c1a7bfd707848bbe3eca036e9a2092eea5d9041001bd07a3dc0a8b6636fce42fc94b1446c283c24daa458460ef9ab8a18ebb9c4791f45d87f11e0918f002bfbdbc955d74d7ffc7fa4bacd6f15f10137ebde93b8219ae38ebae9b029e97cd79d204255f30a048865ffbb3eabb6b9-----END OpenVPN Static key V1-----<br></secret> |
| Notes:<br>• This is the unchanged content of the file exported from the CMR without enabled OpenVPN functionality.<br>• When exporting the file in this form, the pre-shared key is still missing on the CMR. You still need to import the pre-shared key at the client end (partner) and at the server end (CMR). | Notes:<br>The content was adapted for the use of OpenVPN without DynDNS:<br>• The third commented line of the original file was deleted and the address adapted in the next line.<br>• The second last commented out line of the original file and the comments were deleted and the pre-shared key added. |

### 5.12.3 HTTPS

The requirement for using HTTPS for secure communication via the Internet and mobile wireless network with the CMR is a SIM card for the CMR with a publically accessible IP address.

For information on the functions and requirements, refer to the following sections:

Further functions (Page 15)

Requirements for use (Page 18)

**HTTPS**

- **Allow HTTPS access only**
  If the option is enabled, connections can only be established to the WBM of the CMR with HTTPS. Non secure connections with HTTP are not permitted.
  If you connect to the CMR via an HTTP connection, activate and save this option, the existing HTTP connection between the PC and CMR can no longer be used. After activating and saving this option, the new HTTPS URL of the CMR is displayed as a link at the top of the page. Click on the link to remain connected to the CMR without an interruption.
- **Enable HTTPS on the mobile wireless interface**
  Select the option to enable secure communication with the CMR via the internet and the mobile wireless network using HTTPS. To achieve this port 443 on the WAN interface is opened.
  Note:
  HTTPS is always enabled on the LAN interface.

**Note**

**Connections with HTTPS access via the mobile wireless interface**

The CMR makes precisely one connection available on the mobile wireless interface. You should therefore use browsers that also only operate with one connection (Mozilla Firefox, Apple Safari). With browsers that require at least two connections (e.g. Internet Explorer 11, Edge, Chrome) no functioning connection will be established or the Web pages will not be displayed correctly.

**Note**

**Updating pages with HTTPS access**

Use the following options to update and reload a Web page:

- The WBM button "Update"
- Click on the link of the required page in the navigation on the left in the browser window
- Repeat the entry in the address line

Avoid updating pages using the standard browser mechanisms ("Reload page" or F5).

Depending on the device and the mobile wireless network, the setup of the pages can take several seconds and with a bad connection or cell change be interrupted.

**Own certificate**

In the factory settings the CMR uses a self-issued server certificate for authentication with the communications partner (client). In the browser of the PC from which you want to connect with the CMR, in this case a message is displayed when establishing the connection.

**Note**

**Warning message regarding the certificate (HTTPS)**

When you establish the connection via HTTPS when you log in a warning message is displayed indicating that the Web page is unsafe or that the certificate is not trustworthy. If you are sure that you have entered the correct address, ignore the message. Also add the connection to the exceptions in your Web browser (depending on the browser).

As an alternative you can import a third-party certificate, for example a certificate issued by the client application.

- **Currently used file**
  Display of the file name of the currently used file
- **Delete**
  With the button, you delete the currently used file. The file is deleted only after you click the "Apply" button.
  After deleting an imported certificate, the CMR once again uses the self-issued certificate from the factory settings.
- **File used after applying**
  After loading the certificate, the name of the loaded file is displayed here.
- **Load new file**
  After selecting a file stored on the configuration PC using the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a certificate file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the button "Load on device" load the selected file on the CMR.

**Own key**

In the factory settings the CMR uses a self-generated private key for encryption of the data to be transferred via SSL/TLS.

As an alternative you can import a third-party key, for example a private key. A private key without password must be used.

- **Currently used file**
  Display of the file name of the currently used file
- **Delete**
  With the button, you delete the currently used file.
  The file is deleted only after you click the "Apply" button.
- **File used after applying**
  After loading the key file, the name of the loaded file is displayed here.

- **Load new file**
  After selecting a key file stored on the configuration PC using the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a key file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the button "Load on device" load the selected file on the CMR.

## 5.13 Users / groups

You can create and configure a maximum of 50 users in the CMR.

You can then create up to 25 user groups. You can assign up to 10 users to the individual user groups.

You will find a description of creating, changing and deleting users and groups in the section General functions of the WBM (Page 60).

### 5.13.1 User

You can enter a maximum of 50 users in the tab. You assign attributes and rights to these users.

If you click the "Apply" button, all the settings you made in the "User" tab are adopted.

**Note**

**Permitted characters and lengths of passwords**

You will find the conditions for passwords in the section Permitted characters and string lengths (Page 64).

#### Add a new user / Change user

- To add a new user, click the "Add" button.
  The parameter group "Add a new user" is opened where you configure the parameters in even put boxes and drop-down lists.
- To change the data of an existing user, select the user in the list at the top.
  In the parameter group "Change user" you can change all the data of the user except the user name and password.
  To change the user name and password of the user as well, click the "Change login data" button. After this, the input boxes for the user name and password are enabled.

**Configuration**

- **Name**
  Freely selectable name, for example first name and surname. This name is not used as a login to the WBM and may contain special characters.
- **Description**
  Freely selectable text for a more detailed description of the user, e.g. "Service technician".
- **Phone number**
  Phone number at which the user can be reached.
  You can also create phone number groups by using the * (asterisk) character. For example, with the entry "+49172*", all phone numbers that start with "+49172" are authorized to send SMS messages to the CMR.

  **Note**

  **Note the following when using phone number groups**

  When using phone number groups, remember that the users of these groups cannot receive SMS messages. The users of these groups are only authorized to send SMS messages to the CMR.

- **Allow receipt of SMS messages**
  "Allow receipt of SMS messages" means that the created user can send SMS commands to the CMR.
  - An SMS message of the user with the specified phone number is received and evaluated (allow receipt)
  - An SMS message of the user with the specified phone number discarded: the SMS message is not evaluated (do not allow receipt).
- **Phone number of this user can be changed using SMS**
  You can change the phone number of this user with the "CHANGEUSER" with an SMS message.
  Changing the phone number using an SMS message can be useful in the following situations:
  - If you want to set up a substitute for a period of vacation.
  - If a phone number has changed and you cannot or do not want to make this change locally or using the WBM.
- **Allow calls**
  "Allow calls" means that the created user can call the CMR with the configured phone number or phone number group to trigger actions.
- **E-mail address**
  Email address of the user for receiving e-mails
  If no e-mail address is entered, the user cannot receive any e-mails from the CMR.
- **Change login data**
  Click the button if you want to change the user name and password of the user.
- **User name**
  This is the User name with which the user logs in to the WBM of the CMR.
- **Password**
  Password of the user for logging in to the WBM of the CMR
  The password must be in keeping with the displayed password rules.

- **Repeat password**
- **Do not use password rules**
  If you enable this option, the default password rules are turned off and you can use a freely selected password. The length remains restricted to a maximum of 20 characters.

With the "Apply" button all changes are adopted and the list is updated.

## 5.13.2 User groups

In this tab, you set up your user groups or make changes to user groups that have already been set up.

You can set up a maximum of 25 groups each with 10 users per group.

### Add new group / Change group data

- To add a new group, click the "Add new group" button.
  In the parameter group "Add new group" configure the input boxes and drop down lists of the parameters.
- To change the data of an existing group, select the group in the list at the top.
  In the parameter group "Change group data" change the input boxes and drop down lists of the parameters.

In the lower part of the page you will find all the configured uses with phone number and e-mail address.

If you select a group in the list at the top of the page, the users that are assigned to this group are marked with a check.

**Configuration**

- **Name**
  Freely selectable user group name. This name must not contain any special characters.
- **Description**
  Freely selectable text for a more detailed description of the group.
- **Group type**
  - SMS: This group is intended for receiving SMS messages.
  - E-mail: This group is intended for receiving e-mails.
  - Incoming calls: Only includes users which have been assigned a phone number. Wildcard character (*) permitted in phone number.
  - Outgoing calls: Contains a maximum of two users whose phone number must not include a wildcard symbol (*).

With the "Apply" button all changes are adopted and the list is updated.

## 5.14 Monitoring

Before you begin to configure the monitoring of the BM or the CMR in standalone mode, we recommend that you get an overview of the principle of monitoring and its functions in the following section.

You will find a detailed description of the function in the relevant sections relating to the WBM tabs.

You will find a description of creating, changing, and deleting elements in the individual tabs (texts, signals, actions, etc.) in the section General functions of the WBM (Page 60).

You will find an example of configuring monitoring at the end in the section Example of a monitoring configuration (Page 131).

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**Note**

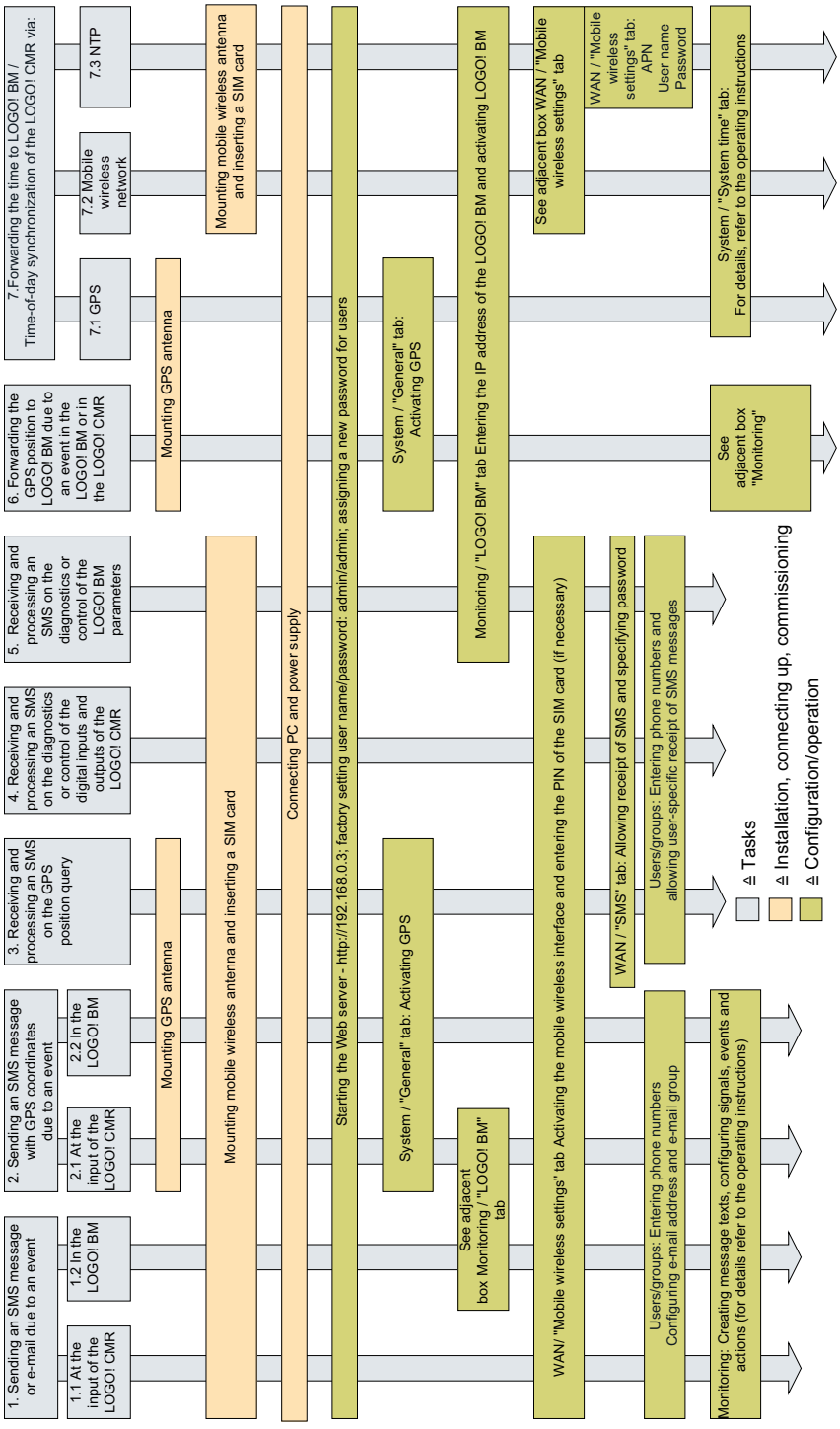
**High data volume due to monitoring the BM**

Note that monitoring the BM involves a high data volume.

---

## 5.14.1 Monitoring - What do I need to do?

To allow better orientation, you will find a graphic overview of the individual applications/tasks and the steps required here:



## 5.14.2 Monitoring functions

### The monitoring functions

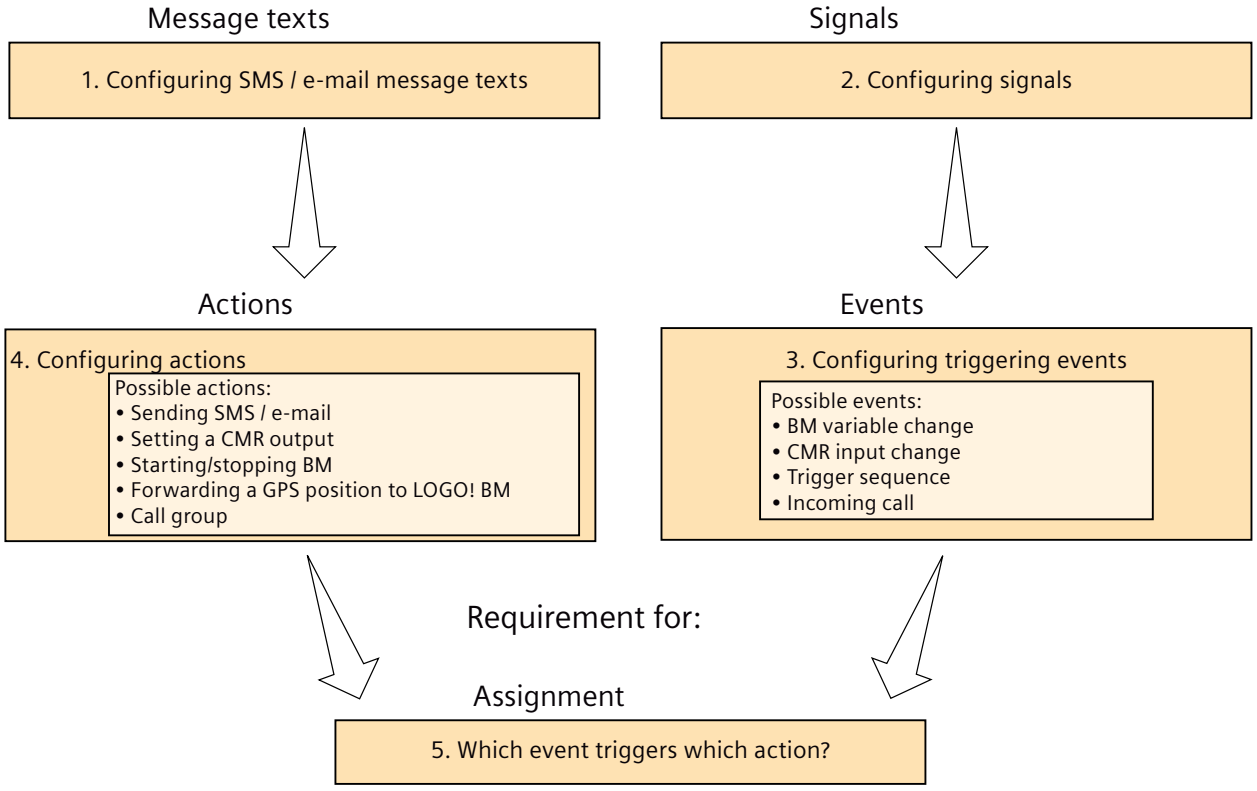



Figure 5-4 Monitoring - procedure for configuration

### Tabs of the group "Monitoring" - Overview.

- **"Overview tab"**
  The "Overview" tab shows all configured signals and their current status.
  When shipped, the inputs and outputs of the CMR have already been created as signals.
  Signals of the signal source LOGO! BM are displayed in red if there is no connection between the CMR and BM.
- **"LOGO! BM"** tab
  A connection between the CMR and BM is only established if you have selected the "Active" option.
  If the option is disabled, no connection to the BM is established.
  - Enter the IP address of your BM.
  - Check whether the entered IP address can be reached by the CMR.
  - Query interval for process image: Specify the intervals at which the process image of the BM is read by the CMR.

- **"Constants tab"**
  For writing access to the BM by SMS, here you specify fixed values for the variables to be written.
- **"Message texts tab"**
  You create texts you want to send using SMS or e-mail. You assign symbolic names to the message texts.
  You configure the sending of these texts to a recipient or recipient group as an action in the "Actions" tab. You assign this action to an event in the "Assignments" tab.
- **"Signals tab"**
  You first specify which signals from the BM or the CMR you want to monitor; e.g. the digital input 1 (I1) of the BM.
  You can give all signals symbolic names.
- **"Events tab"**
  For the selected signal, you configure an event, for example I1 "Changes to 0".
- **"Actions tab"**
  You specify one or more actions, initially not associated with an event:
  - Send an SMS message or e-mail to a user group or make a call
  - Set an output in the CMR
  - Send an SMS message with the process image
  - Forward a GPS position to LOGO! BM
  - Change the program status of the LOGO! BM .

  You can give all actions symbolic names.
- **"Assignments tab"**
  You assign certain actions to the configured events, for example sending an SMS message to a particular recipient group if an output of the BM changes.
  In the lower part of the page under "If: " and "Then:" you will see which action will be executed along with all the set parameters.

### 5.14.3 Overview

All configured signals of the BM and the CMR are displayed with symbolic names and their current status.

After resetting to factory settings, the inputs and outputs of the CMR are displayed as when shipped.

#### Display if the connection between the CMR and BM is interrupted

- In the "LOGO! BM" tab, you have configured a connection between the CMR and BM.
- You have configured LOGO!-BM signal types in the “Signals" tab .

The connection between the CMR and BM is interrupted, for example by removing the Ethernet cable:

- The error LED of the CMR is lit red.
- The "Overview" tab shows all configured signal types of the BM in red characters.
- If the "LOGO! BM" signal was configured with the signal types "CS - communications status", the signal changes to the status "Off".

**Note**

**Delayed display of the interrupted connection**

The interrupted connection is detected by the CMR after a delay of several seconds.

## 5.14.4 LOGO! BM

### Establishing communication between BM 8.0 to 8.2 and CMR

1. Enter the IP address of your BM in the "IP address of the LOGO! BM" input box.
2. Select the "Active" check box. This establishes a connection between the CMR and BM. If the check box is disabled, there is no connection between the CMR and BM.
3. With "Update interval for process image" you specify the intervals (selection: "1 second" and "10 seconds") at which the process image of the BM will be read by the CMR. The CMR keeps a copy of the current process image and on request sends it as a reply SMS message or e-mail, see sections SMS commands (Page 174) and Reply SMS message to the "MONITOR?" command (Page 178).
4. Leave the "Maximum permissible processing time (100 ms)" set to the value "1".
5. Select the communication profile "LOGO! BM 8.0 up to 8.2".
6. Then click the "Apply" button. The settings you have made are applied.
7. Click the "Ping LOGO! BM" button: You test whether the entered IP address can be reached by the CMR. A message is displayed indicating whether or not the IP address can be reached.

## Establishing communication between BM as of 8.3 and CMR

Starting with version 8.3, the BM only supports a secure connection between CMR and BM. The CMR communicates via the LSC / LWE access of the BM. Enable this access in the LSC and protect it with an optional password protection.

**Note**

**Simultaneous access of CMR and LSC/LWE to BM**

When secure monitoring by a CMR is activated, no simultaneous access from LSC/LWE to the BM is possible. For access of the BM with active monitoring, the process communication of the CMR must be stopped.

With an active LSC/LWE connection to the BM, monitoring of the CMR cannot be started.

1. Enter the IP address of your BM in the "IP address of the LOGO! BM" input box.
2. Select the "Active" check box. This establishes a connection between the CMR and BM.
   If the check box is disabled, there is no connection between the CMR and BM.
3. With "Update interval for process image" you specify the intervals (selection: "1 second" and "10 seconds") at which the process image of the BM will be read by the CMR.
   The CMR keeps a copy of the current process image and on request sends it as a reply SMS message or e-mail, see sections SMS commands (Page 174) and Reply SMS message to the "MONITOR?" command (Page 178).
4. Enter the "Maximum permissible processing time (100 ms)" . This way you specify the time (value range: 1 ... 50) that may pass in the LOGO! BM between receipt of a read or write job from the CMR and its processing. The more complex the loaded program, the greater the entered value should be.
5. Select the communication profile suitable for your LOGO! BM, either "LOGO! BM 8.3" or "LOGO! BM 8.4 and higher". A secure connection between CMR and BM is activated, and the following fields are enabled.
6. Analogous to the setting "Enable password protection for LSC & LWE access" in the LSC, select the "Password protection" check box.
   The "Password" field is enabled. When the check box is deactivated, the CMR does not use a password when logging in to the BM. Use this setting when you have deactivated the password protection in the LSC.
7. In the "Password" field, enter the password configured in the LSC for LSC / LWE access.

**Root certificate**

By default, the "LOGO! root certificate" of the BM is downloaded to the CMR. If you change the communication profile, the root certificate is adapted as follows:

- LOGO! BM 8.0 to 8.2: Certificate is deleted; note: "! Non-secure connection"
- LOGO! BM 8.3: V8.3 root certificate is entered
- LOGO! BM 8.4 and higher: V8.4 root certificate is entered

**Note**

**Authentication of the BM with the CMR**

The certificate serves to authenticate the BM with the CMR. To ensure that the CMR only communicates with the desired BM, set an individual certificate for the BM in the LSC and then import this certificate into the CMR.

Certificates are not absolutely necessary for operation.

- **Currently used fingerprint SHA-1**
  Display of the fingerprint of the currently used file.
- **Fingerprint SHA-1 after Apply**
  Display of the fingerprint of a new loaded certificate file before pressing the "Apply" button.
- **User Defined**
  Enable this option to load your own certificate. You load your own certificate using the "Browse" button.
  After the option is enabled, the root certificates are no longer adapted automatically when the communication profile is changed.
- **Load new file**
  After selecting a file stored on the configuration PC using the "Search" button, the file name is displayed here.
- **Search**
  Searches the file system of the configuration PC for a certificate file saved there that is intended to be loaded on the CMR.
- **Load on device**
  With the button "Load on device" load the selected file on the CMR.
- **Delete certificate**
  With the button, you delete the currently used file. The file is deleted only after you click the "Apply" button.

1. You can load a different certificate to the CMR.
2. Then click the "Apply" button. The settings you have made are applied.
3. Click the "Ping LOGO! BM" button:
   You test whether the entered IP address can be reached by the CMR. A message is displayed whether the IP address can be reached or not.

### Start/stop process communication

**Note**

**Reconfiguration with stopped CMR**

When you change the configuration of a CMR in the STOP state, it automatically changes to the RUN state after the configuration was successfully applied.

For LSC or LWE access to a monitored BM ≥ 8.3, communication of the CMR with the BM must be stopped. Communication can be started again after LSC or LWE access to the BM.

For information on this, refer to section General functions of the WBM (Page 60).

## 5.14.5 Constants

### Configuration of the constants

In the table, configure the values for the constants for writing SMS messages. This is useful when you often send the same values in SMS messages. You then do not need to write the scalar value in the SMS text, instead you write the name of the constant.

You configure symbolic names as placeholders for the value to be written.

- Name
  Name of the constant
- Value
  Value to be written that replaces the name of the constant on receipt.

**Example 1**

- The name of the constant is: OFF
  The name of the constant is transferred in the SMS text instead of the actual value.
- The configured value of the constant is: 0
- The SMS text is as follows: <Password>;LOGO=VM125,OFF,BYTE

When it receives an SMS message with the text "<Password>;LOGO=VM125,OFF,BYTE", the CMR first checks the configured password.

Then according to the configuration in the table the CMR translates the remaining text into "LOGO=VM125,0,BYTE" and writes this to the variable memory of the BM.

**Example 2**

In this example instead of the address in the variable memory a configured signal is used, for more information, see section Signals (Page 122).

- The name of the constant is: OFF
  The name of the constant is transferred in the SMS text instead of the actual value.
- The configured value of the constant is: 0
- The signal "Light" is configured as  VM125,BYTE
- The SMS text is as follows: <Password>;LOGO=Light,OFF
  Please note: When using a configured signal, you must not send the data type (here: BYTE) in the SMS text.

When it receives an SMS message with the text "<Password>;LOGO=Light,OFF", the CMR first checks the configured password.

Then according to the configuration of the constant and the signal the CMR translates the remaining text into "LOGO=VM125,0,BYTE" and writes this to the variable memory of the BM.

## 5.14.6 Message texts

### Adding a new message text

You can create various SMS message and e-mail texts.

You can assign a symbolic name to every message text. You can create the text freely with a maximum of 160 characters per message text.

- You configure which texts are sent to which recipient groups in the Actions (Page 126) tab.
- If you click the "Apply" button, all the settings you made in the "Message texts" tab are adopted.

### Sending process values and parameters along with the message

In the SMS and e-mail message texts and in the e-mail subject, you can also send process values and parameters such as time, date and GPS position.

If placeholders are used, 2 SMS messages will be sent under some circumstances.

You will find the formats permitted for the placeholders of the process values in Permitted characters and string lengths (Page 64).

## 5.14.7 Signals

In this tab you configure individual signals for further use.

A maximum of 32 signals can be configured.

**Signals for the monitoring**

Here you specify which process data or changes, statuses, triggers or other internal data that you want to use as signals for further monitoring. You then use these signals to configure the events.

**Signals for SMS and e-mail texts.**

Except for call signals, you can use all signals of the data source BM and CMR as placeholders for variables in the text of SMS messages and e-mails. Call signals are not replaced and are not part of the process image.

Please note: When using a configured signal, you must not send the data type in the SMS text.

**Examples**

- **Example 1**
  You configure:
  - Signal name = Motor_2
  - Signal source = LOGO! CMR
  - Signal type = I/O
  - I/O type = Output
  - Number = 1

  Receipt of SMS messages
  When it receives an SMS with the text "OUTPUT=Motor_2,0" the CMR interprets the SMS text as "OUTPUT=O1,0".
  The command sets the signal "Motor_2" in other words output 1 of the CMR to the value zero.
- **Example 2**
  As a result of the SMS, a value from the variable memory of the BM will be written to a different variable of the BM. To do this use two signals.
  You configure:
  - Signal name 1 = Basin_1
  - Signal source = LOGO! BM
  - Signal type = VM - variable memory
  - Data type = WORD
  - Address = 107

  and
  - Signal name 2 = Volume_3
  - Signal source = LOGO! BM
  - Signal type = VM - variable memory
  - Data type = WORD
  - Address = 50

  Receipt of SMS messages
  When it receives an SMS with the text "LOGO=Basin_1,Volume_3" the CMR copies the value of "Volume_3" to the signal "Basin_1".

**Signals for calls**

You can select from the following signal types:

- **Call without code**
  You can configure one signal of this signal type when the security setting "Use no code" is set in the "WAN > Calls" tab.
- **Call with one-digit code**
  You can configure up to ten signals (with different code) of this signal type when the security setting "One-digit code" is set in the "WAN > Calls" tab. In the "Security code" field, specify the one-digit code (value range: 0 ... 9). To trigger an action, the calling user must enter this code.
- **Call with four-digit code**
  You can configure up to ten signals (with different code) of this signal type when the security setting "Four-digit code" is set in the "WAN > Calls" tab. In the "Security code" field, specify the four-digit code (value range: 0000 ... 9999). To trigger an action, the calling user must enter this code.

**Signal sources and Signal types**

As the signal source the BM or the CMR can each be configured with their own signal types. The following signal types can be selected:

- **Signal types BM**
  With "LOGO! BM" these are all the components of the BM process image, the areas of the variable memory, the program status and the connection status with the CMR.
  - Digital input
  - Digital output
  - Digital bit memory
  - Analog input
  - Analog output
  - Analog memory bit
  - Function key
  - Cursor key
  - Digital shift register
  - Program status
  - Communication status (status of the communication with the CMR)
  - Variable memory
- **Signal types CMR**
  With "LOGO! CMR" these are the inputs and outputs, triggers, connection status of the mobile wireless interface or call signals.
  - I/O (input/output)
  - Trigger
    As an alternative you can create the following trigger types:
    - Periodic trigger that fires cyclically.
    - Time trigger that fires once a day.
  - Connection status wireless mobile network
  - Connection status data service
  - Depending on the security setting (see section "Signals for calls"): Call without code, Call with one-digit code, Call with four-digit code

## Change signal / Add new signal

- **Name**
  Symbolic name of the signal
  Following this the signal name is used for the event and assignment configuration and can be used in SMS commands.
- **Signal source**
  "LOGO! BM" for the BM or "LOGO! CMR" for the CMR
- **Signal type**
  (see list above)

Depending on the signal type further drop down lists are displayed:

- **Trigger type**
- **Number**
- **Address**
- **Bit**

## 5.14.8 Events

For a selected signal, you configure an event, for example I1 "Changes to 0".

In the upper part of the page, you will see a list with the currently configured events.

A maximum of 32 events can be configured.

### Add event / Change event

An input box and additional drop-down lists are then available for the configuration:

- **Name**
  Freely selectable symbolic name for the event.
  Following this the event name will be used for the assignment configuration.
- **Signal name**
  Select the relevant signal from the drop-down list.
  All the signals you have configured along with their symbolic names are available.
- **Event**
  You configure the event. Examples:
  The digital input changes from "1" to "0".
  The analog flag falls below or exceeds the value you specify this point.
  Call events
- **Group**
  For the selection "is called by", you must also select the group. The event is only triggered when the calling number is a member of this group.

Depending on the selection you have made in "Signal name" and "Event", further buttons will become available with which you can complete your event.

## 5.14.9 Actions

Configure one or more actions that you can later link to events in the "Assignments" tab.

In the upper part of the page, you will see a list with the currently configured actions.

A maximum of 32 actions can be configured.

## Add new action / Change action

### Add action

In the lower part of the page, click the "Add" button.

An input box and three drop-down lists are then available for the configuration:

### Change action

To change an action, follow the steps below.

1. In the list, select the row with the action you want to modify.
2. Change the action with "Change action" in the lower part of the page.
3. Then click "Apply".

### Parameter

- **Name**
  Freely selectable symbolic name for this action.
  Following this the action name will be used for the assignment configuration.
- **Target system**
  Target system of the action:
  - LOGO! CMR
    If you select the CMR, you can use the two outputs of the CMR as the target element of an action, e.g. opening an output.
  - LOGO! BM
    If you select the BM as the target system of your action you can change the status of the BM program or forward the GPS position to the BM.
  - Send e-mail
    With this selection you configure the user group (see below), the subject, the message text and possibly an attachment.
  - Send SMS
    With this selection you configure the user group (see below) and the message text.
  - Send PA-SMS (send SMS of the process image)
    With this selection you configure the user group (see below).
  - Make call
    With this selection you configure the user group (see below).
- **Target element**
  Only with selection of the target systems "CMR" and "BM". Here, select the required element.
  - CMR: Output
  - BM: Program status, GPS position

  Depending on the selection you have made further drop-down lists will become available with which you specify your action.

**Other parameters**

- **User group**
  When selecting a target element for sending an SMS or e-mail or for making a call, you select a user group but no individual users or phone numbers.
  If you select the target system "Send e-mail" the options "Subject" and "Text" are available for which you need to select configured message texts and the option of sending an attachment with the-e-mail.
  If you select "Send SMS" or "Send PA-SMS" as the target system, you can choose from the SMS user groups you have configured.
  When selecting the target system "Make call", you configure the user group of the type "Outgoing calls".
- **Subject / message text**
  Depending on the type of message to be sent (e-mail / SMS) you configure a subject and a message text. You need to have configured the texts earlier in the "Message texts" tab.

You can select the transfer of the current GPS position data to LOGO! BM as an action. Triggering events can, for example be the expiry of a timer or the status change of a BM or CMR input.

The basic sequence for configuration remains unchanged:

1. Configure LOGO! BM settings
2. Configure signal
3. Configure event
4. Configure action with the destination "LOGO! BM"" and the target element "GPS position"
5. Configure assignment

The start address at which the GPS position data is stored in the VM of the LOGO! BM must be in the range 0 to 112.

**Data structure of the GPS position data**

The block of data transferred to the BM is written byte by byte and has a length of 16 bytes. The data block is structured as follows:

---

**Note**

**Representation of the letters**

Letters are represented as decimal ASCII characters: E.g. "78" for "N" and "83" for "S" and "69" for "E" and "87" for "W".

---

**Note**

**Evaluate application on the BM: “state“ and “count“**

To ensure data consistency, the BM application needs to evaluate the "state" and "count" bytes:

1. If "state" = "invalid": Data is currently being written by the CMR.
   Access is possible only if "state" = "valid" is set.
2. If "state" = "valid": Next, you read the Write Counter and store the value read in.
3. After you have completely read the data structure, check whether or not the Write Counter has changed its value.
   – If the value has not changed, you can continue to use the data structure.
   – If the value has changed, repeat the read cycle and start at "1.".

| Byte number | Parameter | Meaning |
|---|---|---|
| 0 | latNS | North / South (N/S) |
| 1 | latD | Degrees (0 ... 179) |
| 2 | latM | Minutes (0 ... 59) |
| 3 | latS | Seconds (0 ... 59) |
| 4 | latSF | Seconds Fraction (0 ... 99) |
| 5 | lngEW | East / West (E/W) |
| 6 | lngD | Degrees (0 ... 179) |
| 7 | lngM | Minutes (0 ... 59) |
| 8 | lngS | Seconds (0 ... 59) |
| 9 | lngSF | Seconds Fraction (0 ... 99) |
| 10<br>11 | alt | Altitude meters (-32767 ... +32767) |
| 12 | satNum | Number of satellites in use |
| 13 | state | GPS signal state (0,1,2)<br>• 0: invalid<br>“invalid = 0" is set by the CMR during a write procedure.<br>• 1: current position<br>• 2: not current position |
| 14 | count | Write Counter: This is incremented each time the GPS data is written by the CMR. |
| 15 | res1 | reserved for later use |

## 5.14.10 Assignments

You assign an action to an event you have configured.

In the upper part of the page, you will see a list with the assignments configured up to now:

- A maximum of 32 assignments are possible.
  If you have not yet specified an assignment, the list is empty.

In the lower part of the page, under "Change assignment", you will find the area required for specifying an assignment.

**Note**

**The monitoring of the event only becomes active with the assignment event → action**

1. You have configured message texts, signals, events and actions.
2. Assign the event to an action.
3. Select the "Activate assignment" check box.
   With this, you activate the assignment for monitoring.
   With the assignment of an action to an event, the relevant event is only monitored when this assignment is active.

**Note**

**Actions from events of LOGO! BM**

The following requirements apply to the monitoring of events from BM and configuring them as an assignment:

- The connection between the CMR and BM is established.
- The program status of LOGO! BM is 1 (RUN)

### Add new assignment

1. In the lower part of the page, click the "Add" button.
2. Following this, you will see three blocks with input boxes, drop-down lists, check boxes and grayed out text boxes for the configuration.

Name

- Freely selectable symbolic name for this assignment.
- Activate/deactivate the assignment in the "Activate assignment" check box.

**If:**

Event

- From the drop-down list, select the entry of the event you have created.
  The entry is displayed with the symbolic name you assigned.
  The grayed out boxes "Signal name", "Signal" and "Event" show you which event with the information shown will be used as the "If condition":
  - Signal name
    You have already made the setting in the Signals (Page 122) tab:
    Display of the symbolic name you assigned for a signal.
  - Signal definition
    You have already made the setting in the Signals (Page 122) tab:
    Display of the signal (signal source, signal type) that you are using under the symbolic name you selected.
  - Event definition
    You have already made the setting in the Events (Page 126) tab:
    Display of the event that you configured. The name originates from the "Event configuration" column.

**Then:**

Action

- From the drop-down list, select the entry of the action you have created.
  The entry is displayed with the symbolic name you assigned.
  The grayed out "Action configuration" allows you to check the configured action. The content corresponds to the corresponding column in the "Actions" tab.

## 5.14.11 Example of a monitoring configuration

The following simple example is intended to illustrate the steps for a monitoring configuration as explained above.

### Assumptions

- A container's fill level is monitored. If the maximum fill level is exceeded, and alarm message will be sent to the maintenance staff in the form of an SMS message.
- The maintenance staff consists of two employees, "User-1" and "User-2".
- The fill level sensor is connected to input no. 1 of the LOGO! BM:
  If the limit value is exceeded, the fill level sensor sets digital input no. 1 to "1".

## Procedure

Requirement: The CMR and BM must be connected via an Ethernet cable.

1. In the "LOGO! BM" tab, enter the IP address of the BM in the "IP address of the LOGO! BM" input box.
2. Select the "Active" check box so that the CMR establishes a connection to the BM.

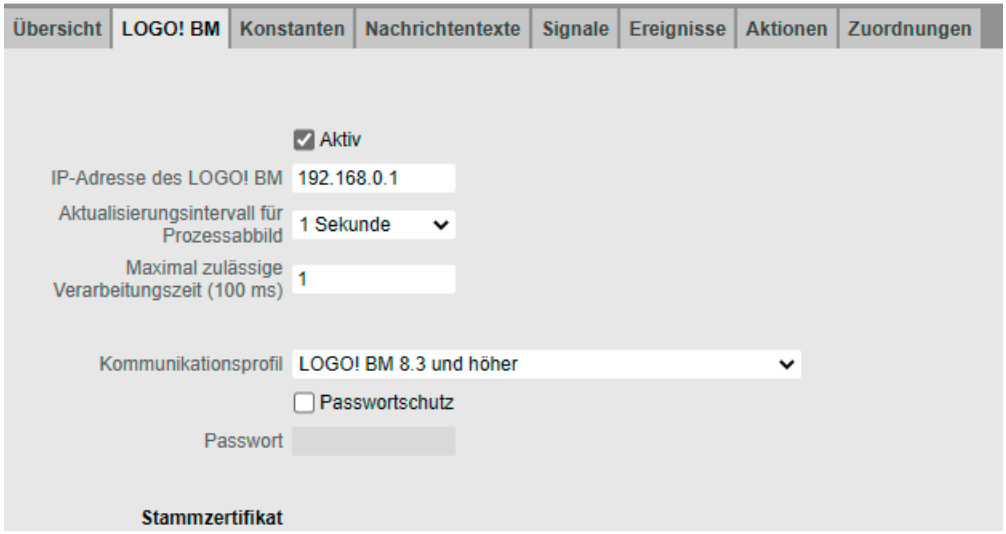



Figure 5-5 Monitoring - "LOGO! BM" tab: Establishing a connection to the BM

3. Enter the two users User 1 and User 2 in the "User" tab with the following properties:

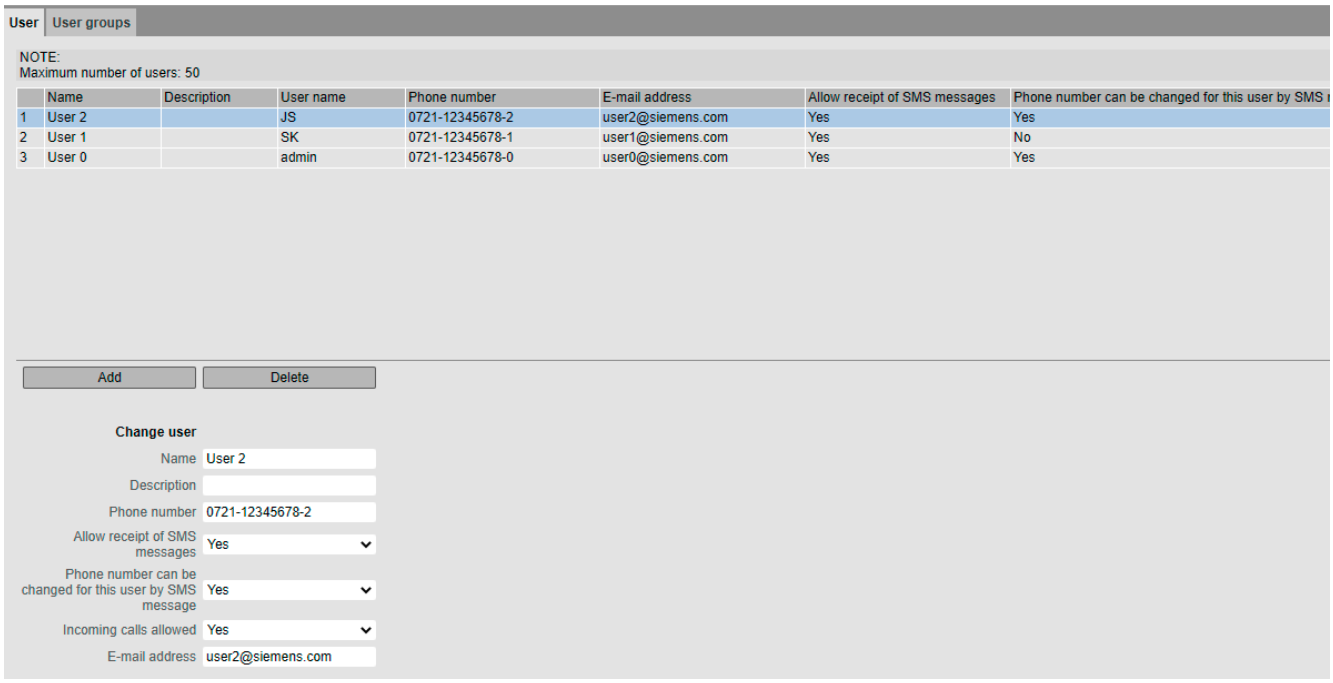



Figure 5-6 Users / groups - "User" tab: Configuring users

User 1

- User 1 is the fitter with the user name "SK".
- With the phone number 0721-12345678-1, User 1 has the right to send SMS messages to the CMR (e.g. writing commands, DIAG?, etc.).
- The phone number of User 1 can be changed using the SMS command "CHANGEUSER": For example if there is a colleague with a different phone number substituting during the user's vacation.

User 2

- User 2 is the foreman with the user name "JS".
- With the phone number 0721-12345678-2, User 2 has the right to send SMS messages to the CMR (e.g. writing commands, DIAG?, etc.).
- The phone number of User 2 can also be changed using the SMS command "CHANGEUSER".

4. Assign the two employees to the user group "Maintenance". The group belongs to the organizational unit "Service" (parameter "Description"):

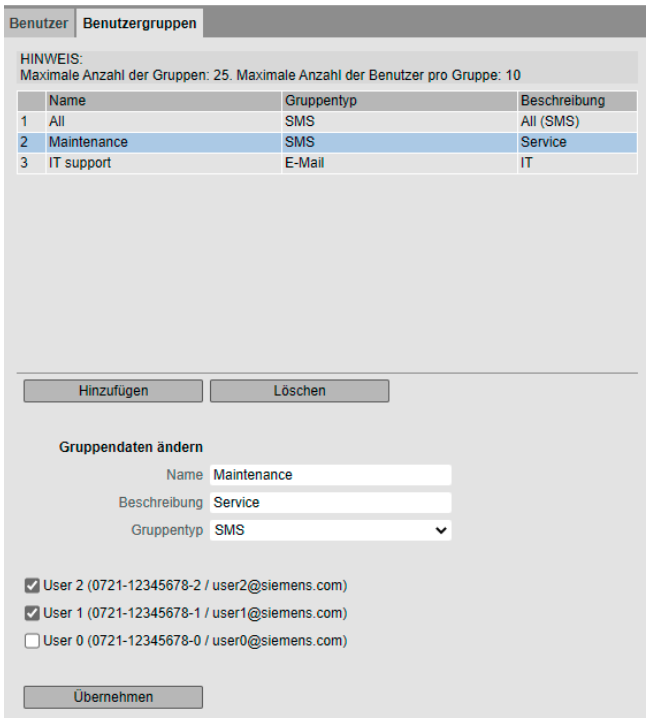



Figure 5-7 Users / groups – "User groups" tab: Assign user group

5. In the "Message texts" tab enter the text "Overflow 1" for the text "Alarm1" in the "Content" input box.

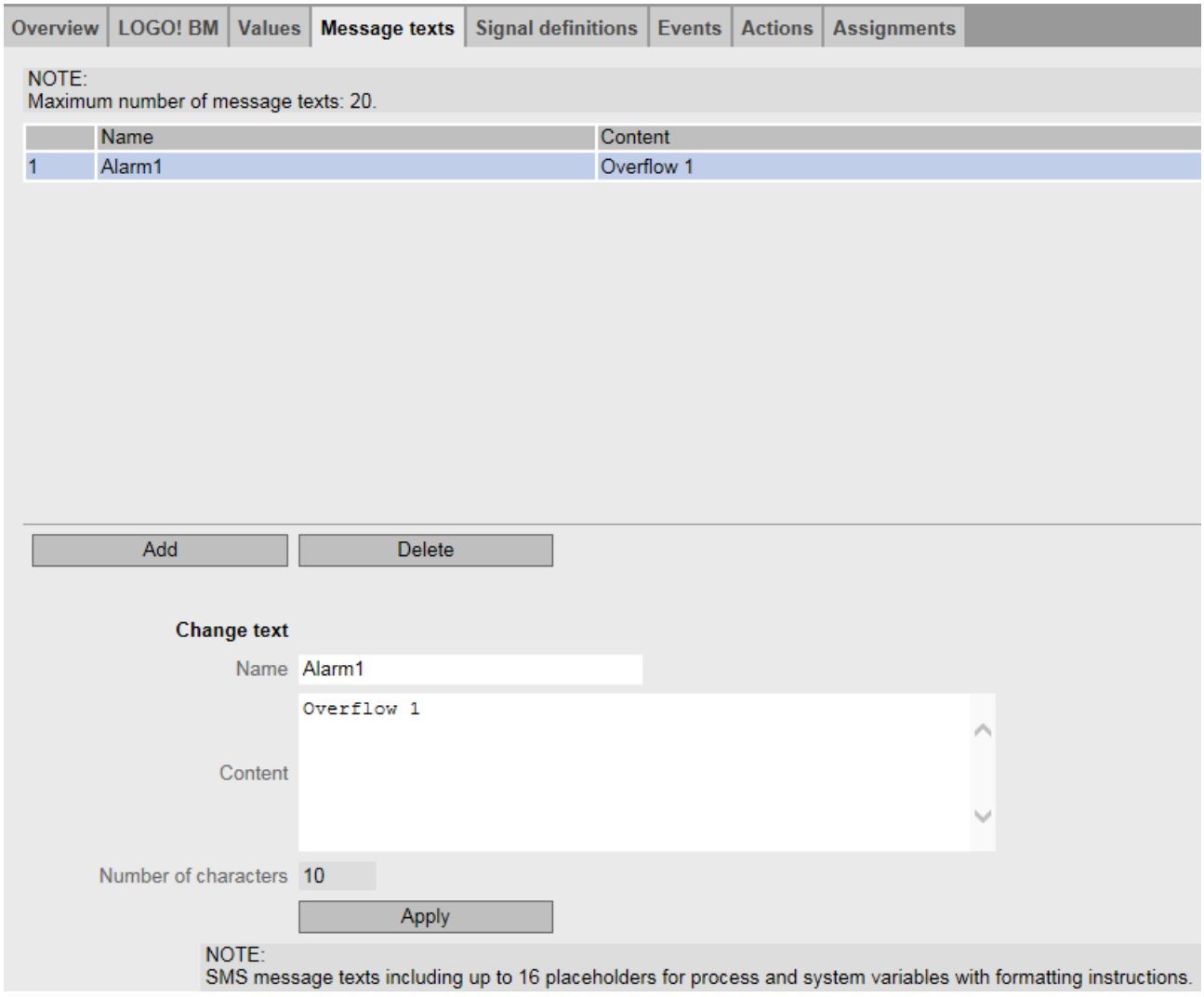



Figure 5-8 Monitoring – "Message texts" tab: Configure the text of the alarm SMS message

6. Create the signal by assigning the signal name "LOGO_DI1" to digital input 1 of the BM as the signal source:

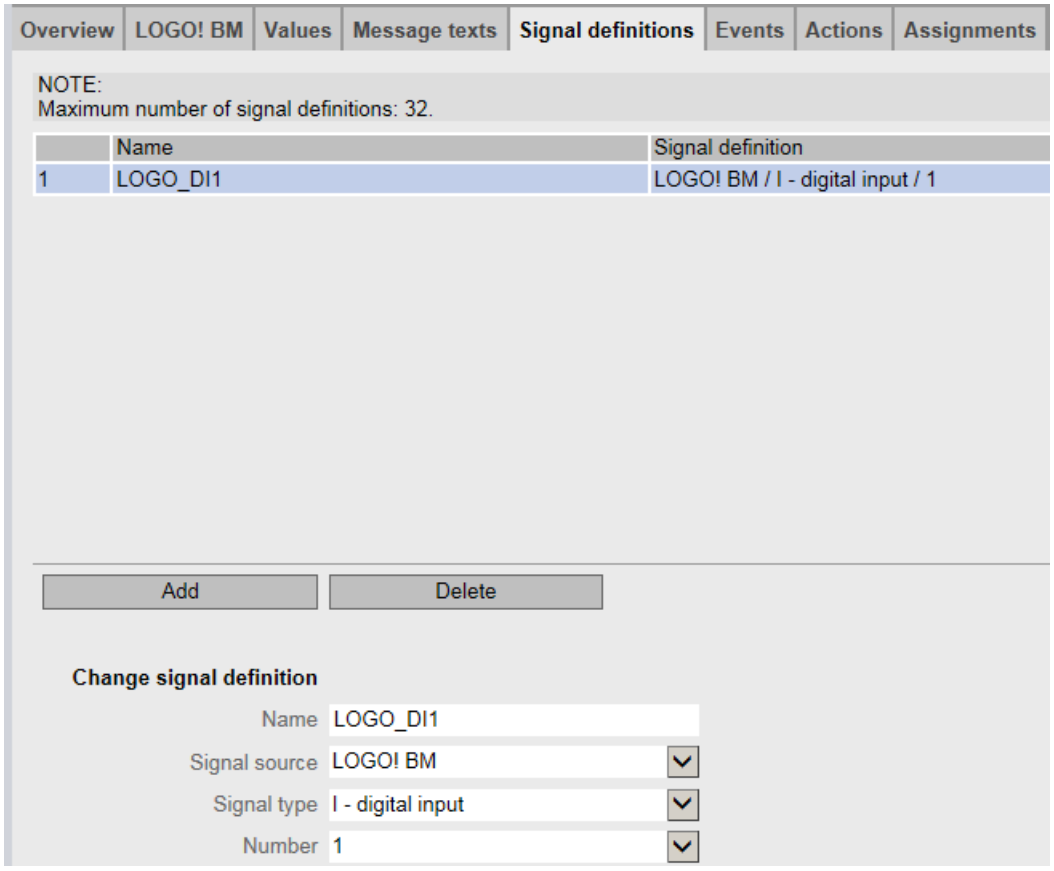



Figure 5-9 Monitoring – "Signals" tab: Creating a signal

7. Create the event to be linked to the signal:

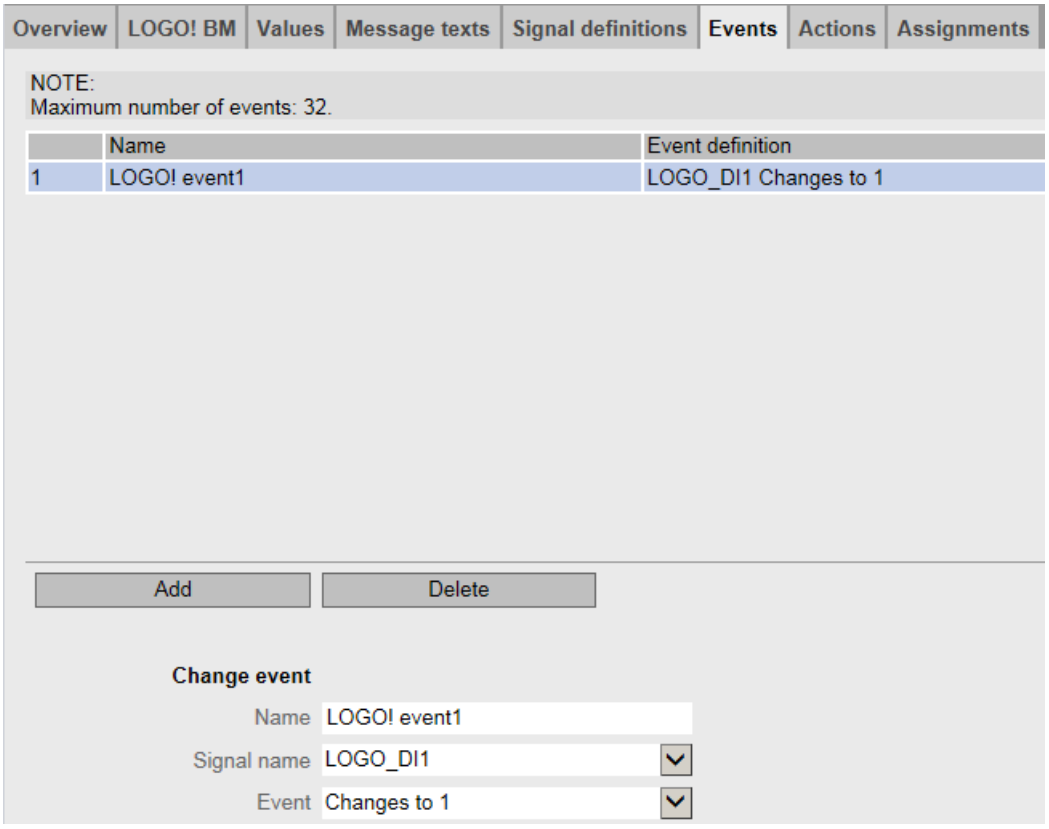



Figure 5-10 Monitoring – "Events" tab: Creating an event

8. Configure an action that will be performed when the created event occurs. The action should be to send an alarm SMS message:

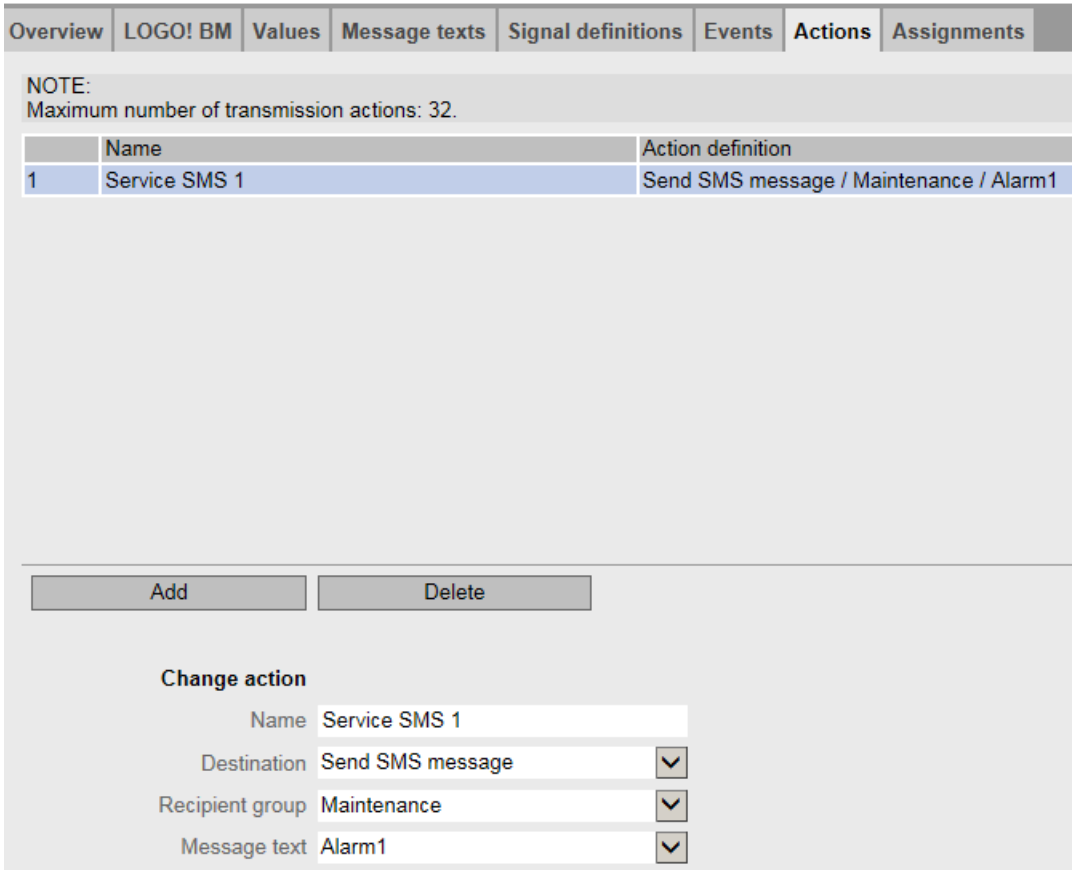



Figure 5-11 Monitoring – "Actions" tab: Configuring the action

9. Finally link the event with the intended action.

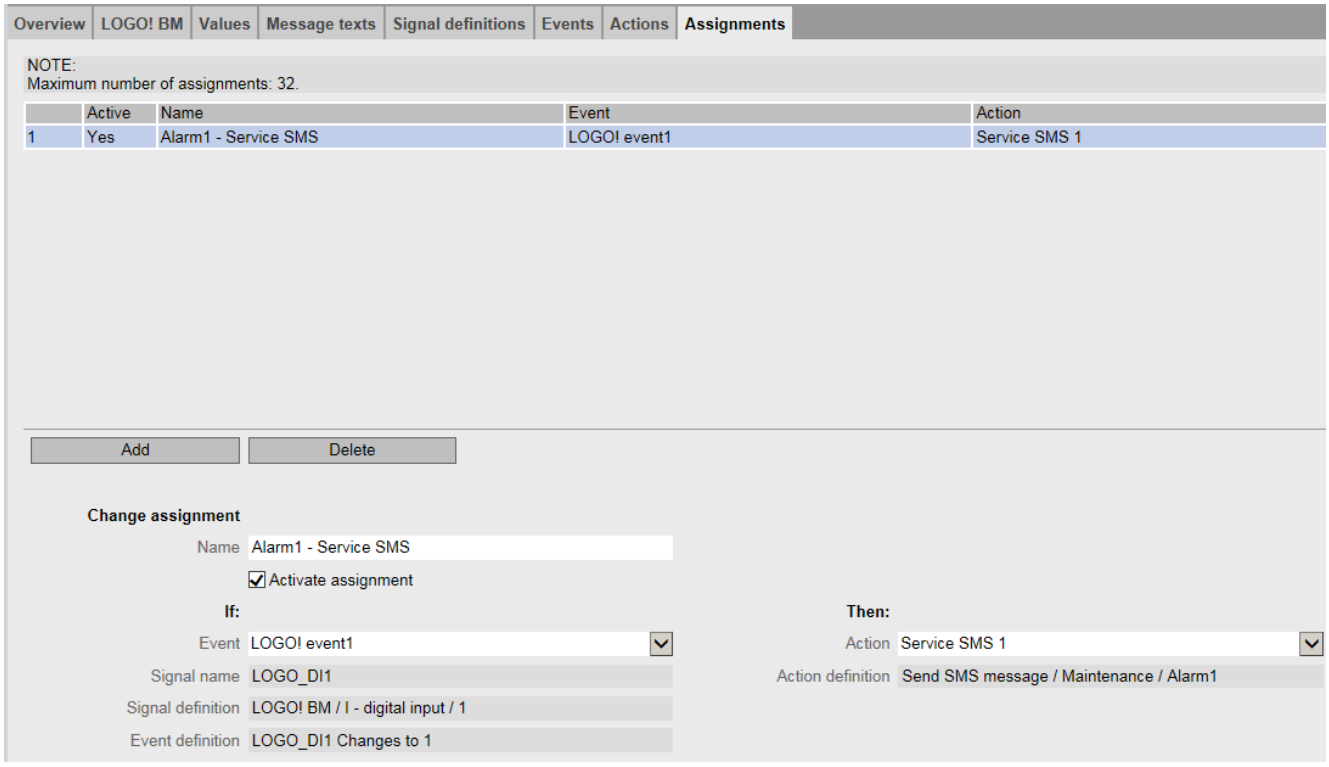



Figure 5-12 Monitoring – "Assignments" tab: Specifying the assignment

## Result

The result of the monitoring is as follows:

When the limit value encoder of the fill level sensor sets the digital input "1" of LOGO! BM to 1, the CMR sends an SMS message with the text "Overflow 1" to the two maintenance employees "User 1" and "User 2".

# Diagnostics and maintenance 6

## 6.1 Diagnostics options

The following diagnostics options are available:

### LEDs of the module

For information on the LED displays, refer to the section LEDs to display operation (Page 32).

You will find selected error patterns in the section Disruptions and their possible causes (Page 145).

### Web Based Management (WBM)

To do this, you need to connect your PC to the CMR locally or via the mobile wireless network.

In the WBM area "Diagnostics", you will find the diagnostics messages and the setting options for sending messages if errors occur (see below).

On the following WBM pages you obtain information on the status of the CMR:

- You will find general information on the status of the CMR on the start page of the WBM.
- You will find the diagnostics messages on the diagnostics page of the WBM, refer to the section Diagnostics buffer (Page 79).

### Diagnostics messages in the diagnostics buffer

When important events occur, the CMR writes diagnostics messages to its diagnostics buffer.

The following are logged, for example:

- Operating messages such as startup, change to the configuration
- Establishment/interruption of the connection to the BM
- Establishment/interruption of the connection to the mobile wireless network
- Establishment/interruption of the mobile data connection
- Warnings when reading in the configuration from an SD card or from the PC.
- Time synchronization

The diagnostics messages are divided into 4 classes, see section Diagnostics buffer (Page 79).

You can read out or transfer diagnostics messages using the following mechanisms:

- Reading out the diagnostics buffer using the WBM
- Transferring diagnostics messages relating to errors by SMS message or e-mail
  Errors can be sent as a message (SMS or e-mail). You will find the description in the section Notifications (Page 80).

### Diagnostics SMS message

Apart from the configurable sending of the diagnostics buffer, the CMR can send standardized diagnostics SMS messages on request. A diagnostics SMS message is sent to a telephone with an unauthorized phone number the when the receives an SMS message with the following text from this phone:

```
DIAG?
```

For information on the content of the diagnostics SMS of the CMR see section Diagnostics SMS message (Page 142).

## 6.2 Diagnostics SMS message

### SMS command "DIAG?"

The reply SMS to a diagnostics request (SMS command "DIAG?") returns information with the following structure:

| Information | SMS content |
|---|---|
| Module name of the CMR | From: DEVICE-Name |
| Date and time of the module | <YYYY-MM-DD> <hh:mm:ss> |
| Type and firmware version | <CMR name> <firmware version> |
| Mobile wireless network status | • registered (booked into the network / connected) |
| Connected since (only with registered / roaming) | Attached for (ddd:hh:mm:ss) <ddd>:<hh>:<mm>:<ss> |
| Data service status | • not registered (booked out of the network / not connected)<br>• registered (booked into the network / connected)<br>• not configured (not configured)<br>• searching network (Network search)<br>• denied (Booking in denied)<br>• unknown (unknown)<br>• roaming (searching)<br>• invalid (invalid access data) |
| Connected for | Attached for (ddd:hh:mm:ss) <ddd>:<hh>:<mm>:<ss> |
| Name of the network /provider | Network: <Network name> |
| IP address | IP: xxx.xxx.xxx.xxx<br>If no IP address exists: IP: - |

| Information | SMS content |
|---|---|
| Signal strength | Signal Quality:<br>• invalid<br>• good<br>• medium<br>• weak<br>• no signal |
| Signal field strength (CSQ /dBm) | (CSQ:xx / -xxdBm)<br>For the significance of the values, refer to the section WAN (Page 89). |

### SMS command "DIAG? Response"

If the information cannot be sent with an SMS message, there is a 2nd SMS that starts with "DIAG? Response".

Such a reply SMS message can appear as follows:

**Example of the two reply SMS messages**

1st SMS

- From: logo.cmr
- 2016-10-05 14:14:45
- LOGO! CMR2020 V2
- GSM: registered
- Attached for (ddd:hh:mm:ss): 000:00:03:36

2nd SMS

- DIAG? Response
- GPRS: registered
- Attached for (ddd:hh:mm:ss): 000:00:03:36
- Network: <provider>.com
- IP: 77.25.26.11
- Signal Quality: good (CSQ:29/-55dBm)

## 6.3 Error identifiers for e-mails

### Information in diagnostics buffer entries about e-mails

A diagnostics buffer entry is created if e-mails are transferred incorrectly.

The diagnostics buffer entry can contain the following information:

- Internal error detection; the corresponding error codes are explained on the following page: Link: (https://curl.haxx.se/libcurl/c/libcurl-errors.html)
- Last response of the server
- Number of attempts

## Last response of the server

The error codes of the e-mail server have the following meaning:

Table 6-1 SMTP (e-mail)

| Code | Meaning |
|---|---|
| 421 | Service not available. Connection is terminated<br>(often lack of resources of the service provider) |
| 450 | Action not executed: Mailbox not available / unreachable.<br>Try again later. |
| 451 | Action aborted - error in execution |
| 452 | Action aborted - not enough system memory |
| 500 | Syntax error: Command unknown. |
| 501 | Syntax error<br>Check the configuration data. |
| 502 | Command not implemented |
| 503 | Wrong order of the commands |
| 504 | Parameter unknown or not implemented |
| 521 | The domain does not accept the e-mail. |
| 530 | Access denied<br>For access using STARTTLS encryption is necessary. |
| 535 | SMTP authentication incomplete<br>Check "Services" > "E-mail" in the configuration:<br>• "User name" and "Password"<br>• "Connection security" |
| 550 | Syntax error - recipient e-mail address or domain unknown.<br>Check "Users / groups" > "Groups" in the configuration:<br>• E-mail address of the recipient |
| 551 | Mailbox not local<br>Try forwarding |
| 552 | Action aborted - error in memory assignment<br>The e-mail could not be transferred because the size of the e-mail exceeds the maximum set by the administrator. |
| 553 | Action not executed - mailbox name not allowed (syntax incorrect)<br>See error 535. |

| Code | Meaning |
|---|---|
| 554 | Transfer failed - no SMTP service available. |
| 5xx | Other error message from the e-mail server<br>The status corresponds to the three-digit error number of the SMTP protocol. |

## 6.4 Disruptions and their possible causes

| Disruption | Meaning | Solution |
|---|---|---|
| Error LED lit red | • No connection to the BM<br>• Wrong PIN<br>• No SIM card but the mobile wireless interface is activated<br>To obtain information on other possible causes of error, it is best to check the log events in the diagnostics buffer. | • Check the connections/run the PING test<br>• Unlocking the SIM card<br>• Inserting the SIM card |
| Error LED flashes red | • Duplicate IP address | • Correct the IP address |
| No LED display | • Power supply too weak<br>• The CMR is in the shut down status | • Correct the power supply according to the Technical specifications (Page 153) |
| No positioning possible | • Bad GPS reception<br>• Antenna not or not correctly plugged in | • GPS reception is normally only possible outdoors: GPS reception is not possible in enclosed spaces.<br>• Check the connector |
| Bad or no time-of-day synchronization using NTP | • Bad mobile wireless reception<br>• Wrong configuration in the WBM<br>• Mobile wireless interface deactivated<br>• Incorrect NTP server name or incorrect IP address | • Correct the alignment of the antenna<br>• Activate the mobile wireless interface in the WBM<br>• Check the configuration of the mobile data connection in the WBM |
| No SMS reception | • SMS reception deactivated<br>• Bad mobile wireless reception<br>• User not registered or authorized | • Enable SMS reception in the WBM<br>• Check user rights in the WBM and if necessary correct<br>• Check the antenna position of the mobile wireless antenna |
| No dial-in to the mobile wireless network | • PIN entered incorrectly three times<br>• Mobile wireless interface deactivated in the WBM | • See section Insert the SIM card and enter the PIN (Page 48), unlocking the SIM card<br>• Activating the mobile wireless interface in the WBM |

| Disruption | Meaning | Solution |
|---|---|---|
| Monitoring not working | • Expected SMS messages configured in the WBM are not received | Check in the WBM:<br>• Are the assignments active?<br>• Are the inputs/outputs connected correctly?<br>• Only if objects of the BM are monitored:<br>Is the BM connected? |
| SMS message received in which there are placeholders between 2 exclamation points | • A signal name specified in the WBM does not exist or has been written incorrectly. The incorrect or non-existent signal name is then shown in the message texts as follows:<br>[CMR_I1] becomes !CMR_I1! | • Correct placeholders in theWBM |

## 6.5 Loading firmware

### New firmware versions

If a new firmware version is available for the module, you will find this on the Internet pages of Siemens Industry Online Support at:

Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/dl)

Save the firmware file on the configuration PC.

### Downloading new firmware files

You load a new firmware file from the configuration PC on the CMR via the WBM.

You will find a description of establishing the connection to the CMR from the configuration PC in the section Establishing a connection to the CMR (Page 67).

You will find a description of loading a firmware file via the WBM of the CMR in the section Firmware (Page 83).

# 6.6 Resetting to factory settings

## Resetting to factory settings: Effect

**Note**

**Data on the CMR will be deleted**

With the functions for resetting to factory settings described here, all configuration data on the CMR is deleted!

**Note**

**CMR no longer reachable via VPN**

When you reset to factory settings, the VPN configuration is deleted and the CMR is no longer reachable via OpenVPN.

- **Deleted data**
  The following data is deleted by resetting to factory settings:
  - IP address of the LAN interface configured by the user
    It is reset to the default factory set IP address 192.168.0.3.
  - All other configuration data in the memory of the CMR
  - Configuration data on a plugged in SD card. The files "default.cfg" and "user.cfg" on the SD card will be deleted.
- **Data not deleted**
  The following data is not deleted by resetting to factory settings:
  - MAC address of the LAN interface:

## Executing the "Reset to factory settings" function

Two methods are available for resetting to factory settings:

- **Resetting using the WBM**
  For a description of the procedure, refer to the section Operating status (Page 84).
- **Resetting using the "SET" button**
  For the number of times and duration of pressing the button, refer to the section The "SET" button (Page 34).

For the LED reactions during resetting and restarting, refer to the section LEDs to display operation (Page 32).

### Reaction after resetting to factory settings

After the reset, the RTU starts up again automatically. The remaining behavior depends on the use of an optional SD card:

- **Startup without SD card**
  - If you do not use an SD card, the CMR remains stopped without configuration data.
  - The CMR is reachable locally via the following default IP address set in the factory 192.168.0.3.
  - The CMR starts up without configuration data.
    Generally, the defaults apply during the first commissioning, refer to the section Establishing the configuration connection (Page 68).
- **Startup with SD card**
  If an SD card is plugged in, the CMR searches the SD card for the configuration file "default.cfg" which was deleted during the reset.
  A configuration file "user.cfg" saved on the SD card by the user is not used.
  If you turn off the CMR after the reset, and then start it up with an SD card plugged in with a configuration file "default.cfg", the CMR uses the configuration file "default.cfg". See also section Configuration (Page 81).

## 6.7 Replacing the CMR

### Replacing the CMR

If you need to replace the CMR, you can also use the SD card to transfer the configuration data of the CMR stored there to the new device. Every change to the configuration data is saved on a plugged in SD card.

| ⚠ **WARNING** |
| --- |
| **Read the safety notices**<br>Before changing the CMR, read the safety notices in the section Important notes on using the device (Page 37).<br>While working on the device make sure that the power supply is turned off. |

When replacing the CMR follow the steps described in the section Installing the device (Page 43).

When replacing the CMR, remember to take the SIM card from the old device and insert it in the new one.

### Transfer of the configuration data to the new CMR

The procedure for transferring the configuration data to the CMR depends on whether you use an SD card in the CMR:

- **Device replacement without SD card**
  If you do not use an SD card, transfer the configuration data from the configuration PC to the new CMR before replacing the device.
  When you create the configuration data using the WBM of the CMR, you have the option of saving the configuration data on the configuration PC.
- **Device replacement with SD card**
  If you have used an SD card in the old CMR, after turning off the power supply remove the card from the old CMR and insert it in the new CMR before connecting up and installing it.
  When it restarts, the CMR reads the configuration data from the SD card.

For information on saving, loading and editing configuration files, see section Configuration (Page 81).

# Dimension drawings

7

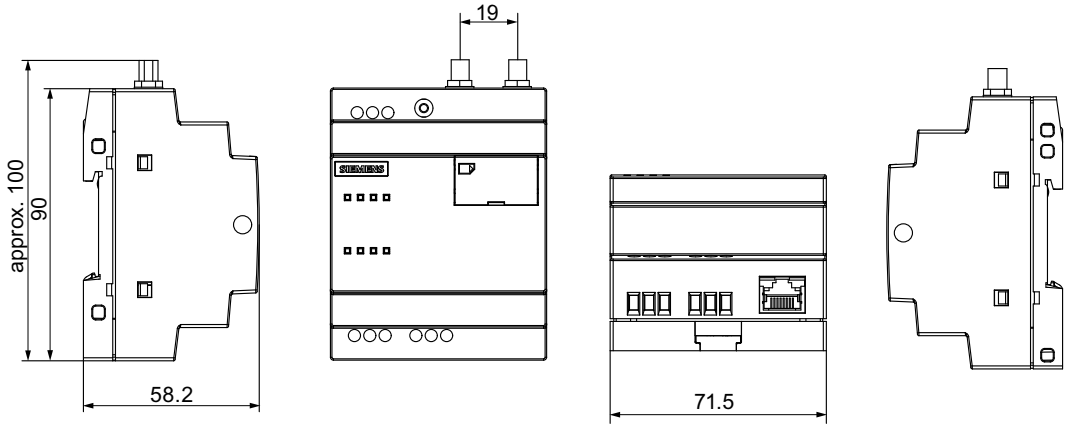



Figure 7-1 All dimensions in millimeters

# Technical specifications

# 8

| Technical specifications - LOGO! CMR2020 / LOGO! CMR2040 | |
|---|---|
| **Article numbers** | |
| LOGO! CMR2020 | 6GK7 142-7BX00-0AX0 |
| LOGO! CMR2040 | 6GK7 142-7EX00-0AX0 |
| **Attachment to Industrial Ethernet** | |
| Interface X1P1 for local applications | |
| • Quantity<br>• Design<br>• Properties<br>• Transmission speed | • 1<br>• RJ-45 jack<br>• 10/100-Base-T, Ethernet IEEE 802, autocrossover, autonegotiation<br>• 10 / 100 Mbps |
| **Permitted cable lengths (Ethernet)** | **(Alternative combinations per length range) *** |
| 0 ... 55 m | • Max. 55 m IE TP Torsion Cable with IE FC RJ45 Plug 180<br>• Max. 45 m IE TP Torsion Cable with IE FC RJ45 + 10 m TP Cord via IE FC RJ45 Outlet |
| 0 ... 85 m | • Max. 85 m IE FC TP Marine/Trailing/Flexible/FRNC/Festoon/ Food Cable with IE FC RJ45 Plug 180<br>• Max. 75 m IE FC TP Marine/Trailing/Flexible/FRNC/Festoon/ Food Cable + 10 m TP Cord via IE FC RJ45 Outlet |
| 0 ... 100 m | • Max. 100 m IE FC TP Standard Cable with IE FC RJ45 Plug 180<br>• Max. 90 m IE FC TP Standard Cable + 10 m TP Cord via IE FC RJ45 Outlet |
| **Electrical data** | |
| Power supply | |
| • Power supply<br>• Tolerance<br>• Design | • 12 to 24 VDC nominal<br>• -15 ... +20 %<br>• 3-pin terminal strip, not floating |
| Current consumption | |
| • At 12 V<br>• At 24 V<br>• $I_{burst}$ | • Max. 850 mA (including 2 x 300 mA for digital outputs)<br>• Max. 725 mA (including 2 x 300 mA for digital outputs)<br>• 1050 mA (including 2 x 300 mA for digital outputs) |
| Effective power loss | Maximum 3 W |
| **Digital inputs (I1, I2)** | |

| **Technical specifications - LOGO! CMR2020 / LOGO! CMR2040** | |
|---|---|
| • Quantity | • 2 |
| • Design | • 3-pin terminal strip, not floating |
| • Permitted voltage range | • 12 to 24 V (nominal) |
| • Voltage in status ON | • > 8.5 V |
| • Voltage in status OFF | • < 5 V |
| • Current consumption | • I = 5.5 mA (maximum) |
| **Digital outputs (Q1, Q2)** | |
| • Quantity | • 2 |
| • Design | • 3-pin terminal strip, transistor, not floating |
| • Output voltage | • Supply voltage |
| • Load capability | • Max. 0.3 A |
| **Mobile wireless interface (XR02)** | |
| Antenna connector | |
| • Quantity | • 1 |
| • Design | • SMA socket |
| • Nominal impedance | • 50 Ω |
| Frequency bands | |
| • LOGO! CMR2020 | • GSM<br>GSM 850 MHz, EGSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz |
| • LOGO! CMR2040 | • HSDPA+ (UMTS)<br>Band I (2100 MHz), band III (1800 MHz), band VIII (900 MHz)<br>• LTE<br>Band I (2100 MHz), band III (1800 MHz), band VII (2600 MHz), band VIII (900 MHz), band XX (800 MHz), band XXVIIIA (700 MHz) |
| Properties and transmission speeds (maximum) | |
| • LOGO! CMR2020 | • GPRS<br>– Multislot class 10<br>– Terminal device class B<br>– Coding scheme: 1 ... 4<br>– Downlink: 80 kbps<br>– Uplink: 40 kbps |

| **Technical specifications - LOGO! CMR2020 / LOGO! CMR2040** | |
|---|---|
| • LOGO! CMR2040 | • LTE<br>– Downlink: 10 Mbps<br>– Uplink: 5 Mbps<br>• HSPA+<br>– Downlink: 42 Mbps<br>– Uplink: 5.76 Mbps<br>• EDGE<br>– Multislot class 33<br>– Terminal device class B<br>– Coding scheme: 1 ... 9<br>– Downlink: 296 kbps<br>– Uplink: 236.8 kbps |
| **GPS interface (XR01)** | |
| • Quantity | • 1 |
| • Design | • SMA socket |
| • Nominal impedance | • 50 Ω |
| Power supply | • 3.8 V (nominal)<br>• At 5 mA: 3.575 V<br>• At 10 mA: 3.35 V<br>• At 15 mA: 3.125 V |
| Current consumption | Max. 15 mA |
| Design | 32-channel GPS standard |
| Frequency bands | • L1 (GPS)<br>• L1, FDMA (Glonass) |
| **Permitted ambient conditions** | |
| Ambient temperature | |
| • During operation | • -20 °C to +70 °C |
| • During storage | • -40 °C to +85 °C |
| Relative humidity at 25 °C | 0 to 95 %, non-condensing |
| **Design, dimensions and weight** | |
| Design | Compact design, for DIN rail mounting |
| Degree of protection | IP20 |
| Weight | 160 g |
| Dimensions (W x H x D) | 71.5 x 90 x 58.2 mm (without antenna sockets) |
| Materials | Plastic |

* For details, refer to the IK PI catalog, cabling technology

You will find additional functions and performance data in the section Application and functions (Page 13).

# Approvals

# 9

## Approvals issued

**Note**

**Issued approvals on the type plate of the device**

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

## Documents on the Internet

You will find the declarations of conformity listed below and certificates of the product on the Internet at the following address:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383)

You can view the considered standards in the respective certificate which is available on the Internet at the address listed above.

## Address for declarations of conformity

The EU and the UK declarations of conformity are available to all responsible authorities at:

Siemens Aktiengesellschaft
Digital Industries
P.O. Box 48 48
90026 Nuremberg
Germany

## EC declaration of conformity

The product meets the requirements and safety objectives of the following EU directives and it complies with the harmonized European standards (EN) for programmable logic controllers which are published in the official documentation of the European Union.

- **2014/34/EU (ATEX explosion protection directive)**
  Directive of the European Parliament and the Council of 26 February 2014 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres, official journal of the EU L96, 29/03/2014, pages 309-356
- **Radio Equipment Directive 2014/53/EU (RED)**
  Directive of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the member states relating to placing radio equipment on the market; official journal of the EU L153, 22 May 2014, pages 62–106
- **2011/65/EU (RoHS)**
  Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Below you will find the product relevant harmonized standards according to the directives named above.

| Standard | LOGO! CMR2020 | LOGO! CMR2040 |
|---|---|---|
| EN 60079-0 | x | x |
| EN 60079-15 | x | x |
| EN 50581 | x | x |
| EN 60950-1 | x | x |
| EN 62311 | x | x |
| EN 301 489-1 | x | x |
| EN 301 489-3 | x | x |
| EN 301 489-7 | x | x |
| EN 301 489-24 | - | x |
| EN 61000-6-1 | x | x |
| EN 61000-6-2 | x | x |
| EN 61000-6-3 | x | x |
| EN 61000-6-4 | x | x |
| EN 300 440-2 | x | x |
| EN 301 511 | x | x |
| EN 301 908-1 | - | x |
| EN 301 908-2 | - | x |
| EN 301 908-13 | - | x |

## UK Declaration of Conformity

Importer UK:

Siemens plc
Sir William Siemens House
Princess Road

Manchester
M20 2UR

The product meets the requirements of the following regulations:

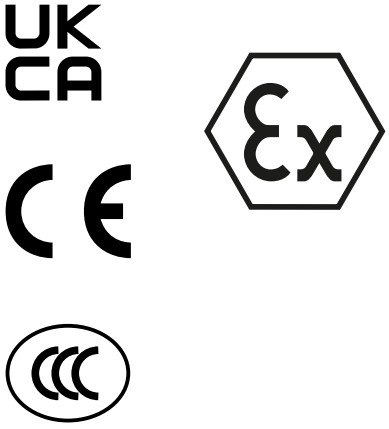
- UKEX Regulations
  SI 2016/1107 The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, and related amendments
- Radio Equipment Directive
  SI 2017/1206 The Radio Equipment Regulations 2017
- RoHS Regulations
  SI 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

## ATEX / IECEx / UKEX / CCC-Ex

Note the information in the document "Use of subassemblies/modules in a Zone 2 Hazardous Area", which you will find on the Internet at the following address:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/cert)

The conditions must be met for the safe deployment of the device according to the section Notes on use in hazardous areas according to ATEX, IECEx, UKEX and CCC Ex (Page 39).

The product meets the explosion protection requirements outlined below.



II 3 G Ex ec IIC T4 Gc

- DEKRA 18ATEX0026 X
- DEKRA 21UKEX0002 X
- IECEx DEK 18.0018 X

Importer UK:
Siemens plc,
Manchester
M20 2UR
(Ex na IIC T4 Gc, not on the nameplate)

The products meet the requirements of the following standards:

EN/IEC 60079-7, GB 3836.8

EN IEC/IEC 60079-0, GB 3836.1

You will find the considered standards in the currently valid certificates.

## RoHS

The product meets the requirements of the following directives:

- EU directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Applied standard: EN IEC 63000

## Radio equipment directive

The CM meets the requirements of the EU Directive 2014/53/EU (Radio equipment) according to the requirements of article 3 (1) a, 3 (1) b and 3 (2).

### Art. 3 (1) a - Health and Safety

Harmonized standards:

- EN 60950-1+A1+A2+A11+A12
  Information technology equipment - Safety - Part 1: General requirements
- EN 62311
  Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz ... 300 GHz)

### Art. 3 (1) b - EMC

Harmonized standards:

- ETSI EN 301 489-1
  Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility for radio equipment and services - Part 1: Common technical requirements
- ETSI EN 301 489-3
  Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility (EMC) for radio equipment and services - Part 3: Specific conditions for wireless devices with a low range (SRD) for use on frequencies between 9 kHz and 246 GHz
- ETSI EN 301 489-7
  Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility for radio equipment and services - Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)
- ETSI EN 301 489-24
  Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility for radio equipment and services - Part 24: Specific conditions for mobile and portable IMT-2000 CDMA Direct Spread (UTRA) radio and ancillary equipment
- EN 61000-6-1
  Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- EN 61000-6-2+AC
  Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-3+A1+AC
  Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- EN 61000-6-4+A1
  Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

**Article 3 (2) - Measures of efficient use of the frequency spectrum**

Harmonized standards:

- ETSI EN 300 440-2
  Electromagnetic compatibility and radio spectrum matters (ERM) - short range devices - radio equipment to be used in the 1 GHz to 40 GHz frequency range. Part 2: Harmonized standard covering the essential requirements of article 3.2 of the R&TTE directive.
- ETSI EN 301 511
  Global system for mobile communication (GSM). Harmonized standard for mobile phones in the GSM 900 and GSM 1800 bands covering essential requirements of article 3.2 of the R&TTE directive.
- ETSI EN 301 908-1
  IMT cellular networks - Harmonized standard covering the essential requirements of article 3.2 of the R&TTE directive. Part 1: Introduction and common requirements
- ETSI EN 301 908-2
  IMT cellular networks. Harmonized standard covering the essential requirements of article 3.2 of the R&TTE directive. Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)
- ETSI EN 301 908-13
  IMT cellular networks. Harmonized standard covering the essential requirements of article 3.2 of the R&TTE directive. Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)

**Maximum antenna gain**

Users and installers must be provided with antenna installation instructions and transmitter operating conditions that must be followed to avoid exceeding the permitted RF exposure.

Refer to the technical specifications of the antenna, refer to the appendix Antennas (Page 163).

**cULus**

- UL 60950-1 (Information Technology Equipment - Safety - Part 1: General Requirements)
- CSA C22.2 No. 60950-1-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
- UL 61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements)
- UL 61010-2-201 (Part 2-201: Particular Requirements for Control Equipment)
- CAN/CSA C22.2 No. 61010-1-12 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements)
- CAN/CSA-IEC 61010-2-201 (Part 2-201: Particular Requirements for Control Equipment)

### cULus Hazardous (Classified) Locations

Underwriters Laboratories, Inc., Certificate / Report No. E240480

- ISA 12.12.01 (Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations)
- CSA C22.2 No. 213 (Hazardous Location)

APPROVED for Use in:

- Cl. 1, Div. 2, GP. A, B, C, D T4; Ta = -20 °C...+70 °C
- Cl. 1, Zone 2, GP. IIC T4; Ta = -20 °C...+70 °C

### FM

Factory Mutual Approval Standard Class Number 3600, 3611

Class I, Division 2, Group A, B, C, D, T4 or Class I, Zone 2, Group IIC, T4

Ta: Refer to the temperature class on the type plate of the product.

Certificate of Compliance: 3030463

### National wireless approvals

To operate the device in certain countries approvals for wireless operation must exist, the agreed marking must be present on the type plate and special instructions for the particular country must be adhered to.

### Country-specific mobile wireless approvals of SIMATIC NET devices

You will find an overview of the mobile wireless approvals of the SIMATIC NET devices for specific countries here:
Link: (www.siemens.com/mobilenetwork-approvals)

You can obtain further information on mobile wireless approvals of SIMATIC NET devices from Siemens Industry Online Support.

### Current approvals

SIMATIC NET products are regularly submitted to the relevant authorities and approval centers for approvals relating to specific markets and applications.

If you require a list of the current approvals for individual devices, consult your Siemens contact or check the Internet pages of Siemens Industry Online Support:

Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/cert)

# Accessories

# A

## A.1 Antennas

The following antennas are available and can be installed both indoors and outdoors:

### Antennas

Figure A-1 GPRS/LTE antenna, ANT794-4MR rod antenna

| Article number | Explanation |
|---|---|
| 6NH9 860-1AA00 | Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G); weatherproof for indoor and outdoor areas; 5 m connecting cable connected permanently to the antenna, SMA connector, including installation bracket, screws, wall plugs. |

You will find detailed information in the device manual. You will find this on the Internet on the pages of Siemens Industry Online Support at the following address:

Link: (https://support.industry.siemens.com/cs/ww/en/view/23119005)

Figure A-2 LTE antenna, ANT896-4MA, rod antenna

| Article number | Explanation |
|---|---|
| 6GK5896-4MA00-0AA3 | IRC antenna ANT 896-4MA for GSM (2G), UMTS (3G) and LTE (4G), omnidirectional, radial swiveling, with additional joint, antenna gain: 2 dBi, incl. SMA connector, IP54, -40 ... +85 °C, for direct mounting with SMA connector; package contains: 1 x ANT896-4MA |

Figure A-3 LTE antenna, ANT896-4ME, cylinder shaped antenna

| Article number | Explanation |
|---|---|
| 6GK5896-4ME00-0AA0 | Cylinder shaped antenna ANT 896-4ME for GSM (2G), UMTS (3G) and LTE (4G), omnidirectional, incl. N female connector: 3 dBi, IP66, -40 ... +70 °C, for mounting on cabinet; package contains: 1 x ANT896-4ME |

Figure A-4 GPS antenna, ANT895-6ML, flat antenna

| Article number | Explanation |
|---|---|
| 6GK5895-6ML00-0AA0 | Antenna ANT 895-6ML, active GPS antenna including connecting cable (0.3 m) and N female connector; 3 dBic; @ 90°; IP67, -40 ... +85 °C, mounting using magnets or screws |

## A.2 Antenna cable

### Antenna cable

**Note**

**Maximum length of the antenna cable**

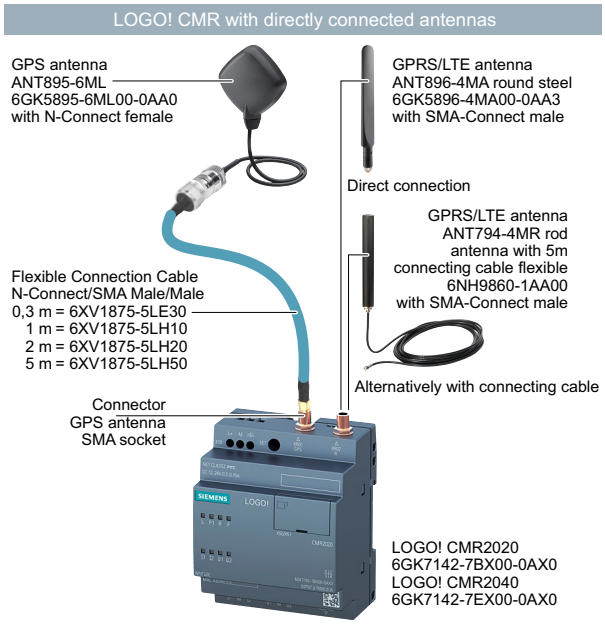
The maximum permitted length of the antenna cable is 15 m.

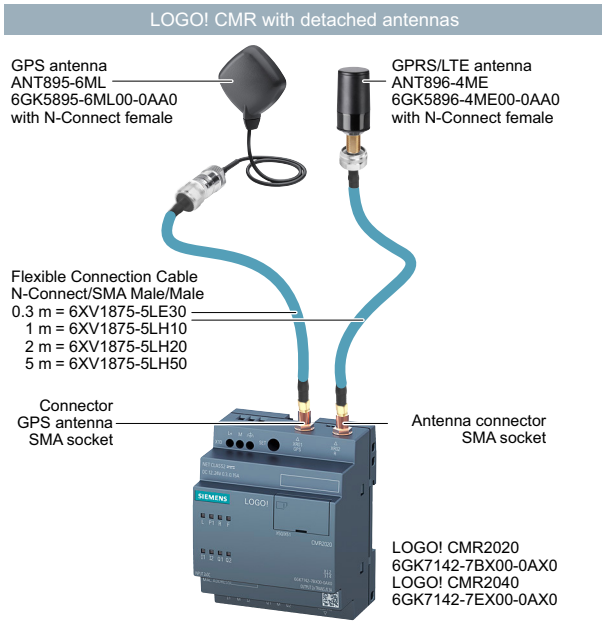
Table A-1 Antenna connecting cables

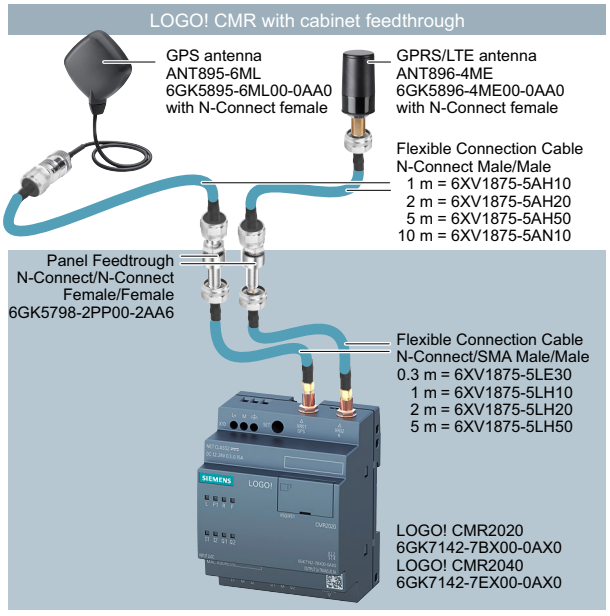
| Article number | Cable lengths | Explanation |
|---|---|---|
| 6XV1875-5LE30 | 0.3 m |  Flexible connecting cable preassembled SIMATIC NET N-Connect/SM male/male |
| 6XV1875-5LH10 | 1 m | |
| 6XV1875-5LH20 | 2 m | |
| 6XV1875-5LH50 | 5 m | |

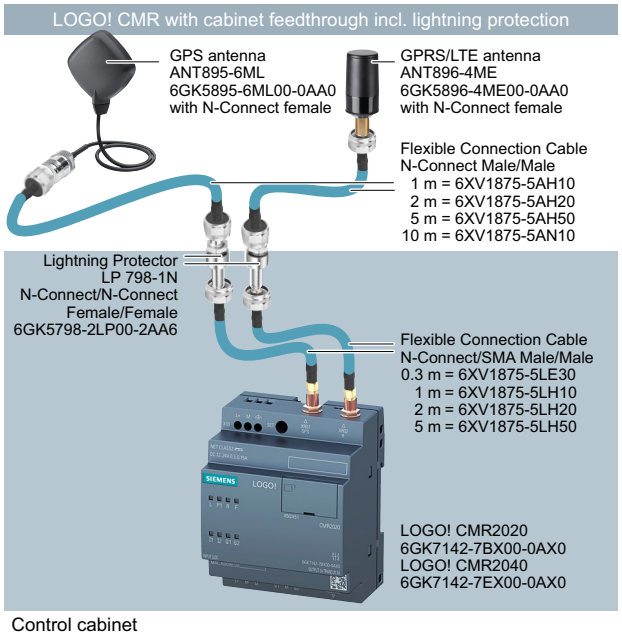
| Article number | Cable lengths | Explanation |
|---|---|---|
| 6XV1875-5AH10 | 1 m |  Flexible connecting cable preassembled SIMATIC NET N-Connect/N-Connect male/male |
| 6XV1875-5AH20 | 2 m | |
| 6XV1875-5AH50 | 5 m | |
| 6XV1875-5AN10 | 10 m | |

Below you will find suggestions for the antenna connection of the CMR with different assembly variants.




LOGO! CMR with detached antennas
GPS antenna
ANT895-6ML
6GK5895-6ML00-0AA0
with N-Connect female
GPRS/LTE antenna
ANT896-4ME
6GK5896-4ME00-0AA0
with N-Connect female
Flexible Connection Cable
N-Connect/SMA Male/Male
0.3 m = 6XV1875-5LE30
1 m = 6XV1875-5LH10
2 m = 6XV1875-5LH20
5 m = 6XV1875-5LH50
Connector
GPS antenna
SMA socket
Antenna connector
SMA socket
LOGO! CMR2020
6GK7142-7BX00-0AX0
LOGO! CMR2040
6GK7142-7EX00-0AX0


LOGO! CMR with cabinet feedthrough
GPS antenna
ANT895-6ML
6GK5895-6ML00-0AA0
with N-Connect female
GPRS/LTE antenna
ANT896-4ME
6GK5896-4ME00-0AA0
with N-Connect female
Flexible Connection Cable
N-Connect Male/Male
1 m = 6XV1875-5AH10
2 m = 6XV1875-5AH20
5 m = 6XV1875-5AH50
10 m = 6XV1875-5AN10
Panel Feedtrough
N-Connect/N-Connect
Female/Female
6GK5798-2PP00-2AA6
Flexible Connection Cable
N-Connect/SMA Male/Male
0.3 m = 6XV1875-5LE30
1 m = 6XV1875-5LH10
2 m = 6XV1875-5LH20
5 m = 6XV1875-5LH50
LOGO! CMR2020
6GK7142-7BX00-0AX0
LOGO! CMR2040
6GK7142-7EX00-0AX0
Control cabinet




# A.3 Cabinet feedthrough / antenna coupling

## Cabinet feedthrough

### Cabinet feedthrough / coupling piece

| Article number | Explanation |
|---|---|
| 6GK5798-2PP00-2AA6 | Cabinet feedthrough for wall thicknesses up to a maximum 4.5 mm, can also be used as a coupling device between two antenna connecting cables, N-Connect/N-Connect female/female connector, suitable for 0 ... 11 GHz, IP68 |

# A.4 Overvoltage protection

## Overvoltage protection

**Lightning protector**

| Article number | Explanation |
|---|---|
| 6GK5798-2LP00-2AA6 | Lightning protector LP798-1N, for the antennas ANT790 and ANT890, for N-Connect connectors, N-Connect/N-Connect female/female connector, suitable for 0 ... 6 GHz, IP68, also suitable for DC feed-in via the antenna cable |

# A.5 SD card

## Compatible SD cards

To store configuration files you have the option of using an SD card.

The card slot and the CMR are compatible with the following card formats:

- **MicroSD card**
  Format 15 x 11 mm
  Specifications:
  - SD 1.0, 1 GB, FAT32
  - SD 1.1, 2 GB, FAT32
  - SDHC, to 32 GB, FAT32

You will find information on using the SD card in the section SD card (Page 75).

**Note**

**Temperature range of the SD card**

When using an SD card, make sure that this is suitable for the temperature range in which the CMR is used.

# Additional information on SMS

# B

## B.1 Response of the CMR when receiving an SMS message/replying to SMS message

### List of all permitted and non-permitted characters

You will find a list of all permitted and non-permitted characters in the section Permitted characters and string lengths (Page 64).

### Checking sender numbers

When it receives an SMS message, the CMR first checks whether the sender and the sender's phone number are registered in the CMR and whether the sender has the rights to send an SMS message to the CMR (see settings in the section User (Page 111)):

- Only messages with authorized sender numbers are accepted by the CMR.
- You can also configure phone number groups by using the * (asterisk) character.

### Checking SMS text for keywords and password

**Note**

- The password must be separated from the keyword with a semicolon ";".
- Read access must not include a password.
- Write access can include a password (password entry can be disabled).

Requirements:

- The sender number of the SMS message was checked against the configured phone numbers of the authorized users.
- All messages originating from unauthorized phone numbers were discarded.

The following conventions apply to queries and write access:

- The keywords must always be in uppercase letters.
- With write access, the "?" character is omitted after the keyword. You need to start with a password:
  - Write access: <password>;<key word>=<parameter>
  - Read access:<key word>?<possibly Parameter>

The CMR checks the text of the SMS message for keywords or with write SMS commands first for the password specified in the configuration:

- If the SMS message does not contain any keywords or no or an incorrect password an entry is made in the diagnostics buffer.
  - If the SMS message comes from an authorized phone number, a reply SMS message is always sent.
  - Exception: If the SMS message comes from an unauthorized phone number or “Allow receipt of SMS messages" is deactivated, the SMS message is discarded.

### Password configuration for SMS messages with write access

**Note**

**No semicolon in the password**

- The password must not contain a semicolon ";".
- The password must be separated from the keyword with a semicolon.

SMS messages with write access can be preceded by a password: You configure this password using the WBM.

The password counts as the authorization of the user and prevents manipulation of LOGO! BM or LOGO! CMR values.

### Replying to SMS messages

SMS messages from authorized users can be replied to by the CMR (configurable). With write access, this reply consists of a positive or negative acknowledgement of the write procedure.

**Note**

**Preventing an SMS message loop with linked CMRs**

To avoid several CMRs connected by mobile wireless forming an SMS loop, acknowledgement frames are received but are not replied to.

### The number of SMS jobs/time is limited

The CMR stores a limited number of SMS send jobs in a job queue.

Sending an SMS message may take several seconds due to the delayed transfer in the mobile wireless network.

Follow the points below to make sure that all SMS messages are sent within the required time:

- Adapt the length of the interval for large amounts of data to be sent cyclically, e.g. PI-SMS messages (monitor SMS) accordingly.
- Make sure that there is enough time between different actions sending PI-SMS messages.

If, for example, a PI-SMS message requested using SMS was sent incompletely, repeat your request SMS message.

### SMS error messages

You will find a list of all possible error messages in SMS error messages (Page 173).

## B.2 SMS error messages

| Message | Possible causes |
|---|---|
| OK | The SMS command was executed successfully. |
| Invalid Command | SMS keyword could not be recognized.<br>Check the uppercase/lower case characters and syntax. |
| Invalid Parameter | Transfer parameter not correct; password not correct. |
| No Success | Values could not be set or read. |
| Try Again | The CMR is currently being reconfigured. The request cannot be processed. |
| No connection to LOGO! BM | • LOGO! BM not activated or wrong IP address set.<br>• Cable between LOGO! BM and LOGO! CMR disconnected |
| No GPS Signal | • GPS not configured<br>• GPS signal cannot be received because there is no line of sight to the GPS satellite. |
| Not supported by LOGO! BM | The setting of bits in the VM of the LOGO! BM is not supported by this device version. To use a VM variable of the type BIT, you need a LOGO! BM with at least a hardware product version FS:04 and the firmware version V1.81.01. |

## B.3 Syntax of all SMS commands

### 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 |

| What do I want to influence? | Example |
|---|---|
| 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#" |

## B.4 SMS commands

The following tables describe all the possible SMS structures of the SMS commands and these are illustrated with examples.

**Note**

Only 1 SMS command is possible per SMS message to the CMR.

**Note**

**Use of prepaid SIM cards**

If you use a prepaid SIM card, you can query the current credit using the appropriate service code of your provider.

If your credit has been used up, the CMR does not send an automatic warning.

| **Read CMR status** | |
|---|---|
| Function | Query the CMR status |
| Access | Reading, no password necessary |
| **Structure and keyword** | **MSTATUS?** |
| Return values | RUN, STOP or error message: SMS error messages (Page 173) |
| Example | Send SMS message: MSTATUS?<br>Reply SMS message: MSTATUS:RUN |

| **Set CMR status** | |
|---|---|
| Function | Setting the CMR status to RUN or STOP |
| Access | Writing, password (when configured) |
| **Structure and keyword** | **<password>;MSTATUS=<CMR status>** |
| Return values | OK (optional) or error message: SMS error messages (Page 173) |
| Example | Send SMS message: Password;MSTATUS=RUN<br>Reply SMS message: MSTATUS=RUN:OK |

| **Read diagnostics data from the CMR** | |
|---|---|
| Function | Requesting diagnostics data from the CMR |
| Access | Reading, no password necessary |
| **Structure and keyword** | **DIAG?** |
| Return values | Diagnostics data or error message: SMS error messages (Page 173)<br>Structure of diagnostics data:Diagnostics SMS message (Page 142) |
| Example | Send SMS message: DIAG?<br>Reply SMS message: Diagnostics SMS message (Page 142) |

| **Read GPS position from the CMR** | | | |
|---|---|---|---|
| Function | Request current GPS position.<br>The current GPS position is read out and returned to the sender. | | |
| Access | Reading, no password necessary | | |
| **Structure and keyword** | **GPSPOSITION?** | | |
| Return values | GPS coordinates or error message: SMS error messages (Page 173)<br>Structure of the SMS message: GPS position: ddd:mm:ss.hs N/S ddd:mm:ss.hs W/E Alt mmmm | | |
| Example | Send SMS message: GPSPOSITION?<br>Reply SMS message: GPS position: 49:0:50.4 N 8:24:15.48 E Alt 0350 | | |
| Explanation of reading the transfer data | ddd | degree | Degree |
| | mm | minutes | Minutes |
| | ss.hs | seconds | Seconds |
| | N/S | North/South | Degree of longitude |
| | W/E | West/East | Degree of latitude |
| | Alt mmmm | Altitude | Height above sea level in meters |

| **Read process image** | |
|---|---|
| Function | Reading out the BM process image and the status of the two inputs and outputs of the CMR. |
| Access | Reading, no password necessary |
| **Structure and keyword** | **MONITOR?** |
| Return values | Process image or error message: SMS error messages (Page 173)<br>Structure of the process image: Reply SMS message to the "MONITOR?" command (Page 178) |
| Example | Send SMS message: MONITOR?<br>Reply SMS message: Reply SMS message to the "MONITOR?" command (Page 178) |

| **Read BM status** | |
|---|---|
| Function | Query the BM status |
| Access | Reading, no password necessary |
| **Structure and keyword** | **STATUS?** |

| **Read BM status** | |
|---|---|
| Return values | RUN, STOP or error message: SMS error messages (Page 173) |
| Example | Send SMS message: STATUS?<br>Reply SMS message: STATUS:RUN |

| **Set BM status** | |
|---|---|
| Function | Setting the BM status to RUN or STOP |
| Access | Writing, password (when configured) |
| **Structure and keyword** | **<password>;STATUS=<LOGO status>** |
| Return values | OK (optional) or error message: SMS error messages (Page 173) |
| Example | Send SMS message: Password;STATUS=RUN<br>Reply SMS message: STATUS=RUN:OK |

| **Configure address of an NTP server** | |
|---|---|
| Function | Configuring address of an NTP server.<br>You can configure the address of an NTP server only if NTP was selected as the time-of-day synchronization method.<br><address> can either be the IP address in the format 123.123.123.123 or the name of the NTP server in URL format, e.g. http://www.ntpservername.de. |
| Access | Writing, password (when configured) |
| **Structure and keyword** | **<password>;NTPSERVER="<address>"** |
| Return values | OK (optional) or error message: SMS error messages (Page 173) |
| Example | 1st example:<br>Send SMS message: Password;NTPSERVER="http://www.ntpservername.de"<br>Reply SMS message: NTPSERVER="http://www.ntpservername.de":OK<br>2nd example:<br>Send SMS message: Password;NTPSERVER="217.13.75.19"<br>Reply SMS message: NTPSERVER=”217.13.75.19”:OK |

**Note**

**Direct access to BM variables memory**

For security reasons the address in the VM memory can only be read or written using SMS if the address was created earlier as a signal using the WBM.

The commands "Set or read value in the BM variable memory" access the variable memory of the BM directly.

When using these commands, remember the points made in the section Overview (Page 51).

| **Reading the current value from the BM variables memory: Read "current values"** | |
|---|---|
| Function | Reading the current value from the BM variables memory.<br>You obtain the address from the BM variables memory. The value <data type> corresponds to BIT, BYTE, WORD or DWORD.<br>Only the first 128 bytes of the BM variable memory can be read and written to.<br>Start addresses of the data types:<br>• BIT / BYTE: 0 ... 127<br>• WORD: 0 ... 126<br>• DWORD: 0 ... 124<br>You can read any value from the BM variables memory. If you know the LOGO! control program precisely, this can, for example, be useful for diagnostics purposes. |
| Access | Reading, no password necessary |
| **Structure and keyword** | • **LOGO?VM<address>,<data type>**<br>• **LOGO?<Signal name>**<br>The signal name must not contain a semicolon (;). |
| Return values | Current value or error message: SMS error messages (Page 173)<br>• Structure of the returned value from the variable memory:VM<address>:<value>(<data type>)<br>• Structure of the returned value from a signal:<signal name>:<value><br>Output: Decimal output of the returned value |
| Example | Send SMS message: LOGO?VM125,WORD<br>Reply SMS message: VM125:1(WORD) |

| **Setting value in the BM variables memory: Write "current values"** | |
|---|---|
| Function | Setting values of a component in the BM variables memory, e.g. inputs, outputs, flags.<br>You obtain the address of the component from the BM variables memory.<br>Only the first 128 bytes of the BM variables memory can be read and written to.<br>• BIT, BYTE: 0 ... 127<br>• WORD: 0 ... 126<br>• DWORD: 0 ... 124<br>By setting a value in the BM variables memory, you can change the running of a LOGO! control program. Only use this command if you have precise knowledge of the control program!<br>All values are processed by the CMR as signed values. |
| Access | Writing, password (when configured) |
| **Structure and keyword** | • **<password>;LOGO=VM<address>,<value>,<data type>**<br>• **<Password>;LOGO=VM<Address>,<Constant name> ***<br>• **<Password>;LOGO=<signal name>,<value>**<br>• **<Password>;LOGO=<signal name>,<constant name>**<br>The signal name / constant name must not contain a semicolon (;). |
| Return values | Confirmation (optional) or error message: SMS error messages (Page 173) |
| Example | Send SMS message: Password;LOGO=VM125,1,WORD<br>Reply SMS message: LOGO=VM125,1,WORD: OK |

| **Set digital output of the CMR** | |
|---|---|
| Function | Setting the digital output 1 or 2 of the CMR to a value: 1 or 0. |
| Access | Writing, password (when configured) |
| **Structure and keyword** | • **<password>;OUTPUT=O<1/2>,<1/0>**<br>• **<Password>;OUTPUT=<signal name>,<1/0>**<br>• **<Password>;OUTPUT=<signal name>,<constant name>** |
| Return values | OK (optional) or error message: SMS error messages (Page 173) |
| Example | Send SMS message: Password;OUTPUT=O1,1<br>Reply SMS message: OUTPUT=O1,1:OK |

| **Changing the phone number of a user** | |
|---|---|
| Function | Changing the phone number of a user uniquely specified by the user name.<br>For the selected user, in the WBM in Users / groups in the User tab the corresponding release must be entered see section User (Page 111). |
| Access | Writing, password (when configured), right must be configured in the WBM |
| **Structure and keyword** | **<Password>;CHANGEUSER="User name","phone number"**<br>With this command use the User name you need to enter when logging in to the WBM. |
| Return values | OK (optional) or error message: SMS error messages (Page 173) |
| Example | Send SMS message: Password;CHANGEUSER="Joe","01751234567"<br>Reply SMS message: CHANGEUSER="Joe","01751234567":OK |

| **Querying the mobile wireless provider about the service code** | |
|---|---|
| Function | Querying a service code with the mobile wireless provider, e.g. "*100#".<br>The text transferred by the mobile wireless provider is returned unchanged as the reply in an SMS message.<br>If you use a prepaid SIM card, and want to query the current credit, the service can be used to query your credit. You cannot, however, use all possible service codes for queries. |
| Access | Writing, password (when configured) |
| **Structure and keyword** | **<password>;SERVICECODE="code"** |
| Return values | Original reply of the mobile wireless provider or error message |
| Example | Send SMS message: Password;SERVICECODE="*100#"<br>Reply SMS message: *100# Original text of the mobile wireless provider or error message |

## B.5 Reply SMS message to the "MONITOR?" command

### Process image

The process image shows the current statuses and values of the CMR and the BM with its expansion modules.

The number of I/O elements actually in the system depends on the expansion modules being used.

| **SMS header** | **Value blocks** |
|---|---|
| Module name of the CMR | From: logo.cmr |
| Date and time of the module | <YYYY-MM-DD> <hh:mm:ss> |

| **CMR** | | **Value blocks** |
|---|---|---|
| Digital inputs | Inputs | I1, I2 |
| Digital outputs | Outputs | Q1, Q2 |

| **BM** | | **Value blocks** |
|---|---|---|
| Program status | Status program | PS |
| Communication status | Connection status BM-CMR | CS |
| Digital inputs | Inputs | I1 ... I24 |
| Digital outputs | Outputs | Q1 ... Q20 |
| Digital flags | | M1 ... M64 |
| Shift register inputs | | S1.1 ... S4.8 |
| Arrow keys | | ▶ ◀ ▼ ▲ |
| Function keys | | F1 ... F4 |
| Analog inputs | | AI1 ... AI8 |
| Analog outputs | | AQ1 ... AQ8 |
| Analog flags | | AM1 ... AM64 |

## Structure of the reply SMS message of the process image (PI-SMS)

**Note**

**A maximum of 7 SMS messages**

The reply SMS includes a maximum total of 7 SMS messages. The number of SMS messages depends on the monitored signals.

**Meaning of "*" in the tables**

"*" correspond to spaces in the structure of the reply SMS message.

**Representation of digital values, shift registers**

- One digit with the logical state (0 or 1).
- Eight values per line counting from right to left.

**Representation of analog values**

- Analog values according to the internal representation (max. 6 characters) of the analog values of the LOGO! BM.
- The representation of the values is 6 digits with leading zeros. One analog value is output per line.

**Representation of unused values and value blocks**

- Unused values are represented by "x".
- If there are no used values in the remaining lines of a value block, these lines are not shown. Refer to "Example of a reply SMS message" below in the value block "BM I:".
- An unused values block is not displayed nor is the name.

**Representation of control keys**

- 4 values per line

The reply SMS message of the CMR to a process image query has the following prepared structure:

Table B-1 Reply SMS message: Structure

| SMS content | Information |
|---|---|
| **SMS header** | |
| From:<br>logo.cmr | Module name of the CMR |
| 2016-10-05<br>14:14:45 | Date and time of the module |
| **CMR I: Name of the values block for CMR inputs** | |
| ******xx | CMR input 1 and 2, values from right (I1) to left (I2) |
| **CMR Q: Name of the values block for CMR outputs** | |
| ******xx | CMR output 1 and 2, values from right (Q1) to left (Q2) |
| **BM PS/CS: Program and communications status of the BM** | |
| ******11 | PS CS<br>PS=1 BM in RUN<br>PS=0 BM in STOP<br>CS=1 connection to CMR<br>CS=0 no connection to CMR |
| **BM I: Name of the values block for LOGO! BM - digital inputs** | |
| xxxxxxxx | Inputs 8 ... 1, values from right (I1) to left (I8) |
| xxxxxxxx | Inputs 16 ... 9 |
| xxxxxxxx | Inputs 24 ... 17 |
| **BM Q: Name of the values block for LOGO! BM - digital outputs** | |
| xxxxxxxx | Outputs 8 ... 1, values from right (Q1) to left (Q8) |
| xxxxxxxx | Outputs 16 ... 9 |
| ****xxxx | Outputs 20 ... 17 |
| **BM M: Name of the values block for LOGO! BM - digital memory bits** | |
| xxxxxxxx | Memory bits 8 ... 1, values from right (M1) to left (M8) |

| SMS content | Information |
|---|---|
| xxxxxxxx | Memory bits 16 ... 9 |
| xxxxxxxx | Memory bits 24 ... 17 |
| xxxxxxxx | Memory bits 32 ... 25 |
| xxxxxxxx | Memory bits 40 ... 33 |
| xxxxxxxx | Memory bits 48 ... 41 |
| xxxxxxxx | Memory bits 56 ... 49 |
| xxxxxxxx | Memory bits 64 ... 57 |
| **BM S: Name of the values block for LOGO! BM - shift register** | |
| xxxxxxxx | Shift register inputs S1.8 ... S1.1 |
| xxxxxxxx | Shift register inputs S2.8 ... S2.1 |
| xxxxxxxx | Shift register inputs S3.8 ... S3.1 |
| xxxxxxxx | Shift register inputs S4.8 ... S4.1 |
| **BM C: Name of the values block for LOGO! BM - arrow keys** | |
| xxxx | Keys 4 ... 1 in the symbols<br>▶ ◀ ▼ ▲ |
| **BM F: Name of the values block for LOGO! BM - function keys** | |
| xxxx | Function keys F4 ... F1, F1 right justified |
| **BM AI: Name of the values block for LOGO! BM - analog inputs** | |
| xxxxxx | Analog input 1 |
| xxxxxx | Analog input 2 |
| xxxxxx | Analog input 3 |
| xxxxxx | Analog input 4 |
| xxxxxx | Analog input 5 |
| xxxxxx | Analog input 6 |
| xxxxxx | Analog input 7 |
| xxxxxx | Analog input 8 |
| **BM AQ: Name of the values block for LOGO! BM - analog outputs** | |
| xxxxxx | Analog output 1 |
| xxxxxx | **...** |
| xxxxxx | ... |
| xxxxxx | Analog output 8 |
| **BM AM: Name of the values block for LOGO! BM - analog memory bits** | |
| xxxxxx | Analog flag 1 |
| xxxxxx | **...** |
| xxxxxx | ... |
| xxxxxx | Analog flag 64 |

## Example of a reply SMS message

- In the CMR, input 1 and output 2 are used.
- In the BM control program I1, I2 and I6, as well as Q1, Q3,Q9 and Q17 and analog input 2 are monitored.

**Assumption**

- BM in RUN, CMR connection to BM
- CMR: I1=1, Q2=1
- BM: I1 = 0, I2 = 1, I6 = 0, Q1 = 1, Q3 = 0, Q9 = 1, Q17 = 0, AI2 = 3.5 V

Table B-2 Reply SMS message

| Content | Description |
|---|---|
| **SMS header** | |
| From: DE-VICE-Name | Module name of the CMR |
| 2016-10-05 14:14:45 | Date and time of the module |
| CMR I: | |
| ******x1 | * = 6 leading spaces |
| CMR Q: | |
| ******1x | * = 6 leading spaces |
| BM PS/CS: | |
| ******11 | BM in RUN, CMR connected to BM |
| BM I: | |
| xx0xxx10 | Input 9 ... 24 in the values block not used and not displayed |
| BM Q: | |
| xxxxx0x1 | |
| xxxxxxx1 | |
| ****xxx0 | * = 4 leading spaces |
| BM AI: | Values blocks BM M, BM S, BM C and BM F not used and not displayed |
| xxxxxx | |
| 00350 | No further values in this and the following values blocks, therefore not shown in the SMS message. |

**Example with LOGO! BM**

- The input voltage range of the analog input is 0 to 10 V:
  This range is represented by values in 1 000 steps.
- A voltage at the analog input of 3.5 V has a value of 350 [00350]:
  Input voltage in V * 100 = internal value of the LOGO!
- The representation of the values is 6 digits with leading zeros. One analog value is output per line.
- Unused values are represented by x.
  Values that cannot be read out are represented by "e".
- Remaining lines in a values block are omitted completely if there are no further used values in these lines.

# Documentation references

C

### Where to find Siemens documentation

- **Article numbers / Catalogs**
  You will find the article numbers for the Siemens products of relevance here in the following catalogs:
  - SIMATIC NET - Industrial Communication / Industrial Identification, catalog IK PI
  - SIMATIC - Products for Totally Integrated Automation and Micro Automation, catalog ST 70

  You will find the catalogs via the Internet page of Siemens Industry Mall:
  Link: (https://mall.industry.siemens.com)
  You can request catalogs and additional information from your Siemens representative.
- **Manuals on the Internet**
  You will find SIMATIC NET manuals on the Internet pages of Siemens Industry Online Support:
  Link: (https://support.industry.siemens.com/cs/ww/en/ps/15247/man)
  Go to the required product in the product tree and select "Manual" as the entry type.

## C.1 /1/

SIMATIC NET
LOGO! CMR2020 / CMR2040
Operating Instructions
Siemens AG
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15383/man)

## C.2 /2/

LOGO!
System Manual
Siemens AG
Current version on the following Internet page:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/13617/man)

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