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**Communication
between two LOGO!
Controllers by means
of LOGO! CMR and
SMS**

LOGO! 8, LOGO! CMR

<https://support.industry.siemens.com/cs/ww/EN/view/109483740>

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Warranty and liability

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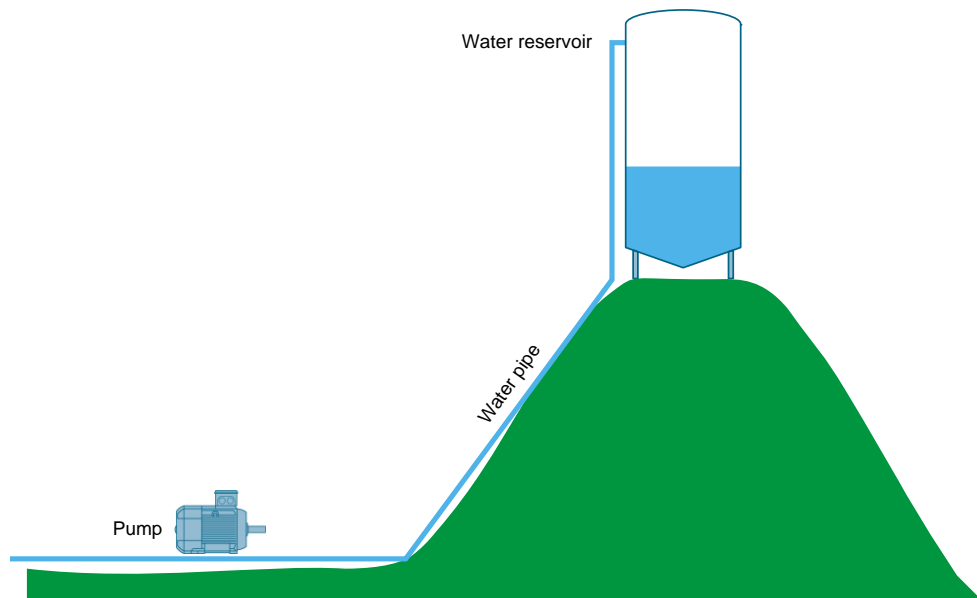
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1 Task

In order to supply a remote, elevated region with water, a water reservoir is installed and filled by a pump in the valley. The pump is to be switched on and off, depending from the filling level of the water reservoir.

Figure 1-1 Overview of task



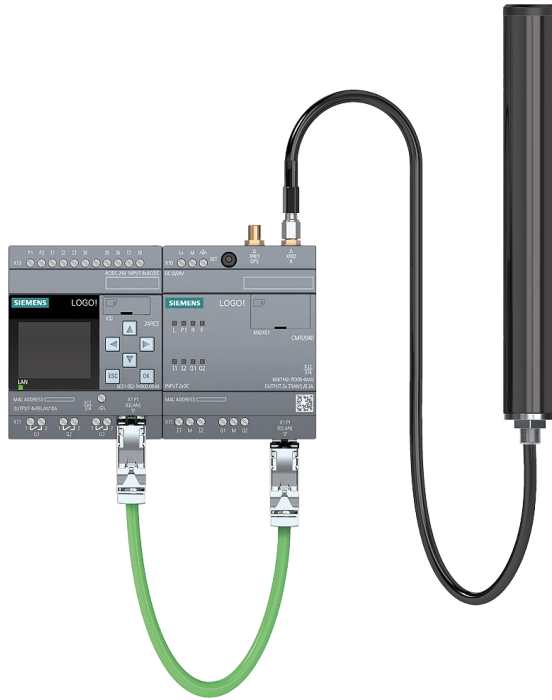
The following requirements must be fulfilled:

- The pump is switched on when the water reservoir is nearly empty.
- The pump is switched off time-controlled or at the latest when the water reservoir is full.
- The operator is to be able to read the filling level of the water reservoir at any time via remote access.

2 Solution

For this task, the use of the LOGO! 8 controller and the LOGO! CMR communication module by SIEMENS is very suitable.

Figure 2-1 LOGO! 8 with LOGO! CMR



LOGO! 8 controller

With LOGO! Siemens offers you the ideal controller for the realization of simple automation tasks in industry and building technology.

The consequent modular configuration of LOGO! makes the logic module highly flexible. A wide range of modules enables a customized expansion of LOGO!.

LOGO! CMR communication module

The CMR (communication module radio) for LOGO! 8 has three typical application areas:

- Communication to LOGO! 8 via SMS (GSM) for alarms, process monitoring and control directly from mobile end devices
- Position determination via GPS
- Time synchronization of LOGO! 8 via NTP server or GPS

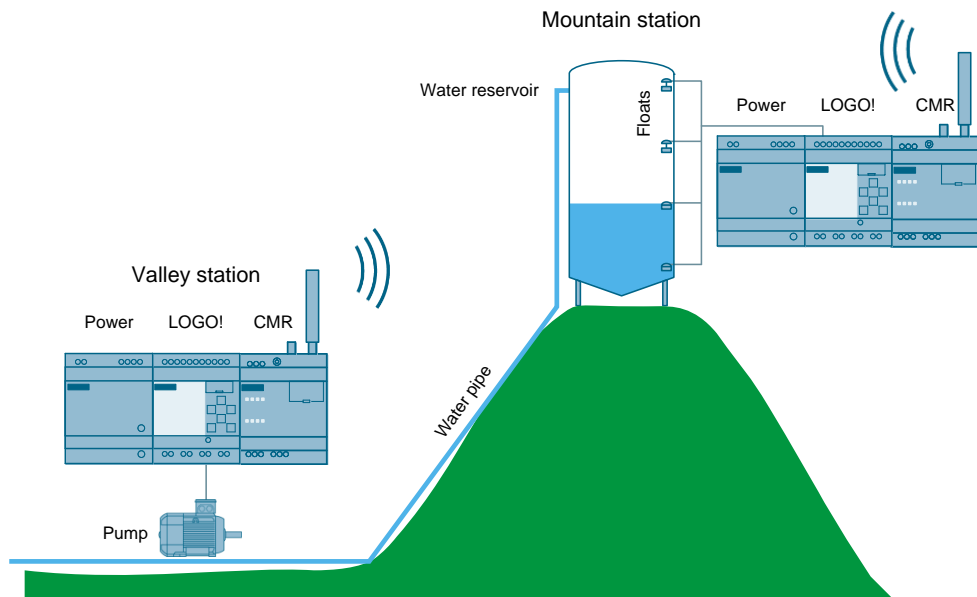
LOGO! CMR supports remote communication via the mobile network with a LOGO! 8. This is how distributed plants can be monitored and controlled via SMS or alarm messages can be triggered from LOGO!.

2.1 Overview

Schematic layout

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

Figure 2-2 Overview of solution



Configuration

A LOGO! 8 controller and a LOGO! CMR communication module are installed both in the valley as well as on the mountain. With the aid of LOGO! CMR both controllers can communicate with each other via SMS.

The filling level of the water reservoir is monitored via four commercially available floats.

Advantages

The solution presented here offers you the following advantages:

- Economical, fully automated supply of the water reservoir
- Easy implementation and expandability
- Error prevention by a tested program and step-by-step instruction
- Economical remote access to filling level of the water reservoir
- High user-friendliness by automatic alarm via SMS, if a defect occurs

2.2 Description of the core functionality

Mountain station requests water

A low filling level is detected by means of the bottom float. The mountain station sends an SMS to the valley station and requests water. A pump is controlled with the help of a contactor via an output of the LOGO! in the valley station and water is pumped to the mountain station. When the specified time is up, the pump switches off automatically. The valley station acknowledges the request via SMS.

If the valley station does not respond within a certain time, the mountain station sends a second SMS. If there is also no response to the second text message, an error is output and the operator is informed via SMS.

Mountain station requests the pump to be switched off

If the top float detects that the water reservoir is full, the mountain station sends an SMS to the valley station to switch off the pump. The pump is then switched off by the valley station before the fixed time is up. The valley station acknowledges the request via SMS.

If the valley station does not respond within a certain time, the mountain station sends a second SMS. If there is also no response to the second text message, an error is output and the operator is informed via SMS.

Operator requests the filling level

The operator requests the filling level of the water reservoir via SMS. The mountain station replies with the current filling level via SMS.

2.3 Hardware and software components

2.3.1 Validity

This application is valid for

- LOGO! 8
- LOGO! Soft Comfort V8

2.3.2 Components used

The application has been created with the following components:

Hardware components

Table 2-1

Component	Qty	Article number	Note
LOGO! 12/24 RCE	2	6ED1052-1MD00-0BA8	
LOGO! CMR 2020	2	6GK7142-7BX00-0AX0	
LOGO! Power	2	6EP1331-1SH03	
Mobile wireless antenna	2	6NH9860-1AA00	
SIM card	2		e.g. O2 prepaid card
Float	4		Available from specialist retailers
Pump	1		Available from specialist retailers
Contactora	1	3RT2015-1BB41	3 kW/400 V

Software components

Table 2-2

Component	Qty	Article number	Note
LOGO! Soft Comfort V8	1	6ED1058-0BA08-0YA1	

Example files and projects

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

Table 2-3

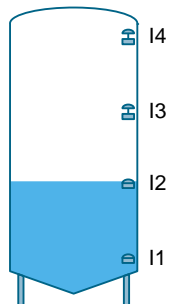
Component	Note
109483740_LOGO_CMR_Pump_DOC_V10_en.pdf	This document
109483740_LOGO_CMR_Pump_PROJ_V10_en.zip	Contains programs for LOGO! and configuration files for LOGO!! CMR

3 Function Principle

3.1 Monitoring the filling level (mountain station)

The filling level of the water reservoir is monitored by four vertical floats. The normally open contacts of the floats are connected to inputs I1 (lowest float) to I4 (highest float).

Figure 3-1



Note

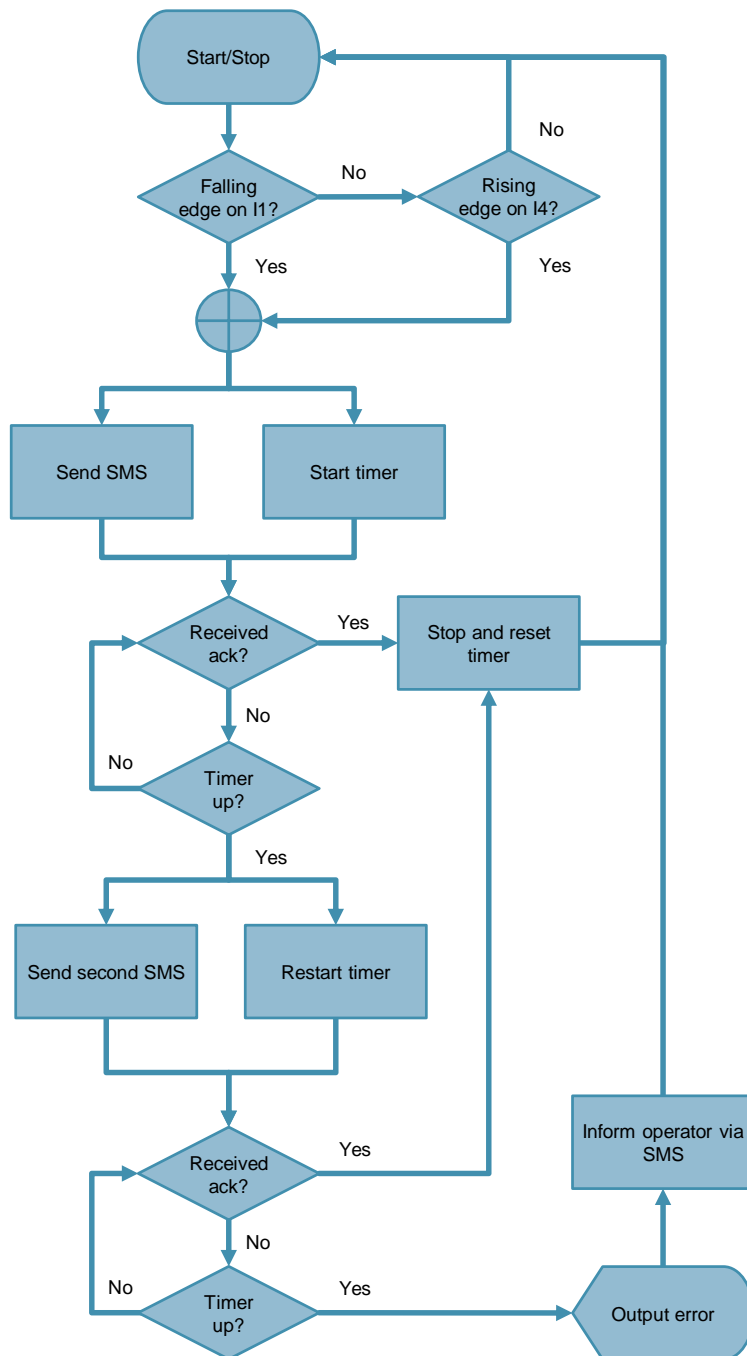
Alternatively, digital level sensors or an analog level sensor can be used.

3 Function Principle

3.1 Monitoring the filling level (mountain station)

The figure below shows the program flow of the mountain station.

Figure 3-2



3.1 Monitoring the filling level (mountain station)

3.1.1 Low filling level

If no error is pending, with a falling edge on input I1 (lowest float), M1 flag is set and a timer is started. This flag is monitored by LOGO! CMR. If there is a signal change to 1, an SMS with the command to activate the pump is sent to the valley station (see chapter [3.2](#)).

Normally, the valley station acknowledges the receipt by SMS and the timer is stopped and reset.

If no acknowledgement is received a second SMS with the same command is sent to the valley station after the configured time is up and the timer is started for a second time.

The number of runs of the timers are counted in. If no acknowledgement is received for the second run, a message text is output on the display, an error lamp is switched on and flag M5 is set. This flag is monitored by LOGO! CMR. If there is a signal change to 1, the operator will be informed that the valley station cannot be reached.

Note

An edge triggered wiping relay is used as timer and the time is configured as interpulse period (TL). Once the TL time is up, a positive signal is created for the pulse duration TH. Thus, the wiping relay is ready for another trigger without special reset signal.

3.1.2 Maximum filling level

With an increasing edge on input I4 (highest float) M2 flag is set a timer and a timer is started. This flag is monitored by LOGO! CMR. If there is a signal change to 1, an SMS with the command to deactivate the pump is sent to the valley station (see chapter [3.2](#)).

Normally, the valley station acknowledges the receipt by SMS and the timer is stopped and reset.

If no acknowledgement is received a second SMS with the same command is sent to the valley station after the configured time is up and the timer is started for a second time.

The number of runs of the timers are counted in. If no acknowledgement is received for the second run, a message text is output on the display, an error lamp is switched on and flag M5 is set. This flag is monitored by LOGO! CMR. If there is a signal change to 1, the operator will be informed that the valley station cannot be reached.

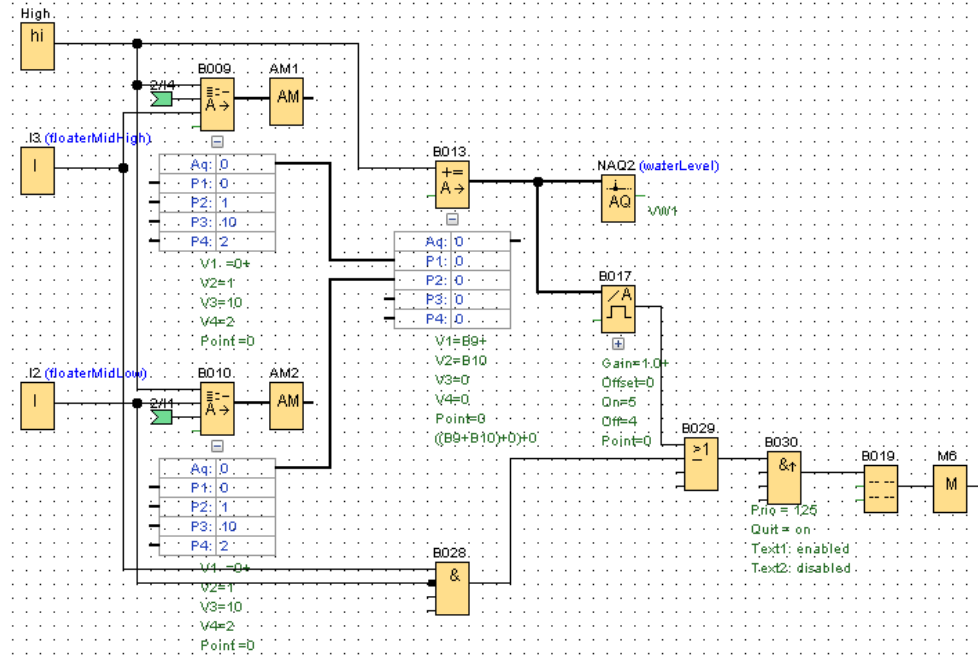
Note

An edge triggered wiping relay is used as timer and the time is configured as interpulse period (TL). Once the TL time is up, a positive signal is created for the pulse duration TH. Thus, the wiping relay is ready for another trigger without special reset signal.

3.1.3 Specifying the level

Based on the four floats the filling level can be qualified in five steps (0 to 4). The level is determined by two analog multiplexers (B009 and B010) and one adder (B013).

Figure 3-3



The signals of two neighboring floats are each applied on one multiplexer. Both multiplexers are identically configured. Depending on the signal of the floats, the multiplexers output the following analogous values:

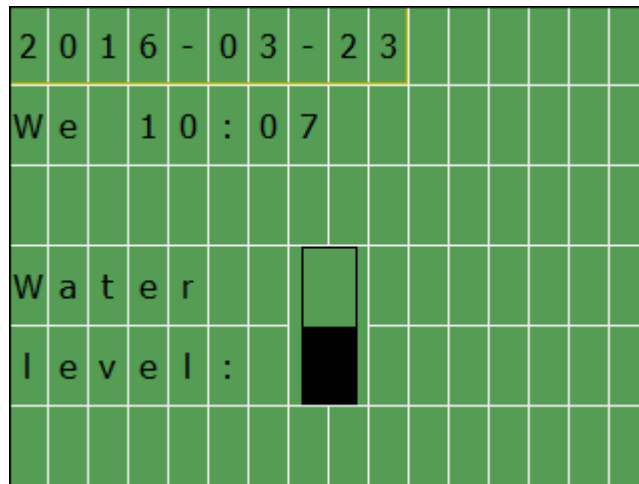
Table 3-1

Signal I2/I4	Signal I1/I3	Output AQ
0	0	0
0	1	1
1	0	10
1	1	2

The two analog values are now added. The result of the addition represents the filling level of the water reservoir.

If no error is pending, the filling level is displayed graphically on the display of the LOGO! mountain station.

Figure 3-4



The filling level is saved in the variable VW1 and the operator can request it by SMS (see chapter [6Fehler! Verweisquelle konnte nicht gefunden werden.](#)).

Detecting a defective float

In order to detect a defective float, a logic check of the signals is carried out. If the floats are switched in an illogical sequence (e.g. I1 = 0, I2 = 1), the multiplexer will output the value "10". The result of the addition is therefore higher than the highest value "4", this enables an analog threshold trigger (B017).

This is the case, a message text is output on the display, an error lamp is switched on and flag M6 is set. This flag is monitored by LOGO! CMR. If there is a signal change to 1, the operator will be informed that at least one float or cable is defective.

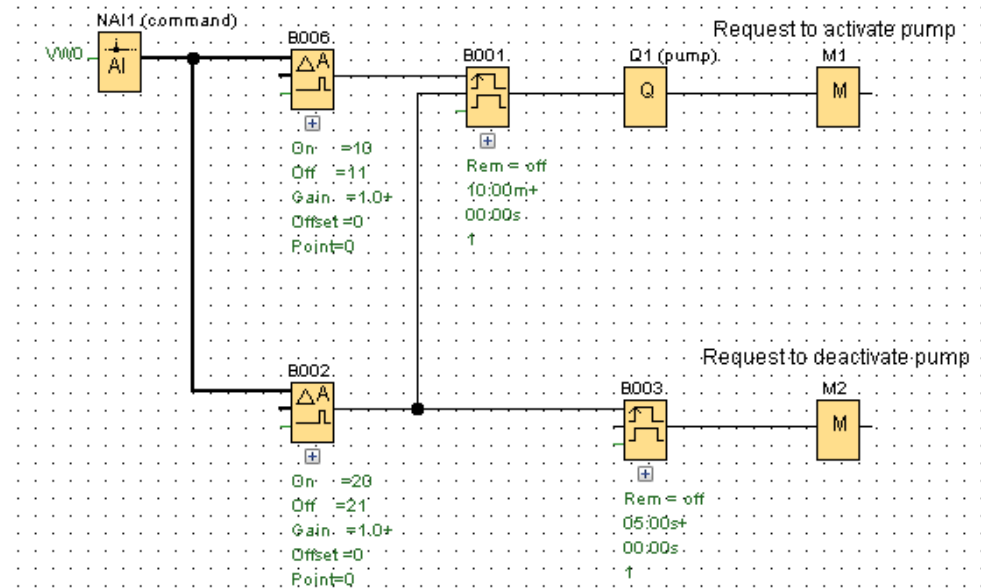
Figure 3-5



3.2 Switching the pump on/off (valley station)

With the receipt of the command to activate the pump, an edge triggered wiping relay (B001) is activated. As long as the configured time is running, output Q1 (pump) and flag M1 are set.

Figure 3-6 Excerpt of the valley station program



Once the time is up, Q1 and M1 are reset and the pump is thus automatically switched off again.

If a command for switching off the pump was received before, the wiping relay is reset and the pump is immediately switched off. In addition, flag M2 is set.

Flags M1 and M2 are monitored by LOGO! CMR. If there is a signal change to 1, an SMS is sent to the mountain station that the respective command has been received. As a result, the mountain station stops its timer.

In order to ensure that the CMR detects the signal change of M2, the signal is held for 5 seconds by a wiping relay (B003).

3.3 Exchanging the control commands via SMS

For the exchange of control commands/acknowledgements between the two stations, the local variable memory (VM) is used in both LOGO!. The VW0 variable is written via a SMS directly to the respective other LOGO!.

Note **Direct access to BM variable memory**

For reasons of security, the address in the VM memory can only be read/write accessed via SMS when the address was previously created as signal via the web interface of the LOGO! CMR.

3.3.1 Sending a command or an acknowledgment

Sending an SMS is triggered in the LOGO! controller by setting flags that are monitored by LOGO! CMR. For this purpose, signal definitions, events and actions are configured in the web interface of the LOGO! CMR. A detailed description of how to configure this can be found in chapter [4](#).

Commands/acknowledgements

The following commands/acknowledgements are exchanged between the two LOGO! via the value of VW0.

Table 3-2 Commands/acknowledgements

Value of VW0	Meaning of the value
10	Command for switching on the pump
12	Acknowledgement of the command for switching on the pump
20	Command for switching off the pump
22	Acknowledgement of the command for switching off the pump
30	Operator requested the current water level.

Structure of the SMS

The structure of the SMS for write commands is defined as follows:

<Password>;LOGO=VM<Address>,<Value>,<Data type>

For write commands a password is always necessary. This is specified in the web interface of the receiving LOGO! CMR (see chapter [4](#)).

The SMS for switching on the pump may, for example, look like this:

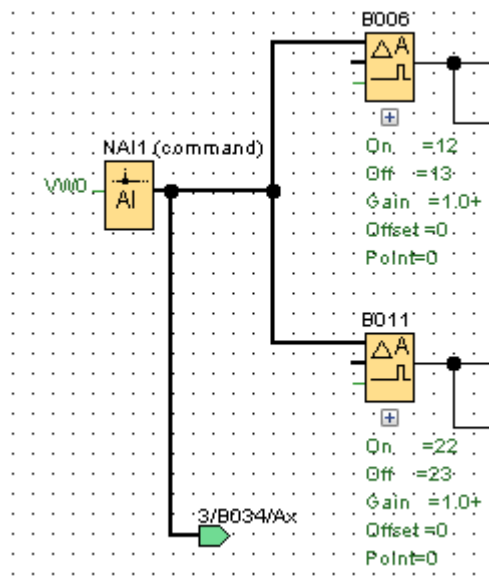
SMSwrite;LOGO=VM0,10,WORD

3.3.2 Receiving a command or an acknowledgment

Received SMS are evaluated by CMR. For write commands the respective variable is written in the LOGO! controller.

By means of analog comparators, the two LOGO! devices monitor the value of their VW0 variable and they perform the previously described action depending on this value.

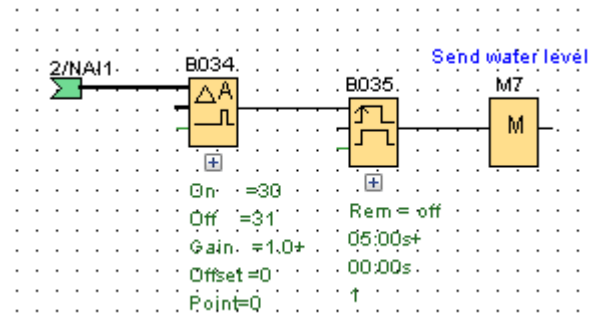
Figure 3-7 Monitoring of VW0 in the mountain station



If the VW0 variable of the mountain station has the value “12”, the analog comparator B006 outputs a “1” signal. If the value “22” is written in the variable, B011 outputs a “1” signal. Otherwise the two analog comparators output “0”.

In order to request the current water level, the operator writes the value “30” in the VW0 variable per SMS (see chapter 6) and the flag M7 that is monitored by the CMR is set. The CMR then sends the current water level per SMS to the operator.

Figure 3-8 Monitoring of VW0 in the mountain station (continuation)



4 Configuration and Settings

Note

In this application example ready-to-use configuration files for the two LOGO! CMR are also offered for download. In the configuration files, the following settings have already been made:

- Settings for receiving and sending SMS messages
- Settings for monitoring the signals from the LOGO! program

Please ensure that when loading the configuration for the LOGO! CMR, the password of the configuration file is also adopted.

In this application example, the password “**LOGO8cmr.**” has been assigned in the configuration for the “admin” user as well as for the respective other station. In addition, the password “**SMSwrite**” was specified in the configuration by SMS as password for write commands. In the web interface of LOGO! CMR you can change the respective password for the user and the password for write commands by SMS at any time.

Further information, on how to load the completed configuration file into LOGO! CMR is available in chapter [5.2.2](#).

4.1 Configuring LOGO! CMR for sending/receiving SMS messages

The table below contains descriptions of the settings necessary in the web interface of LOGO! CMR to enable sending or receiving an SMS with LOGO! CMR.

The settings are shown based on the LOGO! CMR of the mountain station, however, they also apply for the LOGO! CMR of the valley station, unless they are labeled differently.

Note

It is assumed that LOGO! CMR has been connected to a power supply, is connected to a PC network, and that a SIM card has been inserted.

Please ensure that the IP address of the network connection of your PC is located in the same subnet as the LOGO! device. An instruction on how to change the IP address of a network card is available, for example, on the internet in the Microsoft Knowledge Base in “[Change TCP/IP settings](#)”.

Also make sure that during the configuration only one each of the two LOGO! CMR is connected with the network so that the IP addresses do not overlap. When both LOGO! CMR have to be operated in the same network for test purposes, unique IP addresses have to be assigned.

4 Configuration and Settings

4.1 Configuring LOGO! CMR for sending/receiving SMS messages

Table 4-1

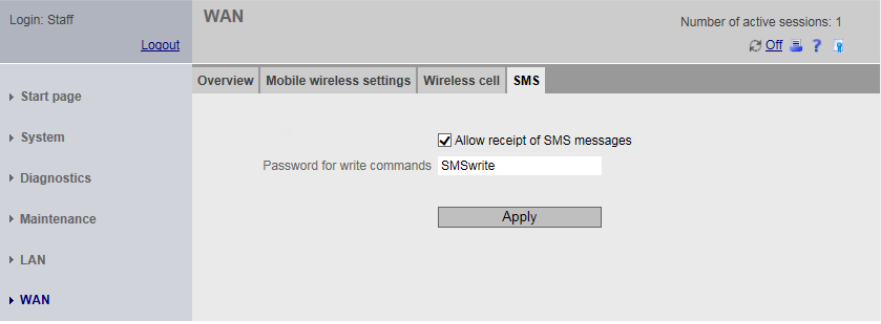
No.	Action
1.	Open your web browser and enter the IP address of LOGO! CMR (factory setting: 192.168.0.3).
2.	When initially logging on, enter the “admin” login info and “admin” as password (factory setting). Then you need to assign your own password.
3.	<p>Navigate to “WAN > Mobile wireless settings” and make the following settings:</p> <ol style="list-style-type: none"> Enable the “Activate mobile wireless interface” checkbox. Enter the PIN of the inserted SIM card in the LOGO! CMR. Click on “Apply” to save the settings.

The screenshot shows the 'WAN' configuration page in the LOGO! CMR web interface. The 'Mobile wireless settings' tab is active. The interface includes a left-hand navigation menu with options like 'Start page', 'System', 'Diagnostics', 'Maintenance', 'LAN', 'WAN', 'Users / groups', and 'Monitoring'. The top bar shows 'Login: admin' and a 'Logout' link. The main content area features several settings:

- 'Activate mobile wireless interface' is checked.
- A message states: 'The PIN has been successfully accepted by the SIM card.' with a green checkmark.
- 'Allow roaming' is unchecked.
- 'Phone number of the SMS service center' is set to '+xxxxxxxxxxxx'.
- A 'NOTE' section explains that the phone number should only be entered if the user does not want to use the default number from the provider.
- 'Activate data connection via the mobile wireless network' is unchecked.
- Fields for 'APN', 'User name', and 'Password' are present but empty.
- 'Authentication method' is set to 'None'.
- An 'Apply' button is at the bottom.

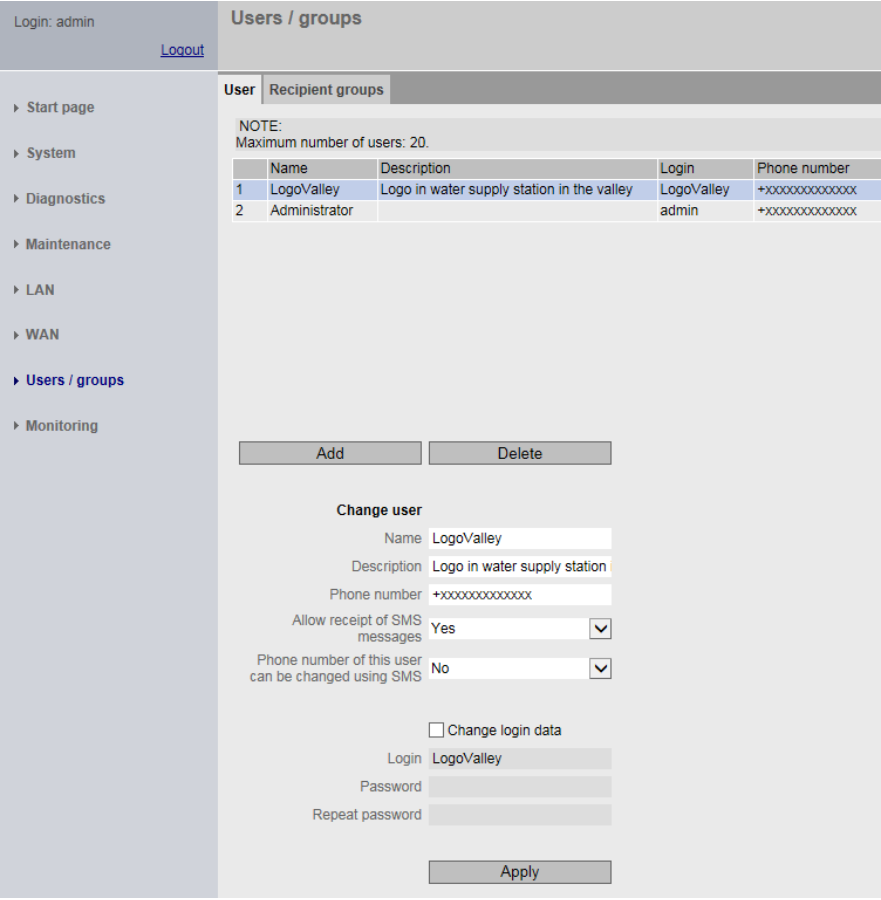
4 Configuration and Settings

4.1 Configuring LOGO! CMR for sending/receiving SMS messages

No.	Action
4.	<p>Navigate to “WAN > SMS” and make the following settings:</p> <ol style="list-style-type: none">Enable the “Allow receipt of SMS messages” checkbox.To be able to send SMS commands to LOGO!, enter any password in “Password for write commands”. <p>Note: The configuration file supplied with this application contains the password “SMSwrite” as the password for write commands.</p> <ol style="list-style-type: none">Click on “Apply” to save the settings. 

4 Configuration and Settings

4.1 Configuring LOGO! CMR for sending/receiving SMS messages

No.	Action
5.	<p>Navigate to “User / groups > User” and make the following settings:</p> <ol style="list-style-type: none"> Click on "Add". Enter a name for the respective other LOGO! CMR. Enter the mobile phone number of the SIM card inserted in the other LOGO! CMR. Select “Yes” in “Allow receipt of SMS messages”. Assign a login for your user (this is required, even if there is no login required for this user). Enter a password for this user in “Password”. Click on “Apply” to save the settings. 
6.	<p>Click on the “Administrator” line and enter your mobile phone number or that of the operator. This user receives the error messages by SMS and can request the filling level by SMS.</p>

4 Configuration and Settings

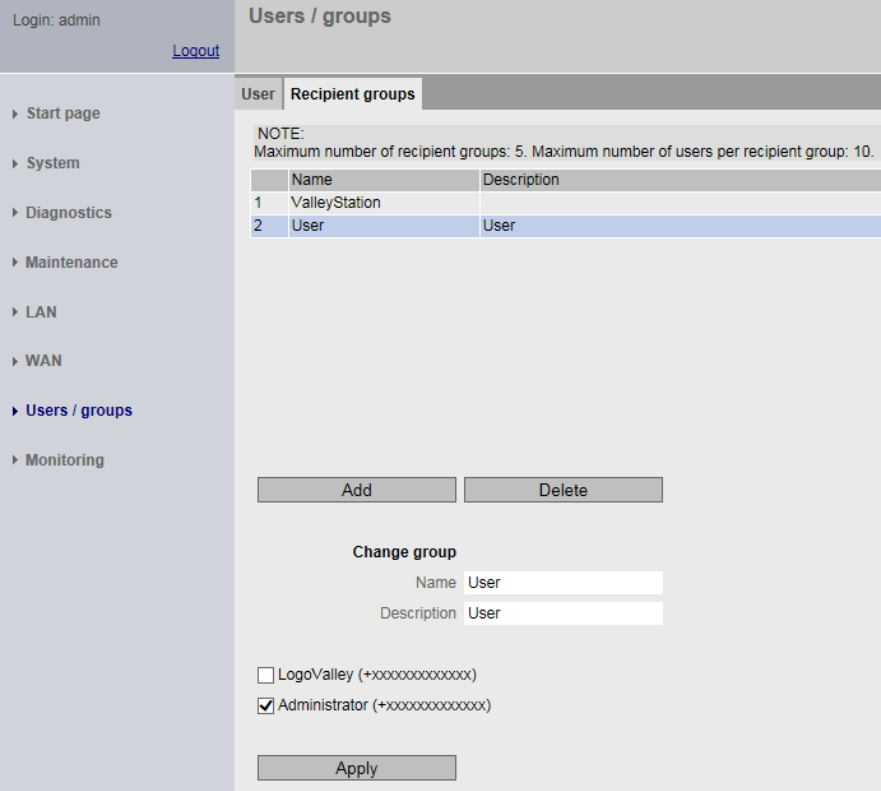
4.1 Configuring LOGO! CMR for sending/receiving SMS messages

No.	Action
7.	<p>Navigate to “User / groups > Recipient groups” and make the following settings:</p> <ol style="list-style-type: none"> Click on "Add". Enter a name and a description of your recipient group. Enable the checkbox of the user of the respective other LOGO! CMR. Enable the checkbox of the administrator, if you want to receive the messages between the two stations on your cell phone. Click on “Apply” to save the settings.

The screenshot displays the 'Users / groups' configuration interface. At the top, it shows 'Login: admin' and a 'Logout' link. The main header is 'Users / groups'. Below this, there are two tabs: 'User' and 'Recipient groups'. A note states: 'NOTE: Maximum number of recipient groups: 5. Maximum number of users per recipient group: 10.' Below the note is a table with two columns: 'Name' and 'Description'. The table contains two rows: row 1 with 'ValleyStation' and row 2 with 'User'. Below the table are 'Add' and 'Delete' buttons. A 'Change group' section contains a 'Name' field with 'ValleyStation' and a 'Description' field. Two checkboxes are checked: 'LogoValley (+xxxxxxxxxxxxxx)' and 'Administrator (+xxxxxxxxxxxxxx)'. At the bottom is an 'Apply' button.

4 Configuration and Settings

4.1 Configuring LOGO! CMR for sending/receiving SMS messages

No.	Action
8.	<p>a. Add a second user group for reading out the filling level and the receipt of the diagnostic SMS.</p> <p>b. Add the user "Administrator" to the second user group.</p>  <p>This user group receives the error messages via SMS and can request the filling level via SMS.</p> <p>Note: This is only required for the configuration of the mountain station since it is only this station that sends SMS to the operator.</p>
9.	Repeat steps 1 to 7 for the LOGO! CMR of the valley station.

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

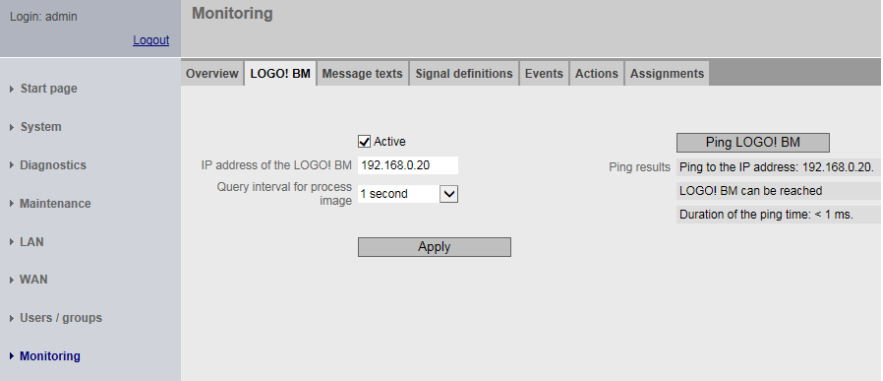
Once you have configured the basic settings for sending and receiving of SMS messages with LOGO! CMR, you can specify which signals and process values of LOGO! 8 are to be monitored or changed at any time via SMS.

Note

In the finished configuration file for LOGO! CMR which is also offered for download in this application example, the settings for the monitoring of signals and process values of LOGO! 8 have already been made with LOGO! CMR.

4.2.1 Configuring the LOGO! CMR of the mountain station

Table 4-2

No.	Action
1.	Open the web interface of the LOGO! CMR of the mountain station and log in as "Administrator".
2.	<p>Navigate to "Monitoring > LOGO! BM" and make the following settings:</p> <ol style="list-style-type: none"> Enable the "Active" checkbox to activate the connection from LOGO! CMR to LOGO! 8. Enter the IP address of your LOGO!. In "Query interval for process image" enter "1 second". Click on "Apply" to save the settings. With "Ping LOGO! BM" you can verify whether the connection between LOGO! CMR and LOGO! has been successful. 

4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action																																				
3.	<p>Navigate to "Message texts" and create the following messages:</p> <ul style="list-style-type: none"> WaterLevelLow: "SMSwrite;LOGO=VM0,10,WORD" WaterLevelMax: "SMSwrite;LOGO=VM0,20,WORD" ErrorCommunication: "Error: Valley station not reachable." ErrorFloats: "Error: Combination of float signals not valid. At least one float or cable is broken." CurrentWaterLevel: "The current water level is at [waterlevel]/4." <table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Content</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>WaterLevelLow</td> <td>SMSwrite;LOGO=VM0,10,WORD</td> </tr> <tr> <td>2</td> <td>WaterLevelMax</td> <td>SMSwrite;LOGO=VM0,20,WORD</td> </tr> <tr> <td>3</td> <td>ErrorCommunication</td> <td>Error: Valley station not reachable.</td> </tr> <tr> <td>4</td> <td>ErrorFloats</td> <td>Error: Combination of float signals not valid.</td> </tr> <tr> <td>5</td> <td>CurrentWaterLevel</td> <td>The current water level is at [waterlevel]/4.</td> </tr> </tbody> </table> <p>Signals that are used in messages (like "waterlevel") must be lower case.</p>		Name	Content	1	WaterLevelLow	SMSwrite;LOGO=VM0,10,WORD	2	WaterLevelMax	SMSwrite;LOGO=VM0,20,WORD	3	ErrorCommunication	Error: Valley station not reachable.	4	ErrorFloats	Error: Combination of float signals not valid.	5	CurrentWaterLevel	The current water level is at [waterlevel]/4.																		
	Name	Content																																			
1	WaterLevelLow	SMSwrite;LOGO=VM0,10,WORD																																			
2	WaterLevelMax	SMSwrite;LOGO=VM0,20,WORD																																			
3	ErrorCommunication	Error: Valley station not reachable.																																			
4	ErrorFloats	Error: Combination of float signals not valid.																																			
5	CurrentWaterLevel	The current water level is at [waterlevel]/4.																																			
4.	<p>Navigate to "Signal definitions" and add the following signals to monitoring:</p> <ul style="list-style-type: none"> waterLevelLow: M1 waterLevelMax: M2 errorCommunication: M5 errorFloats: M6 ack: VM0 waterlevel: VM1 reqWaterLevel: M7 <table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Signal definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CMR_I1</td> <td>LOGO! CMR / I/O / Input / 1</td> </tr> <tr> <td>2</td> <td>CMR_I2</td> <td>LOGO! CMR / I/O / Input / 2</td> </tr> <tr> <td>3</td> <td>CMR_Q1</td> <td>LOGO! CMR / I/O / Output / 1</td> </tr> <tr> <td>4</td> <td>CMR_Q2</td> <td>LOGO! CMR / I/O / Output / 2</td> </tr> <tr> <td>5</td> <td>waterLevelLow</td> <td>LOGO! BM / M - digital flag / 1</td> </tr> <tr> <td>6</td> <td>waterLevelMax</td> <td>LOGO! BM / M - digital flag / 2</td> </tr> <tr> <td>7</td> <td>errorCommunication</td> <td>LOGO! BM / M - digital flag / 5</td> </tr> <tr> <td>8</td> <td>errorFloats</td> <td>LOGO! BM / M - digital flag / 6</td> </tr> <tr> <td>9</td> <td>ack</td> <td>LOGO! BM / VM - variables memory / WORD / 0</td> </tr> <tr> <td>10</td> <td>waterlevel</td> <td>LOGO! BM / VM - variables memory / WORD / 1</td> </tr> <tr> <td>11</td> <td>reqWaterLevel</td> <td>LOGO! BM / M - digital flag / 7</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p>Change signal definition</p> <p>Name: reqWaterLevel</p> <p>Signal source: LOGO! BM <input type="button" value="v"/></p> <p>Signal type: M - digital flag <input type="button" value="v"/></p> <p>Number: 7 <input type="button" value="v"/></p> <p style="text-align: center;"><input type="button" value="Apply"/></p>		Name	Signal definition	1	CMR_I1	LOGO! CMR / I/O / Input / 1	2	CMR_I2	LOGO! CMR / I/O / Input / 2	3	CMR_Q1	LOGO! CMR / I/O / Output / 1	4	CMR_Q2	LOGO! CMR / I/O / Output / 2	5	waterLevelLow	LOGO! BM / M - digital flag / 1	6	waterLevelMax	LOGO! BM / M - digital flag / 2	7	errorCommunication	LOGO! BM / M - digital flag / 5	8	errorFloats	LOGO! BM / M - digital flag / 6	9	ack	LOGO! BM / VM - variables memory / WORD / 0	10	waterlevel	LOGO! BM / VM - variables memory / WORD / 1	11	reqWaterLevel	LOGO! BM / M - digital flag / 7
	Name	Signal definition																																			
1	CMR_I1	LOGO! CMR / I/O / Input / 1																																			
2	CMR_I2	LOGO! CMR / I/O / Input / 2																																			
3	CMR_Q1	LOGO! CMR / I/O / Output / 1																																			
4	CMR_Q2	LOGO! CMR / I/O / Output / 2																																			
5	waterLevelLow	LOGO! BM / M - digital flag / 1																																			
6	waterLevelMax	LOGO! BM / M - digital flag / 2																																			
7	errorCommunication	LOGO! BM / M - digital flag / 5																																			
8	errorFloats	LOGO! BM / M - digital flag / 6																																			
9	ack	LOGO! BM / VM - variables memory / WORD / 0																																			
10	waterlevel	LOGO! BM / VM - variables memory / WORD / 1																																			
11	reqWaterLevel	LOGO! BM / M - digital flag / 7																																			

4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action																		
5.	<p>Navigate to “Events” and add the following events:</p> <table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Event definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>levelLow</td> <td>waterLevelLow Changes to 1</td> </tr> <tr> <td>2</td> <td>levelHigh</td> <td>waterLevelMax Changes to 1</td> </tr> <tr> <td>3</td> <td>errorCommunication</td> <td>errorCommunication Changes to 1</td> </tr> <tr> <td>4</td> <td>errorFloats</td> <td>errorFloats Changes to 1</td> </tr> <tr> <td>5</td> <td>reqWaterLevel</td> <td>reqWaterLevel Changes to 1</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p style="text-align: center;">Change event</p> <p> Name <input type="text" value="levelLow"/> Signal name <input type="text" value="waterLevelLow"/> <input type="button" value="v"/> Event <input type="text" value="Changes to 1"/> <input type="button" value="v"/> </p> <p style="text-align: center;"><input type="button" value="Apply"/></p>		Name	Event definition	1	levelLow	waterLevelLow Changes to 1	2	levelHigh	waterLevelMax Changes to 1	3	errorCommunication	errorCommunication Changes to 1	4	errorFloats	errorFloats Changes to 1	5	reqWaterLevel	reqWaterLevel Changes to 1
	Name	Event definition																	
1	levelLow	waterLevelLow Changes to 1																	
2	levelHigh	waterLevelMax Changes to 1																	
3	errorCommunication	errorCommunication Changes to 1																	
4	errorFloats	errorFloats Changes to 1																	
5	reqWaterLevel	reqWaterLevel Changes to 1																	
6.	<p>Navigate to “Actions” and add the following actions:</p> <table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Action definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>activatePump</td> <td>Send SMS message / ValleyStation / WaterLevelLow</td> </tr> <tr> <td>2</td> <td>deactivatePump</td> <td>Send SMS message / ValleyStation / WaterLevelMax</td> </tr> <tr> <td>3</td> <td>sendTextErrorComm</td> <td>Send SMS message / User / ErrorCommunication</td> </tr> <tr> <td>4</td> <td>sendTextErrorFloat</td> <td>Send SMS message / User / ErrorFloats</td> </tr> <tr> <td>5</td> <td>sendWaterLevel</td> <td>Send SMS message / User / CurrentWaterLevel</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p style="text-align: center;">Change action</p> <p> Name <input type="text" value="activatePump"/> Destination <input type="text" value="Send SMS message"/> <input type="button" value="v"/> Recipient group <input type="text" value="ValleyStation"/> <input type="button" value="v"/> Message text <input type="text" value="WaterLevelLow"/> <input type="button" value="v"/> </p> <p style="text-align: center;"><input type="button" value="Apply"/></p> <p>Make sure to select the correct recipient group.</p>		Name	Action definition	1	activatePump	Send SMS message / ValleyStation / WaterLevelLow	2	deactivatePump	Send SMS message / ValleyStation / WaterLevelMax	3	sendTextErrorComm	Send SMS message / User / ErrorCommunication	4	sendTextErrorFloat	Send SMS message / User / ErrorFloats	5	sendWaterLevel	Send SMS message / User / CurrentWaterLevel
	Name	Action definition																	
1	activatePump	Send SMS message / ValleyStation / WaterLevelLow																	
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3	sendTextErrorComm	Send SMS message / User / ErrorCommunication																	
4	sendTextErrorFloat	Send SMS message / User / ErrorFloats																	
5	sendWaterLevel	Send SMS message / User / CurrentWaterLevel																	

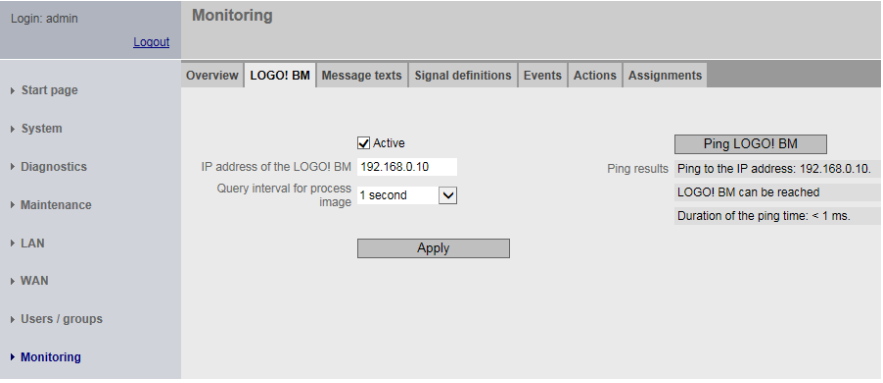
4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action																								
7.	<p>Navigate to "Assignments" and assign the four events to the appropriate action:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Active</th> <th>Name</th> <th>Event</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>activatePump</td> <td>levelLow</td> <td>activatePump</td> </tr> <tr> <td>2</td> <td>deactivatePump</td> <td>levelHigh</td> <td>deactivatePump</td> </tr> <tr> <td>3</td> <td>sendTextErrorComm</td> <td>errorCommunication</td> <td>sendTextErrorComm</td> </tr> <tr> <td>4</td> <td>sendTextErrorFloat</td> <td>errorFloats</td> <td>sendTextErrorFloat</td> </tr> <tr> <td>5</td> <td>sendWaterLevel</td> <td>reqWaterLevel</td> <td>sendWaterLevel</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p>Change assignment</p> <p>Name: <input type="text" value="activatePump"/></p> <p><input checked="" type="checkbox"/> Activate assignment</p> <p>If: <input type="text" value="levelLow"/> <input type="button" value="v"/></p> <p>Signal name: <input type="text" value="waterLevelLow"/></p> <p>Signal definition: <input type="text" value="LOGO! BM / M - digital flag / 1"/></p> <p>Event definition: <input type="text" value="waterLevelLow Changes to 1"/></p> <p style="text-align: right;"> Then: Action: <input type="text" value="activatePump"/> <input type="button" value="v"/> Action definition: <input type="text" value="Send SMS message / ValleyStation / WaterLevelLow"/> </p> <p style="text-align: center;"><input type="button" value="Apply"/></p>	Active	Name	Event	Action	1	activatePump	levelLow	activatePump	2	deactivatePump	levelHigh	deactivatePump	3	sendTextErrorComm	errorCommunication	sendTextErrorComm	4	sendTextErrorFloat	errorFloats	sendTextErrorFloat	5	sendWaterLevel	reqWaterLevel	sendWaterLevel
Active	Name	Event	Action																						
1	activatePump	levelLow	activatePump																						
2	deactivatePump	levelHigh	deactivatePump																						
3	sendTextErrorComm	errorCommunication	sendTextErrorComm																						
4	sendTextErrorFloat	errorFloats	sendTextErrorFloat																						
5	sendWaterLevel	reqWaterLevel	sendWaterLevel																						

4.2.2 Configuring the LOGO! CMR of the valley station

Table 3-4

No.	Action								
1.	Open the web interface of the LOGO! CMR of the valley station and log in as “Administrator”.								
2.	<p>Navigate to “Monitoring > LOGO! BM” and make the following settings:</p> <ol style="list-style-type: none"> Enable the “Active” checkbox to activate the connection from LOGO! CMR to LOGO! 8. Enter the IP address of your LOGO!. In “Query interval for process image” enter “1 second”. Click on “Apply” to save the settings. With “Ping LOGO! BM” you can verify whether the connection between LOGO! CMR and LOGO! has been successful. 								
3.	<p>Navigate to “Message texts” and create the following messages:</p> <ul style="list-style-type: none"> AckActivatePump: “SMSwrite;LOGO=VM0,12,WORD” AckDeactivatePump: “SMSwrite;LOGO=VM0,22,WORD” <table border="1" data-bbox="475 1413 1361 1514"> <thead> <tr> <th>Name</th> <th>Content</th> </tr> </thead> <tbody> <tr> <td>1 AckActivatePump</td> <td>SMSwrite;LOGO=VM0,12,WORD</td> </tr> <tr> <td>2 AckDeactivatePump</td> <td>SMSwrite;LOGO=VM0,22,WORD</td> </tr> <tr> <td>3 AutoDeactivation</td> <td>Time limit for active pump reached. Deactivating pump.</td> </tr> </tbody> </table>	Name	Content	1 AckActivatePump	SMSwrite;LOGO=VM0,12,WORD	2 AckDeactivatePump	SMSwrite;LOGO=VM0,22,WORD	3 AutoDeactivation	Time limit for active pump reached. Deactivating pump.
Name	Content								
1 AckActivatePump	SMSwrite;LOGO=VM0,12,WORD								
2 AckDeactivatePump	SMSwrite;LOGO=VM0,22,WORD								
3 AutoDeactivation	Time limit for active pump reached. Deactivating pump.								

4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action																								
4.	<p>Navigate to "Signal definitions" and add the following signals to monitoring:</p> <ul style="list-style-type: none">• reqActPump: M1• reqDeactPump: M2• command: VM0 <table border="1"><thead><tr><th></th><th>Name</th><th>Signal definition</th></tr></thead><tbody><tr><td>1</td><td>CMR_I1</td><td>LOGO! CMR / I/O / Input / 1</td></tr><tr><td>2</td><td>CMR_I2</td><td>LOGO! CMR / I/O / Input / 2</td></tr><tr><td>3</td><td>CMR_Q1</td><td>LOGO! CMR / I/O / Output / 1</td></tr><tr><td>4</td><td>CMR_Q2</td><td>LOGO! CMR / I/O / Output / 2</td></tr><tr><td>5</td><td>reqDeactPump</td><td>LOGO! BM / M - digital flag / 2</td></tr><tr><td>6</td><td>reqActPump</td><td>LOGO! BM / M - digital flag / 1</td></tr><tr><td>7</td><td>command</td><td>LOGO! BM / VM - variables memory / WORD / 0</td></tr></tbody></table> <p><input type="button" value="Add"/> <input type="button" value="Delete"/></p> <p>Change signal definition</p> <p>Name <input type="text" value="CMR_I1"/></p> <p>Signal source <input type="text" value="LOGO! CMR"/> <input type="button" value="v"/></p> <p>Signal type <input type="text" value="I/O"/> <input type="button" value="v"/></p> <p>I/O type <input type="text" value="Input"/> <input type="button" value="v"/></p> <p>Number <input type="text" value="1"/> <input type="button" value="v"/></p> <p><input type="button" value="Apply"/></p>		Name	Signal definition	1	CMR_I1	LOGO! CMR / I/O / Input / 1	2	CMR_I2	LOGO! CMR / I/O / Input / 2	3	CMR_Q1	LOGO! CMR / I/O / Output / 1	4	CMR_Q2	LOGO! CMR / I/O / Output / 2	5	reqDeactPump	LOGO! BM / M - digital flag / 2	6	reqActPump	LOGO! BM / M - digital flag / 1	7	command	LOGO! BM / VM - variables memory / WORD / 0
	Name	Signal definition																							
1	CMR_I1	LOGO! CMR / I/O / Input / 1																							
2	CMR_I2	LOGO! CMR / I/O / Input / 2																							
3	CMR_Q1	LOGO! CMR / I/O / Output / 1																							
4	CMR_Q2	LOGO! CMR / I/O / Output / 2																							
5	reqDeactPump	LOGO! BM / M - digital flag / 2																							
6	reqActPump	LOGO! BM / M - digital flag / 1																							
7	command	LOGO! BM / VM - variables memory / WORD / 0																							

4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action									
5.	<p>Navigate to "Events" and add the following events:</p> <table border="1" data-bbox="478 376 1359 477"> <thead> <tr> <th></th> <th>Name</th> <th>Event definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>reqActReceived</td> <td>reqActPump Changes to 1</td> </tr> <tr> <td>2</td> <td>reqDeactReceived</td> <td>reqDeactPump Changes to 1</td> </tr> </tbody> </table> <p data-bbox="491 801 1045 835"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p data-bbox="627 891 767 913">Change event</p> <p data-bbox="707 925 1141 958">Name <input type="text" value="reqActReceived"/></p> <p data-bbox="647 969 1141 1003">Signal name <input type="text" value="reqActPump"/> <input type="button" value="v"/></p> <p data-bbox="707 1014 1141 1048">Event <input type="text" value="Changes to 1"/> <input type="button" value="v"/></p> <p data-bbox="774 1093 1045 1126"><input type="button" value="Apply"/></p>		Name	Event definition	1	reqActReceived	reqActPump Changes to 1	2	reqDeactReceived	reqDeactPump Changes to 1
	Name	Event definition								
1	reqActReceived	reqActPump Changes to 1								
2	reqDeactReceived	reqDeactPump Changes to 1								
6.	<p>Navigate to "Actions" and add the following actions:</p> <table border="1" data-bbox="478 1227 1359 1305"> <thead> <tr> <th></th> <th>Name</th> <th>Action definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SendAckActPump</td> <td>Send SMS message / MountainStation / AckActivatePump</td> </tr> <tr> <td>2</td> <td>SendAckDeactPump</td> <td>Send SMS message / MountainStation / AckDeactivatePump</td> </tr> </tbody> </table> <p data-bbox="491 1541 901 1574"> <input type="button" value="Add"/> <input type="button" value="Delete"/> </p> <p data-bbox="584 1608 692 1630">Change action</p> <p data-bbox="647 1641 973 1675">Name <input type="text" value="SendAckActPump"/></p> <p data-bbox="616 1675 973 1709">Destination <input type="text" value="Send SMS message"/> <input type="button" value="v"/></p> <p data-bbox="584 1709 973 1742">Recipient group <input type="text" value="MountainStation"/> <input type="button" value="v"/></p> <p data-bbox="600 1742 973 1776">Message text <input type="text" value="AckActivatePump"/> <input type="button" value="v"/></p> <p data-bbox="699 1798 901 1832"><input type="button" value="Apply"/></p>		Name	Action definition	1	SendAckActPump	Send SMS message / MountainStation / AckActivatePump	2	SendAckDeactPump	Send SMS message / MountainStation / AckDeactivatePump
	Name	Action definition								
1	SendAckActPump	Send SMS message / MountainStation / AckActivatePump								
2	SendAckDeactPump	Send SMS message / MountainStation / AckDeactivatePump								

4 Configuration and Settings

4.2 Configuring the monitoring of signals by LOGO! 8 with LOGO! CMR

No.	Action														
7.	<p>Navigate to "Assignments" and assign the appropriate action to the two events:</p> <table border="1"><thead><tr><th>Active</th><th>Name</th><th>Event</th><th>Action</th></tr></thead><tbody><tr><td>1</td><td>Yes</td><td>AckActivatePump</td><td>reqActReceived</td><td>SendAckActPump</td></tr><tr><td>2</td><td>Yes</td><td>AckDeactivatePump</td><td>reqDeactReceived</td><td>SendAckDeactPump</td></tr></tbody></table> <p><input type="button" value="Add"/> <input type="button" value="Delete"/></p> <p>Change assignment</p> <p>Name: <input type="text" value="AckActivatePump"/></p> <p><input checked="" type="checkbox"/> Activate assignment</p> <p>If: <input type="text" value="reqActReceived"/></p> <p>Signal name: <input type="text" value="reqActPump"/></p> <p>Signal definition: <input type="text" value="LOGO! BM / M - digital flag / 1"/></p> <p>Event definition: <input type="text" value="reqActPump Changes to 1"/></p> <p>Then: <input type="text" value="SendAckActPump"/></p> <p>Action definition: <input type="text" value="Send SMS message / MountainStation / AckActivatePump"/></p> <p><input type="button" value="Apply"/></p>	Active	Name	Event	Action	1	Yes	AckActivatePump	reqActReceived	SendAckActPump	2	Yes	AckDeactivatePump	reqDeactReceived	SendAckDeactPump
Active	Name	Event	Action												
1	Yes	AckActivatePump	reqActReceived	SendAckActPump											
2	Yes	AckDeactivatePump	reqDeactReceived	SendAckDeactPump											

5 Installation

5.1 Installing the hardware

The figures below show the hardware configuration of the two stations.

Figure 5-1 Hardware configuration mountain station

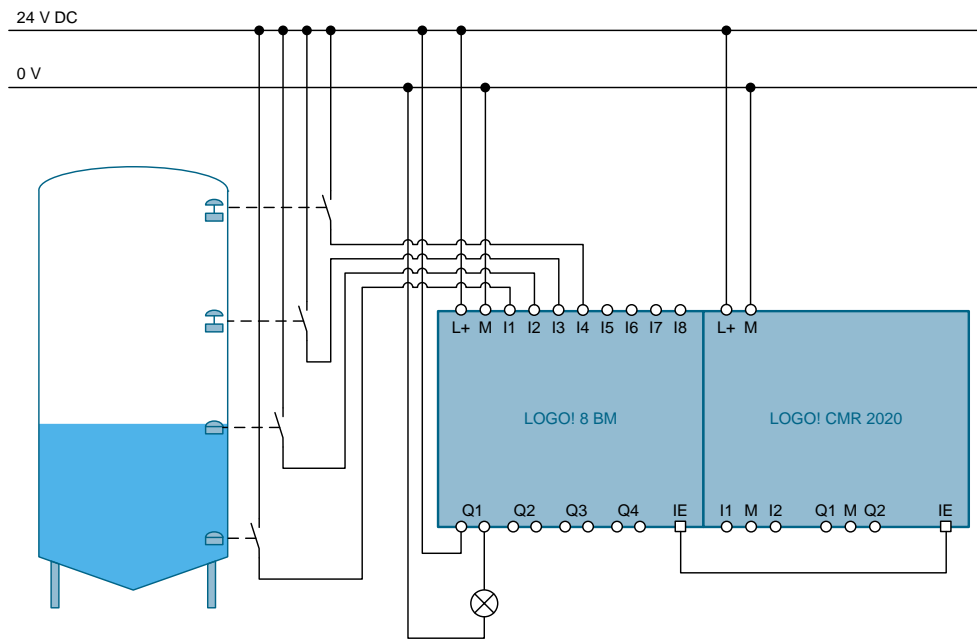


Table 5-1

No.	Action
1.	Connect the LOGO! 8 basic module to the 24V DC supply voltage.
2.	Connect the LOGO! 8 CMR to the 24V DC supply voltage.
3.	Connect the normally open contacts of the four floats to the digital inputs I1 to I4 of LOGO! 8 basic module.
4.	Connect the lamp for the error output to output Q1 of the LOGO! 8 basic module.
5.	Connect the LOGO! 8 basic module and the LOGO! CMR with an Ethernet cable.

5 Installation

5.1 Installing the hardware

Figure 5-2 Hardware configuration valley station

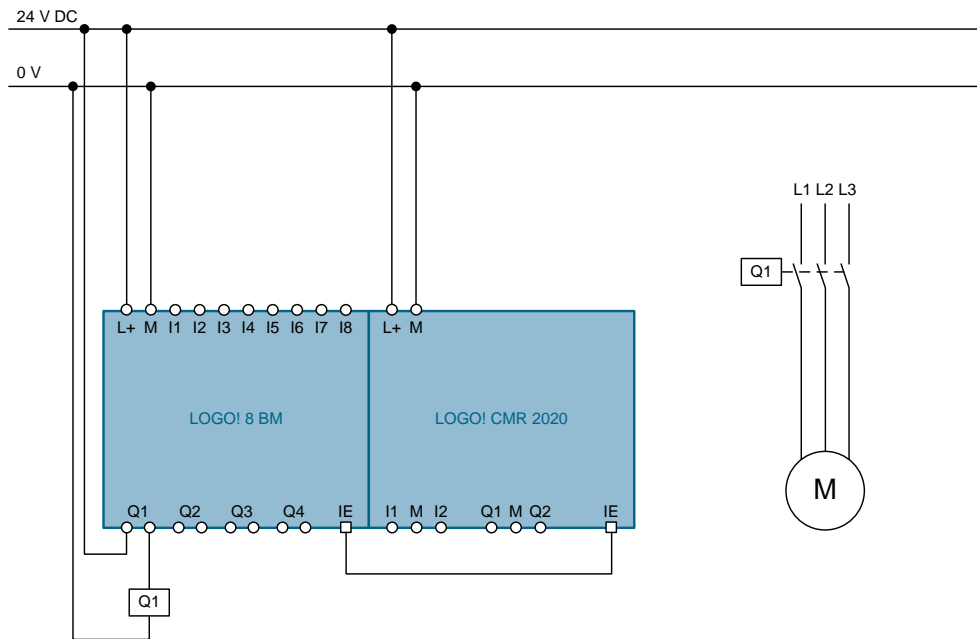


Table 5-2

No.	Action
1.	Connect the LOGO! 8 basic module to the 24V DC supply voltage.
2.	Connect the LOGO! 8 CMR to the 24V DC supply voltage.
3.	Connect the contactor to the three-phase network.
4.	Connect the pump to the contactor.
5.	Connect the contactor to output Q1 of the LOGO! 8 basic module.
6.	Connect the LOGO! 8 basic module and the LOGO! CMR with an Ethernet cable.

Note

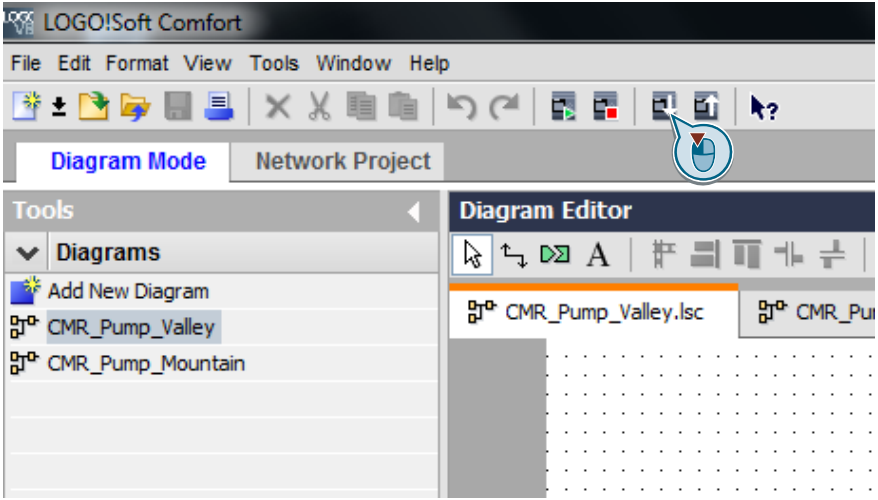
Please note the respective setup guidelines for LOGO! 8. Further information is available in the LOGO! manual in chapter „[LOGO! installation and wiring](#)“.

5.2 Installing the software (download)

5.2.1 Loading program in LOGO! 8

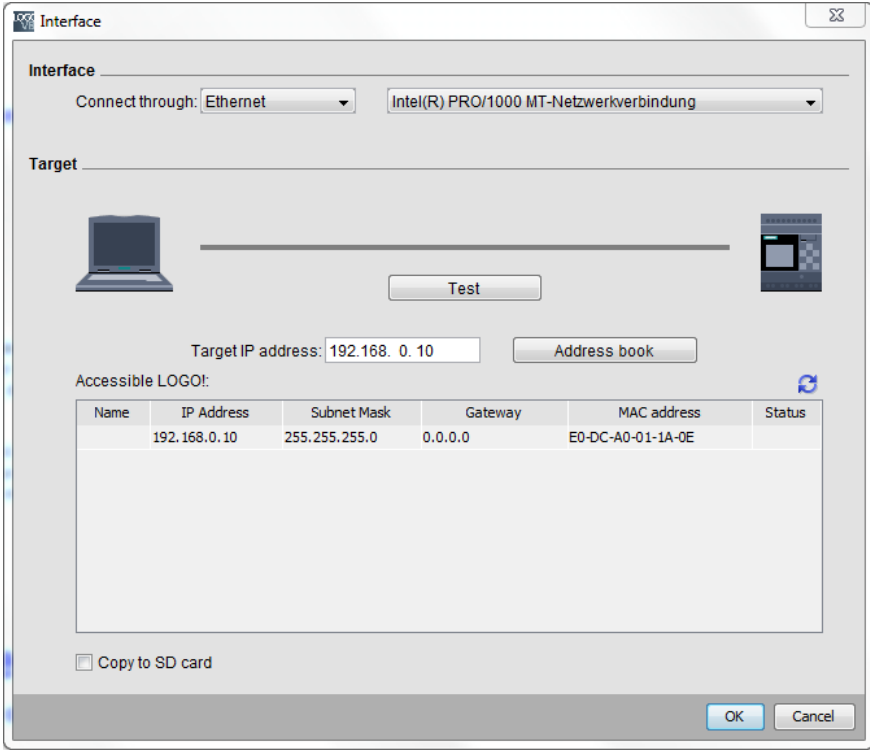
In this application example a ready-made LOGO! program for LOGO! 8 is also offered for download. The table below contains a description of how to load the ready-made LOGO! program into LOGO! 8. Start LOGO! Soft Comfort V8 and proceed as follows:

Table 5-3

No.	Action
7.	Navigate to “File > Open” and select the downloaded LOGO! program for the appropriate station.
8.	<p>Click on the “Download” button or press Ctrl+D.</p> 

5 Installation

5.2 Installing the software (download)

No.	Action
9.	<p>a. Select "Interface" for your connection to LOGO! and enter the IP address of the appropriate LOGO!.</p> <p>b. Click "Test" in order to check whether the connection is successful.</p> <p>c. If the connection is successful click "OK" in order to load the program into the device.</p> 
10.	Click "Yes" to set the LOGO! to STOP before the download.
11.	After the successful completion of the download click "Yes" in order to set the LOGO! back to RUN.
12.	Repeat the steps for each station.

5.2.2 Loading and adjusting a configuration file into LOGO! CMR

The table below contains a description of how to load and adapt the downloaded configuration file for the LOGO! CMR, which is offered for download, into the LOGO! CMR.

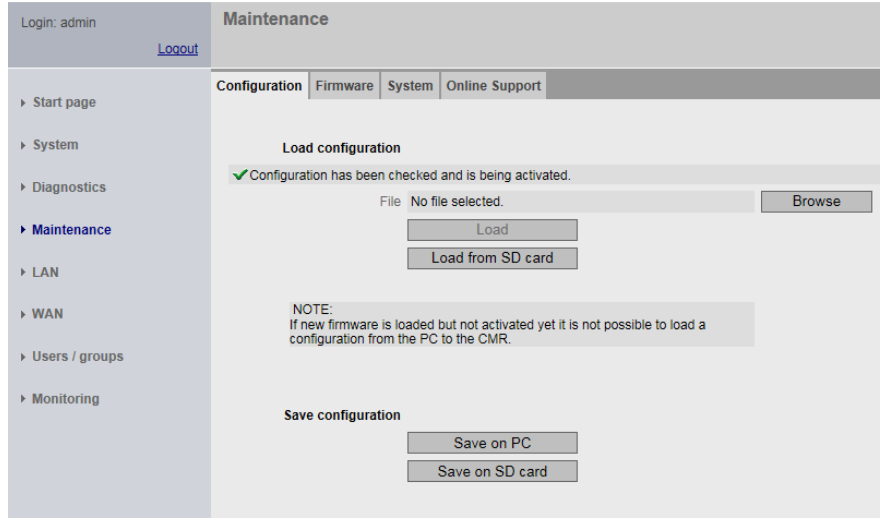
These steps are not required if you have created the configuration as described in chapter 4.

Note

It is assumed that LOGO! CMR has been connected to a power supply, connected to a PC network, and that a SIM card has been inserted.

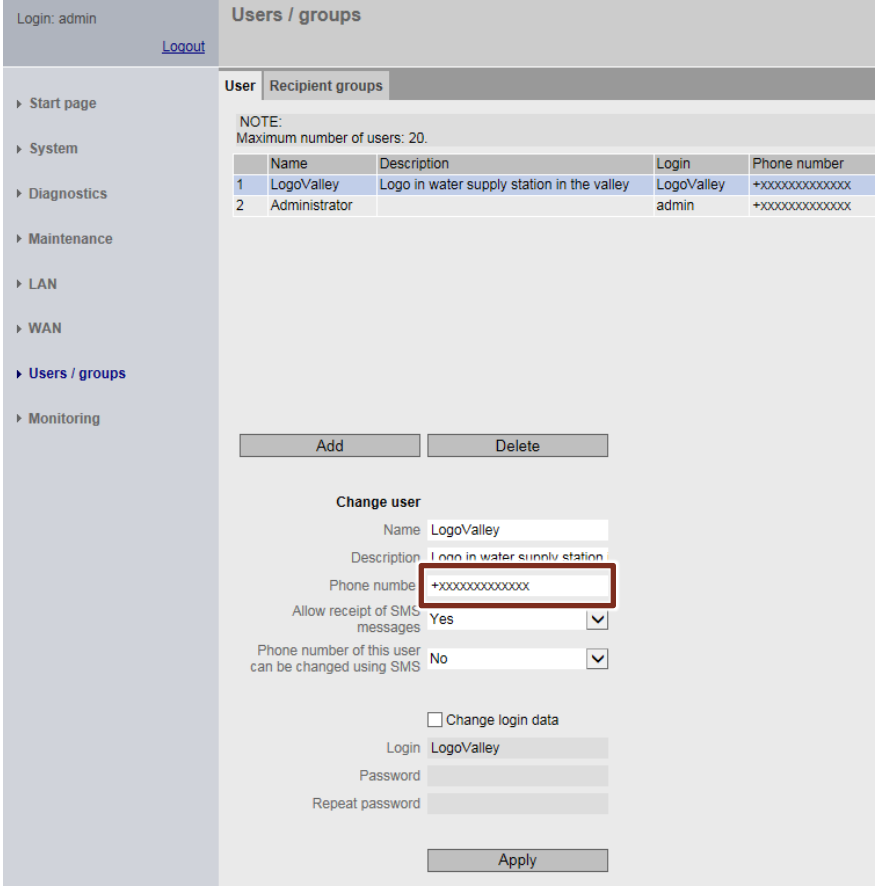
Also make sure that during the configuration only one each of the two LOGO! CMR is connected with the network so that the IP addresses do not overlap. When both LOGO! CMR have to be operated in the same network for test purposes, unique IP addresses have to be assigned.

Table 5-4

No.	Action
13.	Open your web browser and enter the IP address of LOGO! CMR (factory setting: 192.168.0.3).
14.	Navigate to "Maintenance > Configuration".
15.	Click "Browse" and select the storage location of the downloaded configuration file. Then click on "Load".
	
16.	Go to "WAN > Mobile wireless settings".
17.	Enter the PIN of the SIM card inserted and click "Apply".

5 Installation

5.2 Installing the software (download)

No.	Action
18.	<p>Navigate to “User / groups > User” and make the following adjustments:</p> <ol style="list-style-type: none"> For the user of the respective other station, enter the phone number of the other station. Enter your cell phone or that of the operator for the “Administrator” user. This user receives the error messages by SMS and can request the filling level by SMS. 
19.	Repeat the steps for each station.

6 Operating the Application

As the operator, you can request the filling level of the water reservoir at any time via SMS. For that, the VM0 variable of the LOGO! must be set to “30” (see chapter [3.3.1](#)).

The structure of the SMS for read commands is defined as follows:

<Password>;LOGO=VM<Address>,<Value>,<Data type>

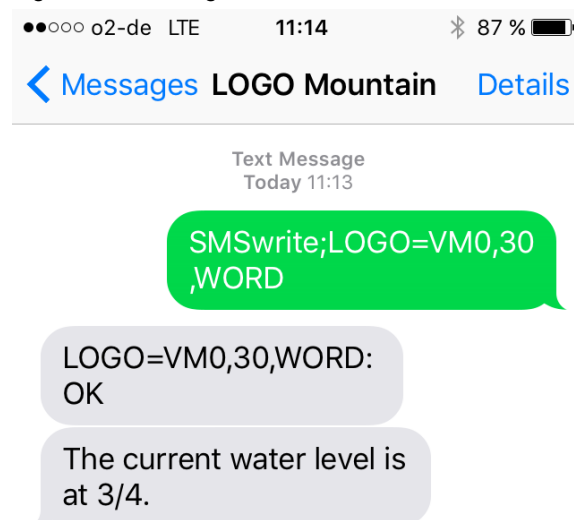
NOTE

For write commands a password is always necessary. This is specified in the web interface of the receiving LOGO! CMR (see chapter [4](#)).

In order to request the filling level of the water reservoir, the following SMS has to be sent to the LOGO! CMR of the mountain station:

SMSwrite;LOGO=VM0,30,WORD

Figure 6-1 Reading the water level



In the figure above, 3 of the 4 floats are activated at the time of the request. Thus the water reservoir is more than $\frac{3}{4}$ filled.

Note

The interpretation of the values of VM1 depends on the positioning of the floats.

Note

The LOGO! CMR replies only to SMS messages by authorized users. In order to request the filling level, your cell phone number has to be stored in the user data of the LOGO! CMR (see chapter [4.1](#)).

7 Links & Literature

Table 7-1

	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Download page of the entry https://support.industry.siemens.com/cs/ww/en/view/109483740
\3\	LOGO! 8 manual https://support.industry.siemens.com/cs/ww/en/view/100761780
\4\	Operating instructions for LOGO! CMR https://support.industry.siemens.com/cs/ww/en/view/103657268

8 History

Table 8-1

Version	Date	Modifications
V1.0	05/2016	First version