

Time-controlled lighting with LOGO! 8 and LOGO! CMR

LOGO! 8 / LOGO! CMR / Set 1

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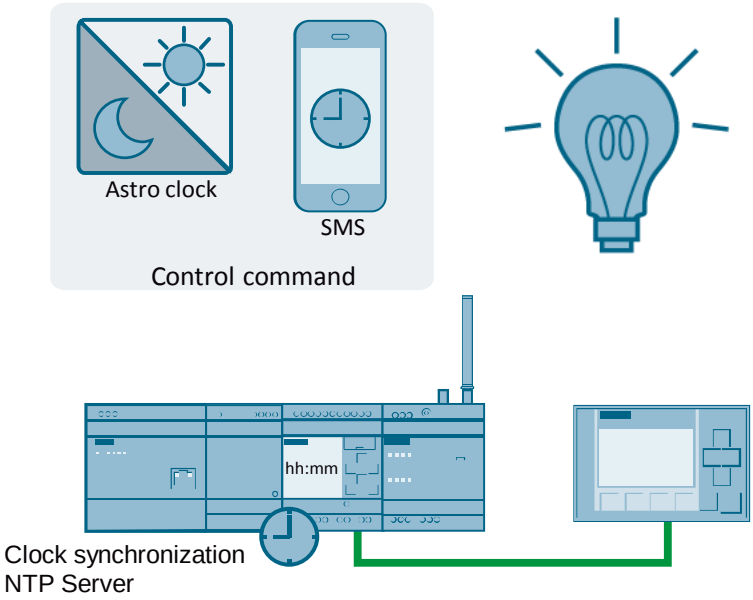
1 Introduction

1.1 Overview

In the automation of lighting systems, factors such as remote control, networking and potential energy savings are playing an increasingly important role.
All aspects were taken into account in this solution. The lighting is controlled by LOGO! 8. This is connected to a LOGO! CMR.
By selecting different operating modes, you decide whether the lighting is switched on or off at sunset or sunrise. In addition, it is possible to manually enter a switch-on or switch-off time for the lighting via SMS or locally onsite.

The following diagram shows the most important components of the solution:

Fig. 1-1



Selection of the various operating modes results in numerous applications such as park and path lighting, architectural lighting, shop window lighting, stable lighting, plant lighting in greenhouses or illuminated advertising.

Your benefits at a glance:

- Multi-functional use, through selection of different operating modes.
- Energy savings by automatically switching the lighting on and off at sunset and sunrise.
- Cost-effective remote access for setting the switch-on or switch-off time via SMS.

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1.2 Principle of operation

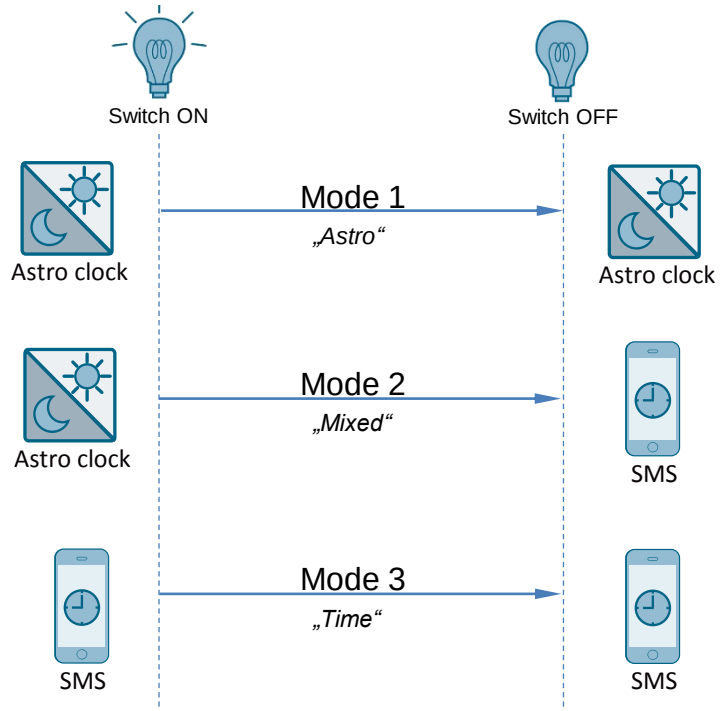
1.2.1 Operating modes

Automatic mode

Via SMS or via the LOGO! TDE/display, first select one of the three operating modes (each mode is followed by the name in brackets that is used to select the respective mode via SMS):

- In mode 1 ("Astro"), sunset and sunrise lighting is automatically switched on and off using the astronomical clock function.
- In mode 2 ("Mixed") the lighting is switched on at sunset. You can set the time when the lighting switches off again via SMS or locally onsite.
- In mode 3 ("Time") you manually determine the switch-on or switch-off times via SMS or via the LOGO! display/TDE locally onsite
-

Fig. 1-2



The time of the LOGO! controller is synchronized with an NTP server using the LOGO! CMR, so that the LOGO! always has the correct UTC time.

Note In this documentation, the term "LOGO! CMR" refers to both the "LOGO! CMR2020" and the "LOGO! CMR2040".

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Maintenance mode

- Simulation:
  You can activate the simulation for test and demonstration purposes via the LOGO! display or the LOGO! TDE. In the simulation, the time (not the system time) passes faster in the ratio of 1:600 and you do not have long waiting times. It is only possible to simulate, mode 2 ("Mixed") and mode 3 ("Time"). The prerequisite for correct function of the simulation is that the system time must already have advanced past midnight once (see chapter 2.5.4).
  In chapter 2.5.3 a description of how to operate the simulation is provided.
-
- Forcing:
  You have the option of controlling the lighting via digital forcing. Thus in automatic mode you can activate or de-activate the lighting independently of the operating modes. In chapter 2.5.3 a description of how to operate the forcing is provided.

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1.3 Components used

This application example was created using these hardware and software components:

Table 1-1

Component	Quantity	Article number	Note
LOGO! POWER 24 V/4 A	1	6EP3333-6SB00-0AY0	
LOGO! V8.2	1	6ED1052-1MD08-0BA0	
LOGO! CMR2020	1	6GK7142-7BX00-0AX0	Optionally the LOGO! CMR2020 or the LOGO! CMR2040 can be used.
LOGO! CMR2040		6GK7142-7EX00-0AX0	
ANT794-4MR, rod antenna	1	6NH9 860-1AA00	GPRS/LTE antenna
LOGO! TDE	1	6ED1055-4MH08-0BA0	
Contactor with auxiliary contact	1	3RT23 26-1AP00	For this application we recommend that you not control the lighting directly via output Q1 of the LOGO!, but rather via a contactor. If necessary, check the power requirement in your application and which contactor is best suited for it.
SIM card	1		For clock synchronization via NTP server, ensure that a provider with mobile data services (Internet) is selected.
LOGO!Soft Comfort Version 8	1	6ED1058-0BA08-0YA1	

This application example consists of the following components:

Table 1-2

Component	File name	Note
Project	109063024_Time_controlled_lighting_project.zip	This packed file contains the LOGO! Soft Comfort project and a configuration file for the LOGO! CMR.
Documentation	109063024_Time_controlled_lighting_DOKU_v20_en.pdf	This document.

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2 Engineering

2.1 Project engineering and configuration

Note

In this application example a complete configuration file for the LOGO! CMR is also offered for download. The **following settings have already been made** in the configuration file:

- Settings for receiving and sending SMS messages
- Settings for monitoring the signals from the LOGO! program
- Settings for time synchronization via NTP server

When loading the configuration for the LOGO! CMR, ensure that the password of the configuration file is also transferred.

In this application, the **password "LOGO8cmr.**" was assigned in the configuration both for the **user "Staff"** and for the **user "admin"**. In addition, in the configuration as **Password for writing commands** via SMS, the **password "SMSwrite"** has been specified. In the web interface (WBM) of LOGO! CMR, via SMS you can change the respective password for the user and the password for writing commands at any time.

Further information on how to load the finished configuration file into the LOGO! CMR is provided in chapter 2.4.2.

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2.1.1 Setting the Admin LOGO! CMR for sending/receiving SMS messages

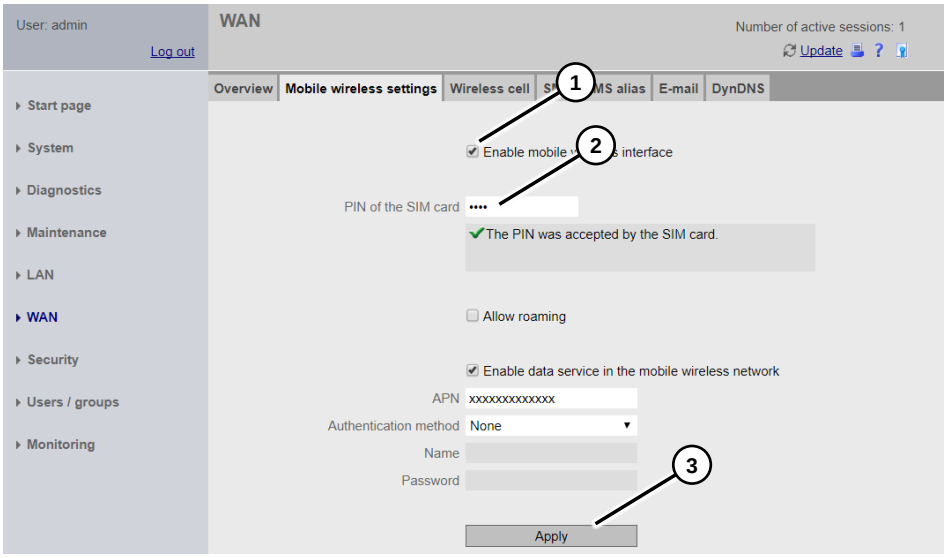
The following tables describe what you have to set in the web interface (WBM) of the LOGO! CMR in order to send or receive an SMS with the LOGO! CMR.

Note

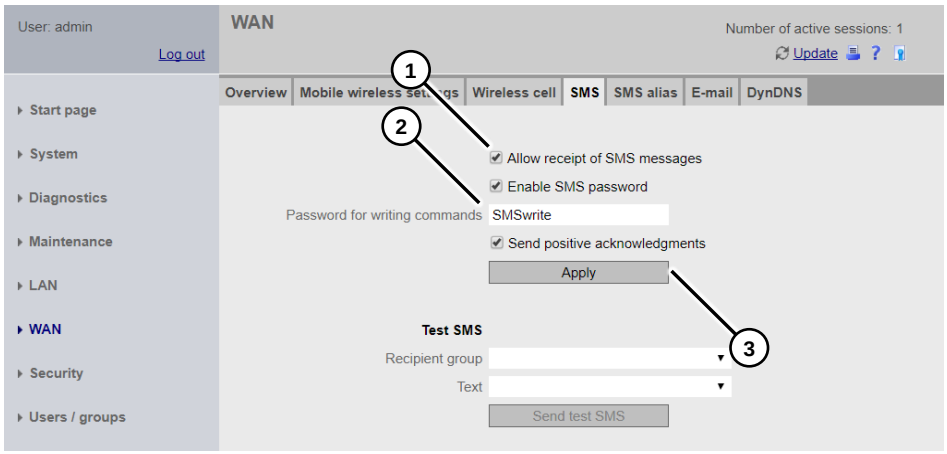
The prerequisites are that the LOGO! CMR must be connected to the power supply, connected to a PC network, and that a SIM card must be inserted. Ensure that the IP address of the network connection of your PC (or the USB Ethernet adapter) that is used to connect to LOGO! 8 is in the same subnet as the LOGO! device and the LOGO! TDE. For information on how to change the IP address of a network card, for example, see the Microsoft Knowledge Base on the Internet, under the term "Change TCP/IP settings".

1. Open your web browser and enter the IP address of the LOGO! CMR (factory set to 192.168.0.3).
2. The web interface (WBM) of LOGO! CMR opens automatically.
3. When logging in for the first time, enter "admin" as login and "admin" as password (factory setting). You must **then assign your own password**.
4. Navigate to "WAN > Mobile wireless settings" and make the following settings:
   Activate the option box "Activate mobile wireless interface". (1)
   Enter the PIN of the SIM card inserted in the LOGO! CMR. (2)
   Click "Apply" to save the settings. (3)

Note The remaining fields, such as "APN", are explained in chapter 2.1.3 Configuring time synchronization of the LOGO! CMR via NTP servers.



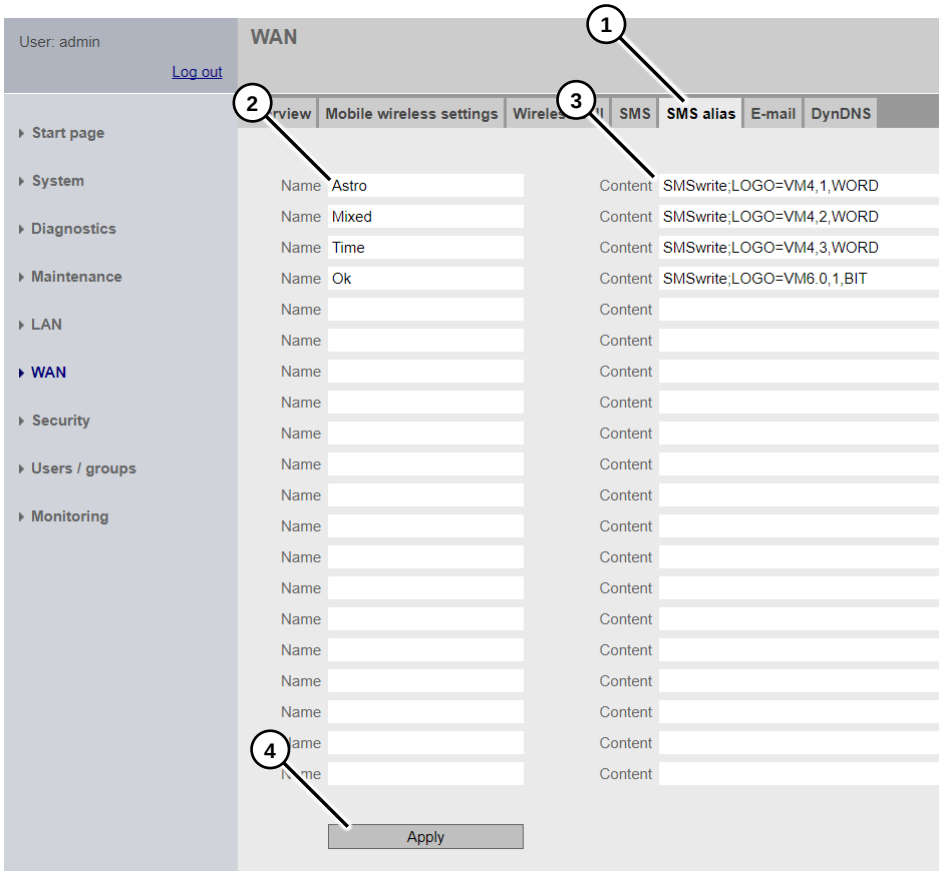
5. Navigate to "WAN > SMS" and make the following settings:
   Activate the option box "Allow receipt of SMS messages". (1)
   To send commands to the LOGO! via SMS, enter any password under "Password for writing commands". (2)
   Note:
   In the **configuration file** provided with **this application**, the **password** for **writing commands** is the password **"SMSwrite"**.
   Click "Apply" to save the settings. (3)



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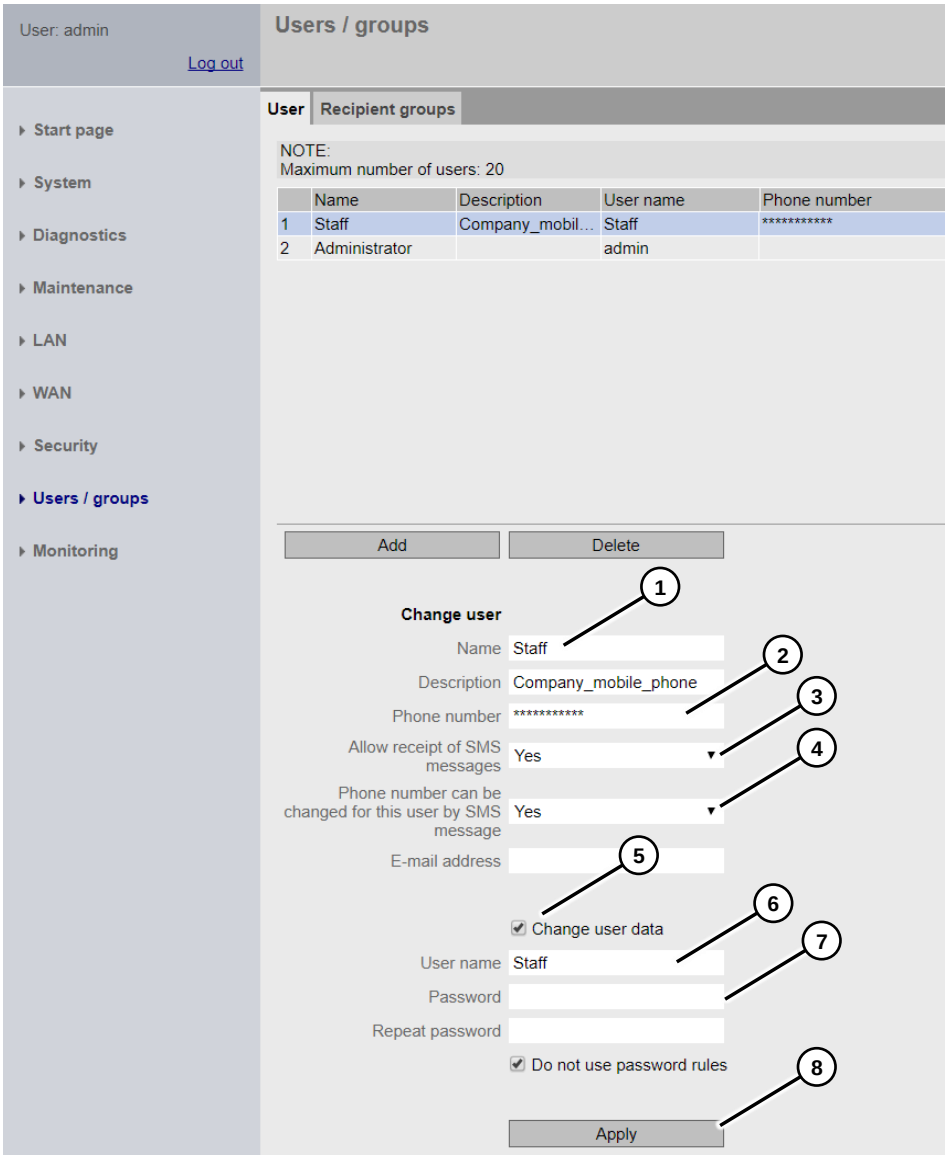
6. Simplify changing the operating mode via SMS with an SMS alias; this means you no longer have ensure correct syntax. An SMS alias is a symbolic name as placeholder for the entire SMS text.

   Navigate to "WAN > SMS alias. (1)
   Enter the symbolic name of the text in the "Name" field. (2)
   In the "Content" field, enter the appropriate text of the alias SMS in the correct syntax. (3)
   Click "Apply" to save the settings. (4)



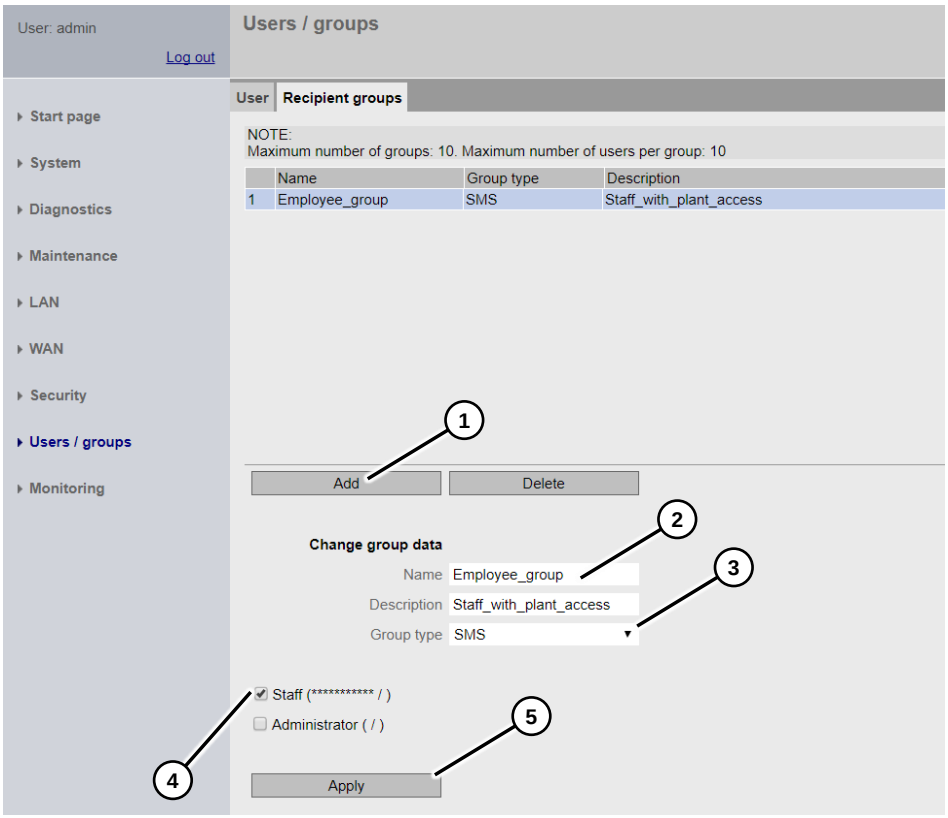
7. Navigate to "Users/Groups > User" and make the following settings:
   Enter a name (this is not the user login) and a description for the user who should have access to operate the application. (1)
   Specify the mobile phone number of the user. (2)
   Under "Allow receipt of SMS messages", select "Yes". (3)
   If desired, select "Yes" under "Phone number can be changed for this user by SMS message". (4)
   Activate the option box "Change login data". (5)
   Assign a login to your user (this will be requested every time you log in to the web interface (WBM) of the LOGO! CMR). (6)
   Under "Password", enter the password with which you want to log into the web interface (WBM) each time. (7)
   Note:
   As long as the administrator is entered under the users, you can also **continue to** log in with the **factory-set login "admin"** and the **password** that you **may have assigned to** the LOGO! CMR **after logging in to** the web interface (WBM) for the **first time** (see step 3).
   Click "Apply" to save the settings. (8)

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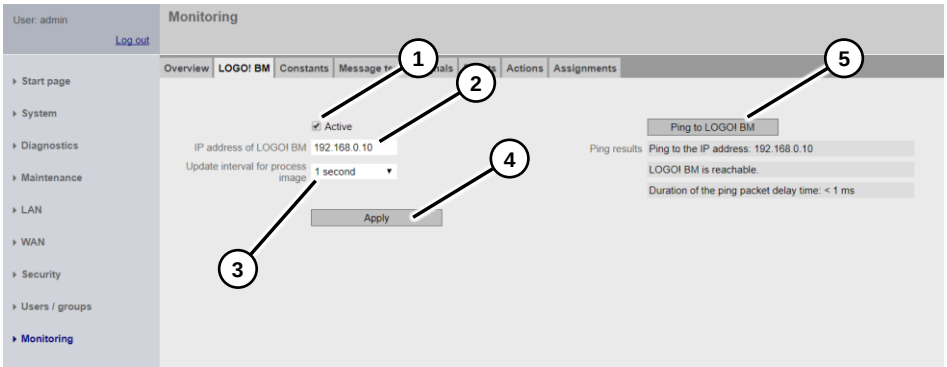


8. Navigate to "Users/groups > Recipient groups" and make the following settings:
   Click "Add". (1)
   Enter a name and a description of your user group. (2)
   Select "SMS" as the "Group type". (3)
   Select which of the users that you have entered should be added to the recipient group by checking the appropriate option box next to the user name. (4)
   Click "Apply" to save the settings. (5)

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9. Navigate to "Monitoring > LOGO! BM" and make the following settings:
   Activate the option box "Active" to activate the connection from the LOGO! CMR to the LOGO! 8. (1)
   Enter the IP address of your LOGO! (2)
   Select the update interval, at which the process image of the LOGO! will be read-out ("Update interval for process image"). (3)
   Note:
   It is recommended that you select "1 second" as the update interval.
   Click "Apply" to save the settings. (4)
   Via "Ping LOGO! BM" you can check whether the connection between the LOGO! CMR and the LOGO! is successful. (5)



10. The **configuration of** the settings for **sending and receiving SMS messages** with the LOGO! CMR is now **concluded.**

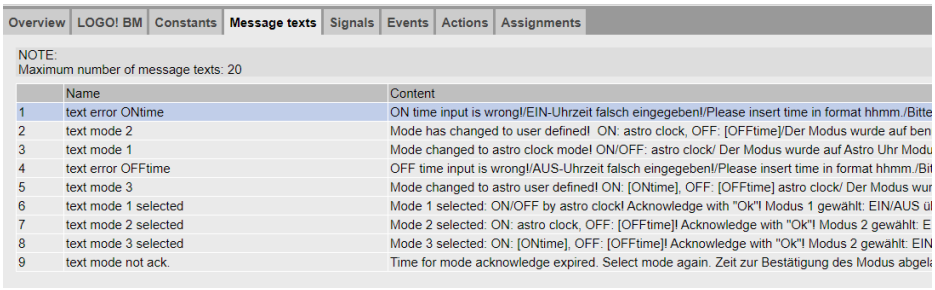
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2.1.2 Monitoring of signals/process values of the LOGO! 8 with the LOGO! CMR

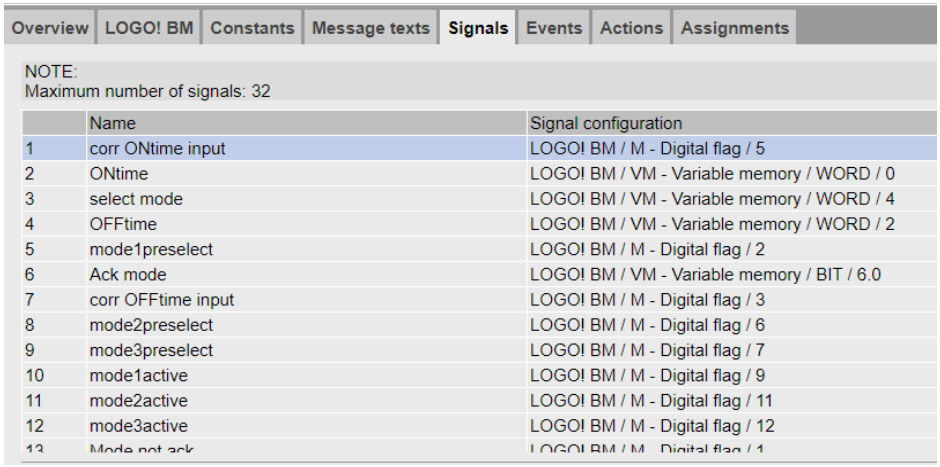
Note In the finished configuration file for the LOGO! CMR, which is offered for download in this application example, **the settings** for the **monitoring of signals and process values** of the LOGO! 8 with LOGO! CMR **have already been made**.

After you have configured the basic settings for sending and receiving SMS messages with the LOGO! CMR, as described in chapter 2.1.1, in the web interface (WBM) of the LOGO! CMR you can specify which signals and process values of the LOGO! 8 should be monitored or can be changed at any time via SMS.

1. In the Web interface (WBM) of the LOGO! CMR, navigate to "Monitoring" and make the following settings.
2. Possible SMS message texts can be entered under "Message texts".

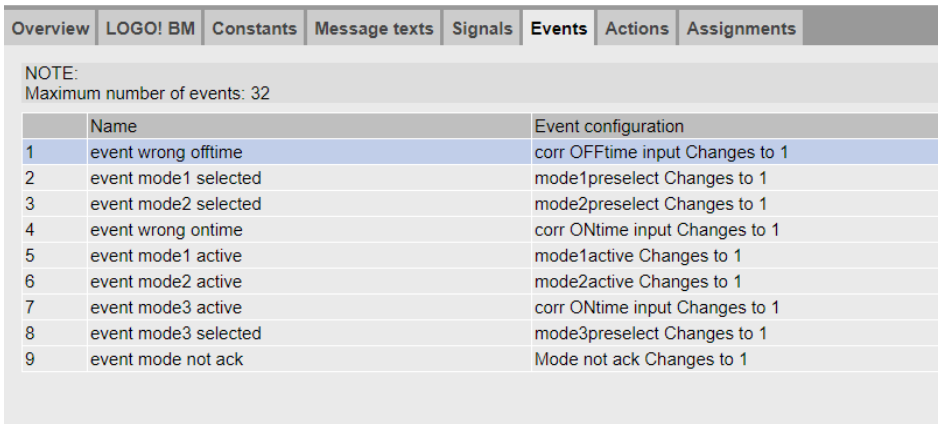


3. **All LOGO! 8 signals** that should be changed or monitored via SMS **must be entered under "Signals"**.
   Note:
   Note that analog values from LOGO! 8 that can be monitored or changed with the LOGO! CMR must first be entered in LOGO! Soft Comfort V8 under "Tools > Parameter VM mapping" (e.g. the output of an analog MUX). This rule does not apply for digital values.



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4. Under "Events", you must define the type of signal change, at which something should happen (e.g. a value exceeds a certain limit or a bit changes to 1).

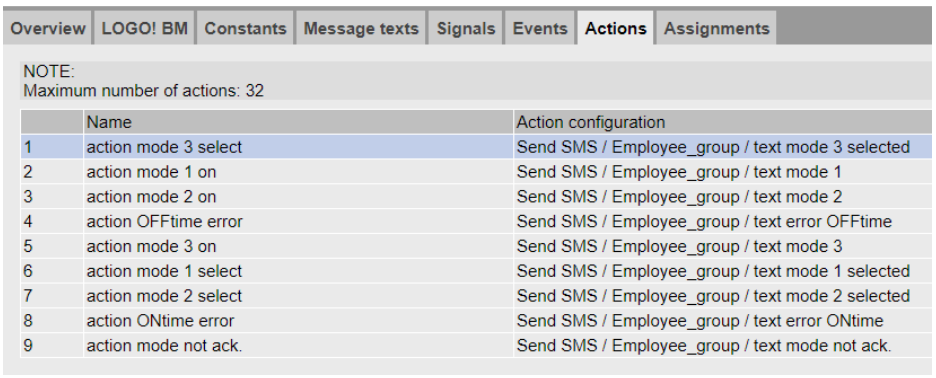


Overview | LOGO! BM | Constants | Message texts | Signals | **Events** | Actions | Assignments

NOTE:
Maximum number of events: 32

	Name	Event configuration
1	event wrong offtime	corr OFFtime input Changes to 1
2	event mode1 selected	mode1preselect Changes to 1
3	event mode2 selected	mode2preselect Changes to 1
4	event wrong ontime	corr ONtime input Changes to 1
5	event mode1 active	mode1active Changes to 1
6	event mode2 active	mode2active Changes to 1
7	event mode3 active	corr ONtime input Changes to 1
8	event mode3 selected	mode3preselect Changes to 1
9	event mode not ack	Mode not ack Changes to 1

5. Under "Actions" you specify exactly what should happen when a signal is changed (e.g. the LOGO! should switch to "STOP" or an SMS should be sent).

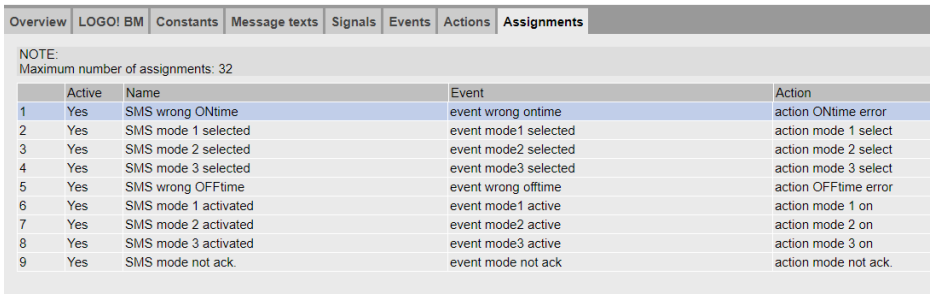


Overview | LOGO! BM | Constants | Message texts | Signals | Events | **Actions** | Assignments

NOTE:
Maximum number of actions: 32

	Name	Action configuration
1	action mode 3 select	Send SMS / Employee_group / text mode 3 selected
2	action mode 1 on	Send SMS / Employee_group / text mode 1
3	action mode 2 on	Send SMS / Employee_group / text mode 2
4	action OFFtime error	Send SMS / Employee_group / text error OFFtime
5	action mode 3 on	Send SMS / Employee_group / text mode 3
6	action mode 1 select	Send SMS / Employee_group / text mode 1 selected
7	action mode 2 select	Send SMS / Employee_group / text mode 2 selected
8	action ONtime error	Send SMS / Employee_group / text error ONtime
9	action mode not ack.	Send SMS / Employee_group / text mode not ack.

6. To complete the configuration for monitoring the signals or process values of LOGO! 8 with the LOGO! CMR, all possible "events" defined for the signals of the LOGO! 8 under "Assignments" must be linked to the "Action" that should occur.



Overview | LOGO! BM | Constants | Message texts | Signals | Events | Actions | **Assignments**

NOTE:
Maximum number of assignments: 32

	Active	Name	Event	Action
1	Yes	SMS wrong ONtime	event wrong ontime	action ONtime error
2	Yes	SMS mode 1 selected	event mode1 selected	action mode 1 select
3	Yes	SMS mode 2 selected	event mode2 selected	action mode 2 select
4	Yes	SMS mode 3 selected	event mode3 selected	action mode 3 select
5	Yes	SMS wrong OFFtime	event wrong offtime	action OFFtime error
6	Yes	SMS mode 1 activated	event mode1 active	action mode 1 on
7	Yes	SMS mode 2 activated	event mode2 active	action mode 2 on
8	Yes	SMS mode 3 activated	event mode3 active	action mode 3 on
9	Yes	SMS mode not ack.	event mode not ack	action mode not ack.

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2.1.3 Configuring time synchronization of the LOGO! CMR via NTP servers

With the LOGO! CMR it is possible to synchronize the time via various methods (GPS, GSM, NTP servers) and forward it to the LOGO! 8.

This ensures that the correct UTC time is always set in the LOGO!; for example, this is very important in applications where a timer is used.

In this application example, time synchronization ensures that the lighting is controlled via the astronomical clock at the correct time.

Note

In the finished configuration file for the LOGO! CMR, which is offered for download in this application example, all **settings** for the **time synchronization of** the LOGO! CMR via **NTP server have already been** made.

Further information on how to load the finished configuration file into the LOGO! CMR is provided in chapter 2.4.2.

The NTP server used in this example is a freely usable NTP server. Siemens does not provide this service.

Alternatively, a different NTP server can also be used.
If necessary, check the respective license conditions of the NTP server for your application.

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A description is provided below of what you must set in the web interface (WBM) of the LOGO CMR, in order to synchronize the time of the LOGO! CMR to an NTP server:

1. In the web interface (WBM) of LOGO! CMR, navigate to "System > System time" and make the following settings:
   Select the "Local time zone" depending on the location of your LOGO! CMR module. (1)

   Ensure that the option box "Automatic daylight saving time switchover" is activated. (2)
   Note:
   It is recommended to deactivate the automatic daylight saving time/standard time switchover of LOGO! 8 because time deviations can occur if the automatic daylight saving time/standard time settings are activated both in the LOGO! CMR configuration and in the settings of LOGO! 8. Further information on how to deactivate the automatic daylight saving time/standard time switchover in LOGO! 8 is provided in the LOGO! manual in the chapter "Summertime/wintertime conversion".

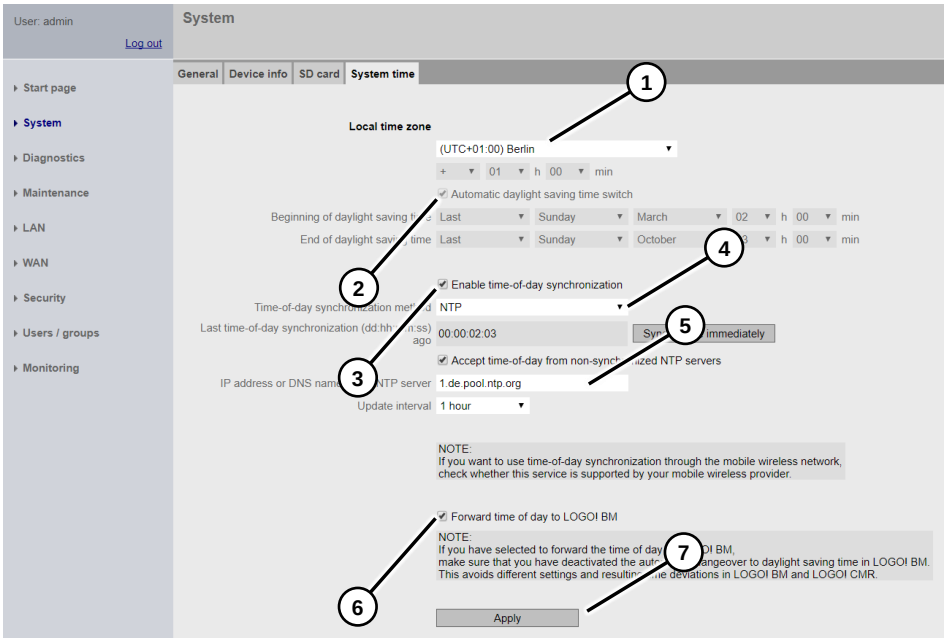
   Activate the option box "Enable time-of-day synchronization". (3)

   Select "NTP" as the "Time-of-day synchronization method". (4)

   Specify the address of the NTP server (DNS name or IP address). (5)

Activate the option box "Forward time of day to LOGO! BM" so that the time of the LOGO! 8 is synchronized. (6)

Click "Apply" to save the settings. (7)

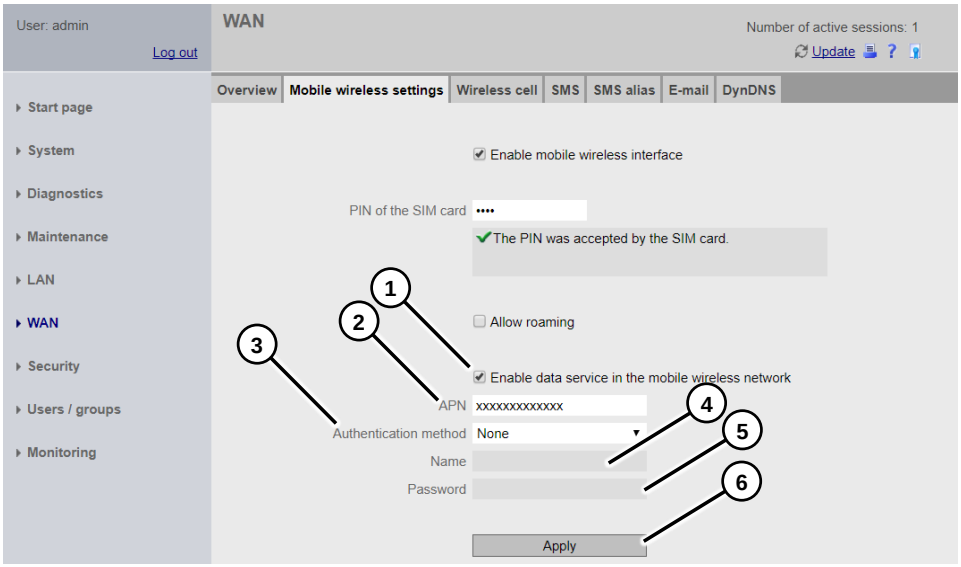


2. Navigate to "WAN > Mobile wireless settings" and check the "Enable data service in the mobile wireless network" box. (1)
Enter the access data of your mobile wireless operator if you can use the mobile data services (Internet) of the mobile network operator. (2)
Note:
In this example, entry of the "APN" as access data suffices. Depending on the mobile network operator you are using, if necessary, check again to determine whether additional access data is required. You can request the access data (APN, user name, password) directly from your provider.

   Specify whether you want your provider's password and user name to be transmitted using a specific authentication method. In this example, the specification "No authentication" has been selected. (3)
Note:
Further information on the various authentication methods in the manual for the LOGO! CMR in the chapter "APN/User Name/Password".

   Enter the user name (provided by the mobile operator) if it is required by your mobile operator for access control. (4)
Enter the password (provided by the mobile operator) if this is required by your mobile operator for access control. (5)
Click "Apply" to save the settings. (6)

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2.2 Installation of the hardware

2.2.1 LOGO! 8 and LOGO! TDE

Comply with the respective setup guidelines for LOGO! 8 and LOGO! TDE. Further information in this regard is provided in the LOGO! manual in the chapter "LOGO! installation and wiring".

2.2.2 LOGO! CMR

Comply with respective setup guidelines for the LOGO! CMR2020 or the LOGO! CMR2040, as well as for the mobile communications antenna used. Further information in this regard is provided in the LOGO! CMR manual in the chapter "Installation, connecting up, commissioning".

For the LOGO! CMR the IP address 192.168.0.3 is used in this application (already set at the factory for the LOGO! CMR).

Note When using the LOGO! CMR, always comply with the country-specific mobile communications approvals. You can find additional information in this regard is provided at the following link: www.siemens.de/mobilfunkzulassungen.

2.2.3 Contactor with auxiliary contact

For this application it is recommended that you not control the lighting directly via the LOGO! outputs, but rather by means of a contactor with auxiliary contact. The contactor is activated via a LOGO! output. In this application example, the LOGO! output Q1 was used for this purpose.

Further information on how the contactor must be wired and what installation guidelines must be complied with is provided in the equipment manual for SIRIUS contactors.

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2.3 Installing the software

Note The prerequisites are that the necessary software, LOGO!Soft Comfort V8, must be installed on your PC and that you must be familiar with the basic operation of this software.

2.4 Commissioning

2.4.1 Assigning IP addresses and subnet masks to devices

For the LOGO! 8 and the LOGO! TDE, in each case an IP address and a subnet mask must be installed, so that these devices are in the same subnet.

LOGO! 8

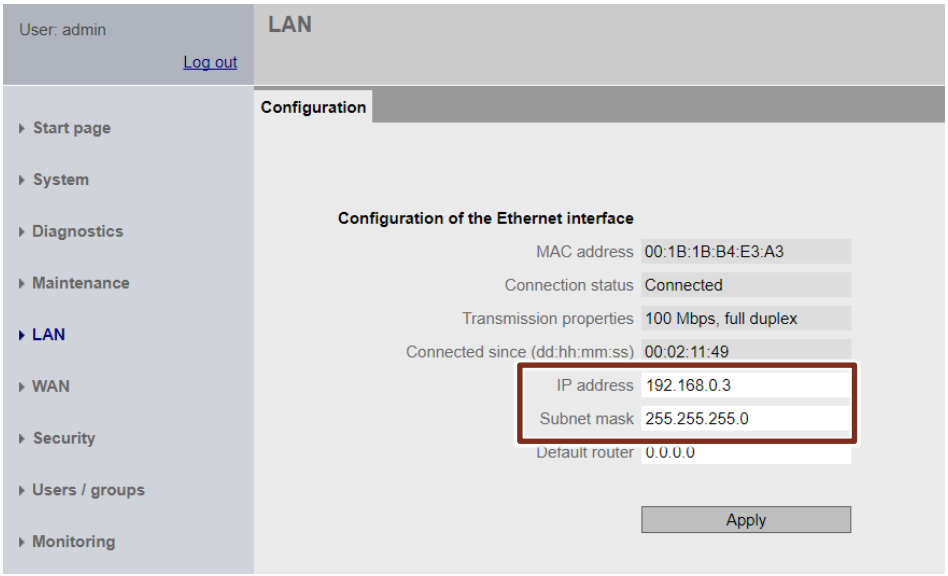
How to assign an IP address and a subnet mask for the LOGO! 8 are described in the LOGO! manual in the chapter "Configuring network settings".

LOGO! TDE

How to assign an IP address for the LOGO! TDE is described in the LOGO! manual in the chapter "LOGO! TDE settings menu."

LOGO! CMR

1. Open your web browser and enter the IP address of the LOGO! CMR (factory set to 192.168.0.3).
2. The web interface (WBM) of LOGO! CMR opens automatically.
3. When logging in for the first time, enter "admin" as login and "admin" as password (factory setting). You must **then assign your own password**.
4. Navigate to "LAN". There you can adapt the IP address and the subnet mask. Then confirm with "Apply".



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PC

Ensure that the IP address of the network connection of your PC (or of the USB Ethernet adapter) that is used to connect to LOGO! 8, is in the same subnet as the LOGO! 8, the LOGO! TDE, and the LOGO! CMR.

For information on how to change the IP address of a network card, for example, see the Microsoft Knowledge Base on the Internet, under the term "Change TCP/IP settings".

The table below shows an example of how you can assign the IP addresses so that they are located in the same subnet.

Table 2-1

No.	Device	IP address	Subnet mask
1.	LOGO! 12/24 RCE	**192.168.0.**10	255.255.255.0
2.	LOGO! CMR	**192.168.0.**3	255.255.255.0
3.	LOGO! TDE	**192.168.0.**12	255.255.255.0
4.	PC	**192.168.0.**14	255.255.255.0

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2.4.2 Loading the configuration file in LOGO! CMR and entering the SIM card settings

Note

The prerequisites are that the LOGO! CMR must be connected to the power supply, connected to a PC network, and that a SIM card must be inserted.

A description is provided below of how to load the finished configuration file for the LOGO! CMR, which is offered for download in this example, into the LOGO! CMR.

Further information on the login data and passwords is provided in chapter 2.1

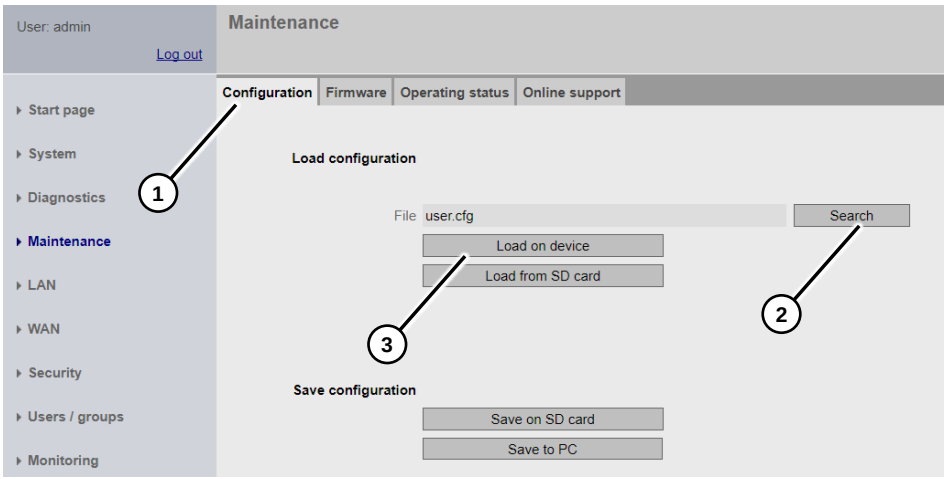
After you have downloaded the finished configuration file, proceed as follows:

1. In the web interface (WBM) of LOGO! CMR, navigate to "Maintenance > Configuration". (1)

   Click "Search" and select the location of the downloaded configuration file. (2)

   Click "Load on device". If you have saved the downloaded configuration file on a microSD card, you can also load the configuration directly from the microSD card.
   To do this, click on "Load from SD card" (3).
   Note:
   Further information on handling micro SD cards with the LOGO! CMR is provided in the LOGO! CMR manual in the chapter "Inserting the micro SD Card".

   As soon as the configuration has been successfully loaded into the LOGO! CMR, a green check-mark appears indicating that the configuration has been checked and is activated.



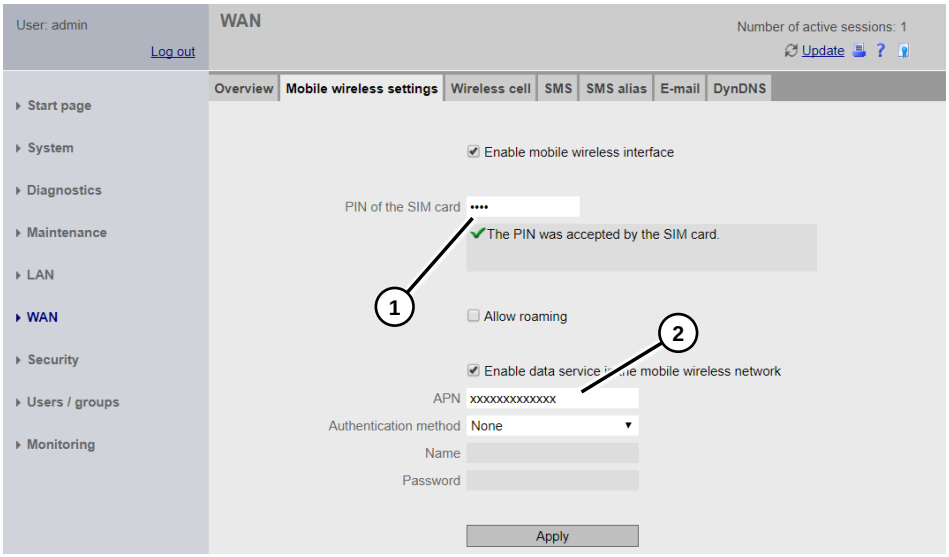
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2. Then change to "WAN > Mobile wireless settings" and make the following settings:

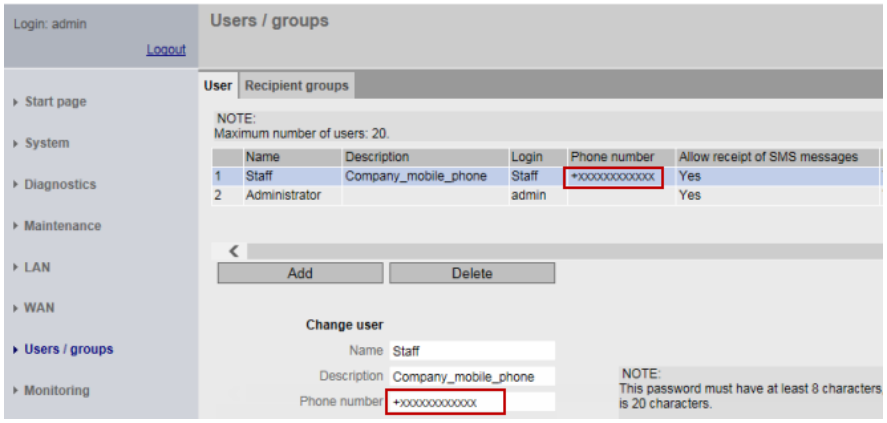
   Enter the PIN of the SIM card inserted in the LOGO! CMR. (1)

   So that time synchronization via NTP server can be used, the data connection via mobile network must be activated. Then enter the access data of your mobile network operator if you can use the mobile data services (Internet) of the mobile network operator. (2)

   Note:
   Further information on the individual access data is provided in the manual for LOGO! CMR in the chapter "APN/User Name/Password" .



3. Navigate to "Users/Groups > Users", and for the "Staff" user enter the mobile phone number of the mobile telephone to which the SMS messages should be sent.



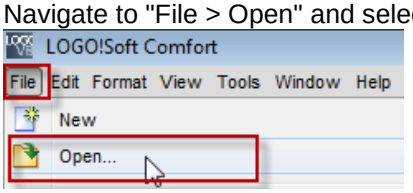
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2.4.3 Loading a program in LOGO! 8

Note The prerequisites are that the LOGO! 8 must be connected to the power supply and to a PC network.

In this application example, a finished LOGO! program for LOGO! 8 is offered for download. A description is provided below of how to load the finished LOGO! program into LOGO! 8. To do this, start LOGO!Soft Comfort V8 and make the following settings:

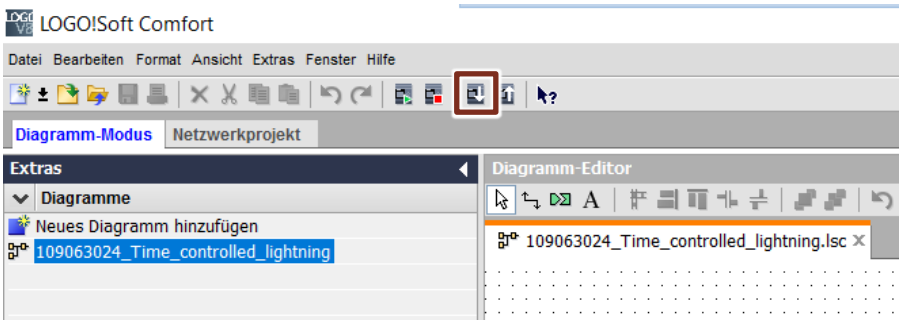
1. Navigate to "File > Open" and select the downloaded LOGO! program "NAME".



Note In the provided project, the astronomical clock is set to "B050" as the location for calculating sunrise and sunset in Berlin (Germany). If you want to set another location or user-defined coordinates, adjust the block properties of the astronomical clock "B050" before loading the program. To do this, see chapter 0

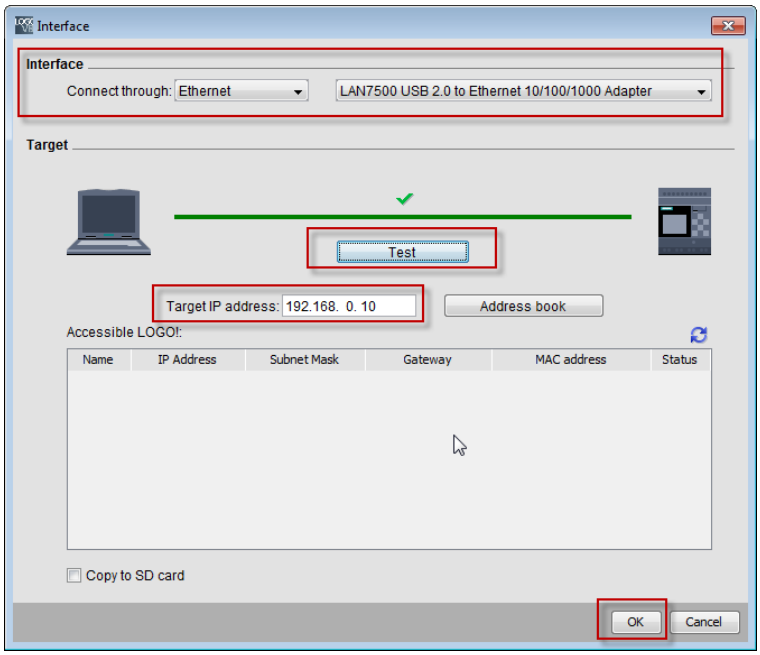
Parameterization of the astronomical clock.

2. Click the "Download" button or press Ctrl+D.

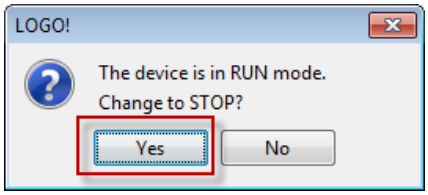


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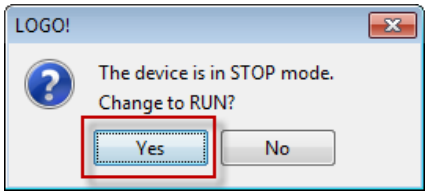
3. Select the "Interface" for your connection to the LOGO! and enter the IP address of your LOGO! Press "Test" to check whether the connection is successful. If the connection is successful, press "OK" to load the program into the device.



4. Click "Yes" to set LOGO! to STOP before downloading.



5. After successfully concluding the download, click "Yes" to set the LOGO! back to RUN.



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2.5 Operation

2.5.1 General information

This chapter explains how to set the operating mode and on/off times via SMS or the via the LOGO! display/TDE. Chapter 1.2 explains the different operating modes in Automatic mode and in Maintenance mode. The operating modes in Maintenance mode can only be reached via the LOGO! display/TDE.

2.5.2 Operation via SMS

Note When sending SMS messages pay attention to upper case/lower case.

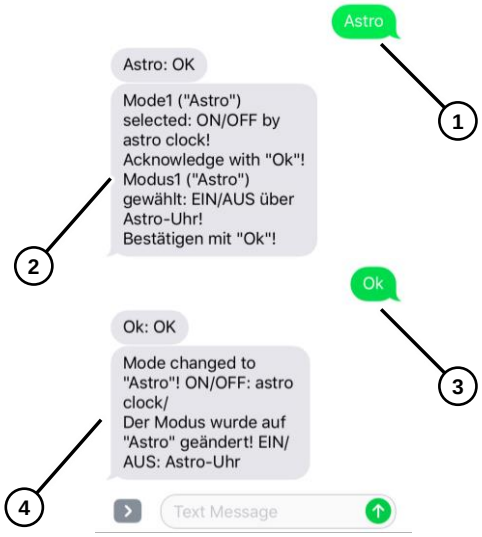
Note Hours and minutes are not displayed separately for the switch-on and switch-off times via SMS. Moreover, leading zeros are not displayed. For example, the time "00:30" is displayed as "30" in the SMS.

Mode 1

1. Send an SMS with the content "Astro" to the mobile phone number of your CMR.
2. The LOGO! CMR will inform you that mode 1 is selected and prompt you to confirm with "Ok".
3. Confirm with "Ok".
4. The LOGO! CMR will tell you that mode 1 is active.

Note Note that you have 5 minutes to select the mode. If the mode is not confirmed with "Ok" in this period of time, the previous mode remains active.

Fig. 2-1



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Mode 2

1. Send an SMS with the content "Mixed" to the mobile phone number of your CMR.
2. The LOGO! CMR will inform you that mode 2 is selected. The SMS also contains the current switch-off time. In addition you will be prompted to confirm with "Ok".
3. This input is optional. Before activating the mode, you can change the switch-off time.

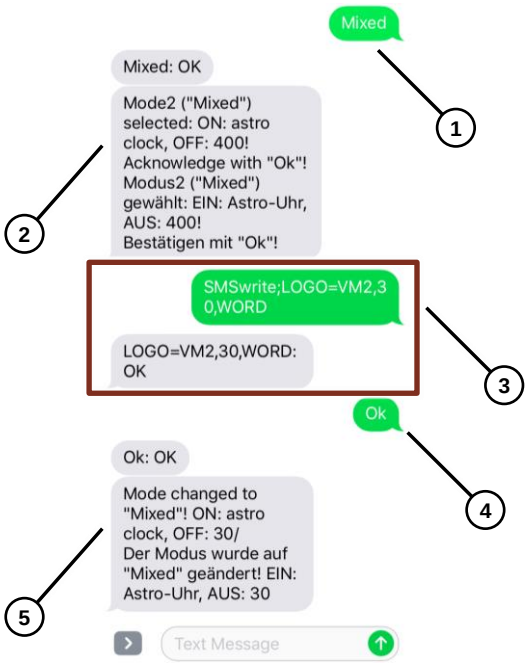
   Note: You can change the switch-off time at any time, even if mode 2 has already been selected.

   To do this, send an SMS to the LOGO! CMR, which is composed as follows: "[Password for writing commands];LOGO=VM2,[switch-off time in the format hhmm],WORD"
   In the example from Fig. 2-2 the switch-off time is set to 00:30.
4. Confirm with "Ok".
5. LOGO! CMR will tell you that mode 2 is active.

Note Note that you have 5 minutes to select the mode. If the mode is not confirmed with "Ok" in this period of time, the previous mode remains active.

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Fig. 2-2



Mode 3

1. Send an SMS with the content "Time" to the mobile phone number of your CMR.
2. The LOGO! CMR will inform you that mode 3 is selected. The SMS also contains the current switch-on and switch-off time. In addition you will be prompted to confirm with "Ok".
3. This input is optional. Before activating the mode, you can change the switch-on and switch-off time.

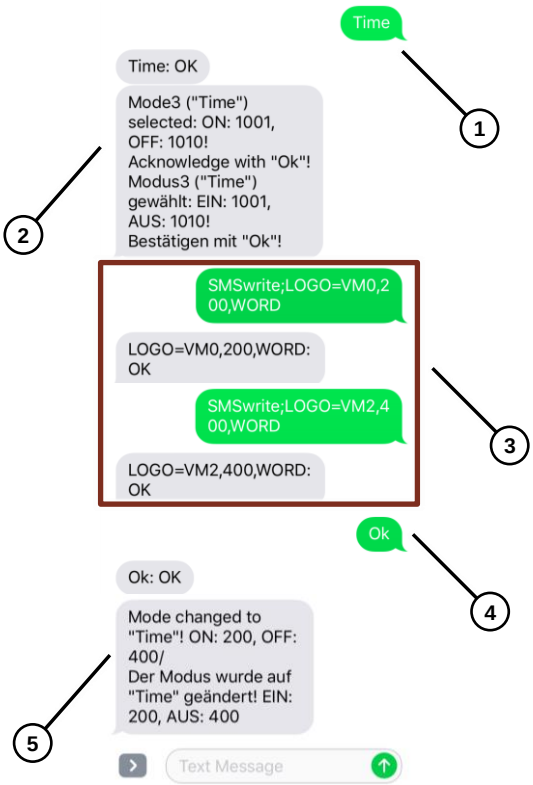
   Note: You can change the on/off time at any time, even if mode 3 has already been selected.

   To do this, send an SMS to the LOGO! CMR, which is composed as follows:
   Switch-on time:
   "[Password for writing commands];LOGO=VM0,[switch-on time in the format hhmm],WORD"
   Off time
   "[Password for writing commands];LOGO=VM2,[switch-off time in the format hhmm],WORD"
   In the example from Fig. 2-3 the switch-on time is changed to 02:00 and the switch-off time is changed to 04:00.
4. Confirm with "Ok".
5. The LOGO! CMR will tell you that mode 3 is active.

Note

Note that you have 5 minutes to select the mode. If the mode is not confirmed with "Ok" in this period of time, the previous mode remains active.

Fig. 2-3



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2.5.3 Operation via display/TDE

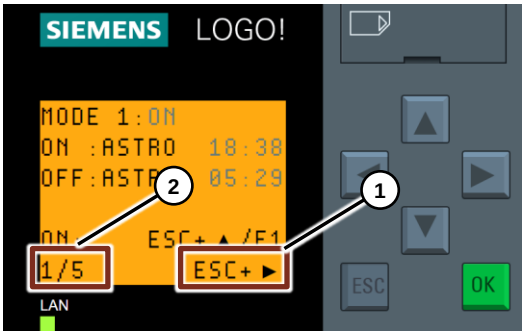
General information

Via the LOGO! display or the LOGO! TDE it is possible to select the operating mode and set the times. Furthermore it is possible to start the simulation

and the forcing.

Navigate through the menus by pressing the key combination "ESC + ►" with the cursor keys (1). The current page number is displayed at the bottom left of the screen (2). As soon as output Q1 and thus the lighting is active, the LOGO! display/TDE lights up yellow (see Fig. 2-4).

Fig. 2-4: General description of the LOGO! display/TDEs

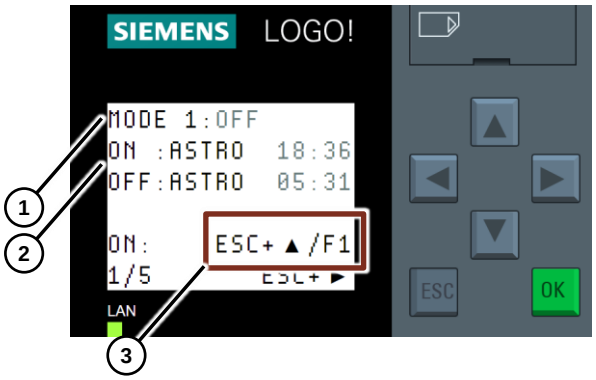


Note

Basically the LOGO! display and the LOGO! TDE behave the same. On the LOGO! display there is only the "OK" key. In LOGO! TDE this key is called "ENTER" but it has the same function. When the documentation refers to the "OK" key, in the LOGO! TDE this means the "ENTER" key.

Selection of the operating mode

- **Mode** 1
  Navigate to page 1/5.
  Under (1) the status is displayed, i.e. whether the mode is switched on or switched off. The switch-on time and switch-off time are displayed under (2). These times cannot be changed in mode 1.
  Activate mode 1 by pressing the key combination "ESC + ▲" or "F1" (3).



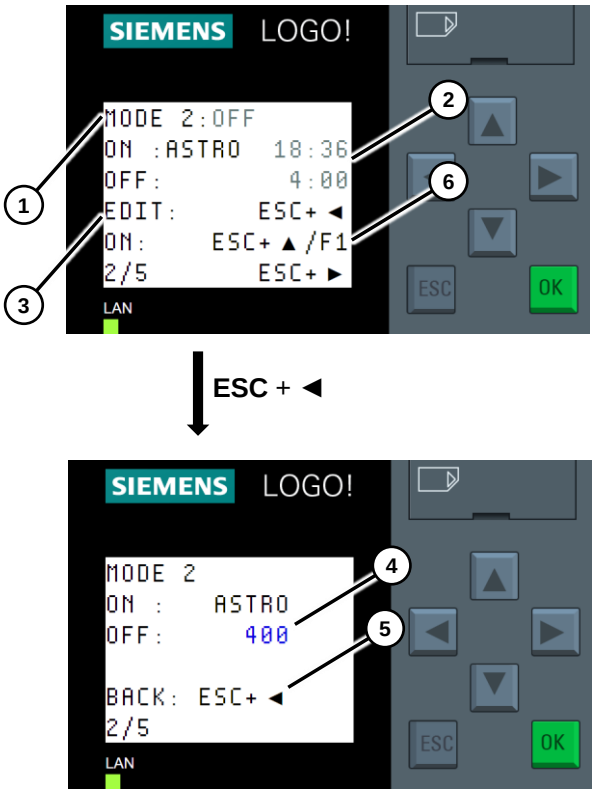
-

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- **Mode 2**
  Navigate to page 2/5.
  Under (1) the status is displayed, i.e. whether the mode is switched on or switched off. The switch-on time and switch-off time are displayed under (2). In mode 2, the switch-off time can be set manually. To do this, press the key combination "ESC + ◄" (3). You are now in the Edit window of mode 2. Keep the ESC key depressed until the switch-off time (4) is highlighted in black. Confirm with "OK" that you want to change the switch-off time. The switch-off time starts flashing in black and white. The cursor keys ◄ and ► are used to navigate to the point where you can increase with the cursor key ▲ or decrease with ▼.

  Note: In the Edit window of the display/TDE, hours and minutes are not displayed separately for the switch-on and switch-off times. Moreover, leading zeros are not displayed. "04:00 o'clock" is displayed as "400" in the editing window, for example.

  Confirm with "OK" that the entry is complete. The key combination "ESC + ◄" (5) takes you back to the main window of mode 2.
  Activate mode 2 by pressing the key combination "ESC + ▲" or "F1" (6). Pay attention to the System behavior during start-up of the LOGO!.



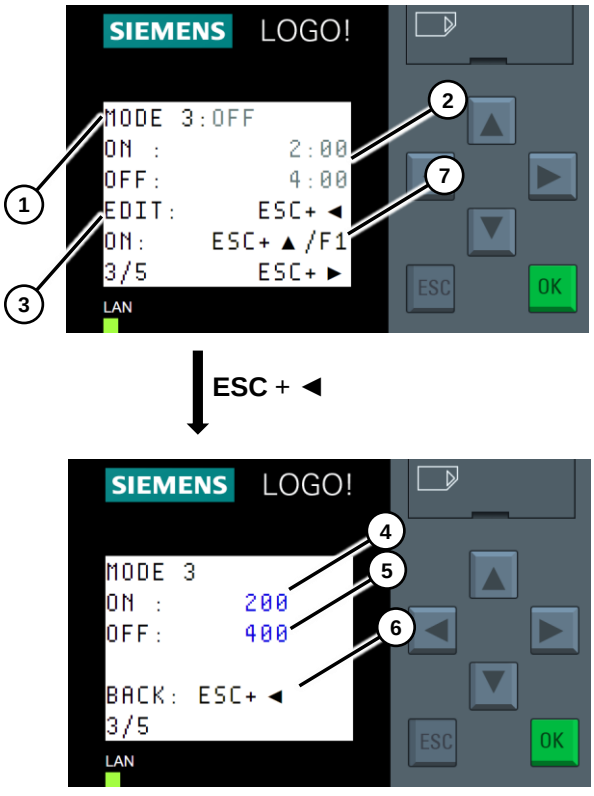
-

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- **Mode 3**
  Navigate to page 3/5.
  Under (1) the status is displayed, i.e. whether the mode is switched on or switched off. The switch-on time and switch-off time are displayed under (2). In mode 3, the switch-on and switch-off time can be set manually. To do this, press the key combination "ESC + ◄" (3). You are now in the Edit window of mode 3. Keep the ESC key depressed until the switch-on time (4) is highlighted in black. Confirm with "OK" that you want to change the switch-on time. The switch-on time starts flashing black and white. Use the cursor keys ◄ and ► to navigate to the place you can increase with the cursor key ▲ or decrease with ▼.
  Confirm with "OK" that the entry of the switch-on time has been completed.
  Press the cursor key ▼ to navigate to the switch-off time (5).
  Confirm with "OK" that you want to change the switch-off time. The switch-off time starts flashing black and white. Use the cursor keys ◄ and ► to navigate to the place you can increase with the cursor key ▲ or decrease with ▼.
  Confirm with "OK" that the entry of the switch-off time has been completed.

  Note: In the Edit window of the display/TDE, hours and minutes are not displayed separately for the switch-on and switch-off times. Moreover, leading zeros are not displayed. "04:00 o'clock" is displayed as "400" in the editing window, for example.

  The key combination "ESC + ◄" (6) takes you back to the main window of mode 3. Activate mode 3 by pressing the key combination "ESC + ▲" or "F1" (6). In this process pay attention to the System behavior during start-up of the LOGO!.



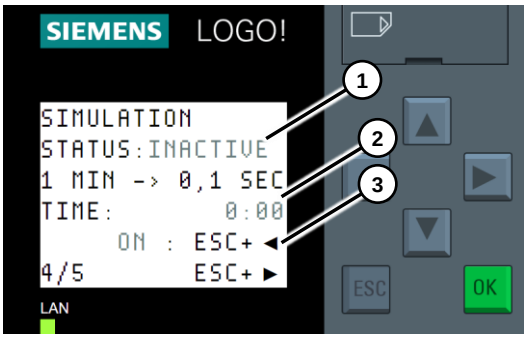
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Simulation

Navigate to page 4/5.
Section 1.2.1 describes the function of the simulation.

Under (1) the status is displayed, i.e. whether the simulation is switched on or off.
At (2), the simulated time runs at a ratio of 1:600 to the actual time.
Activate or deactivate the simulation by pressing the key combination "ESC + ◄".

Note Bear in mind that the simulation only functions if the system time has advanced past midnight once (see chapter 2.5.4).

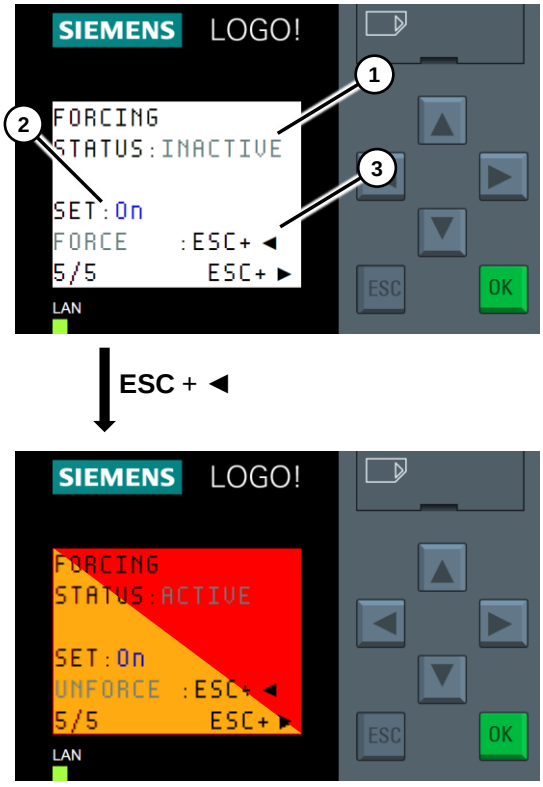


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Forcing

Navigate to page 5/5.
Under (1), the status is displayed whether forcing is switched on or off.
Under (2) you specify the value that the output Q1 and thus the illumination should take on at forcing. To do this keep "ESC" key depressed until the setpoint is highlighted in black. Press "OK" and the setpoint will start flashing black and white. Use the cursor keys ▲ or ▼ to change the setpoint. Set "On" if you want to switch-on the lighting at forcing, or "Off" if you want to switch-off the lighting when forcing. Confirm with "OK". Press "ESC" to exit edit mode.
Activate or deactivate forcing by pressing the key combination "ESC + ◄" (3).
When forcing is active, the LOGO! display/TDE starts flashing. Either it flashes in the colors red/yellow when the lighting is switched on via forcing, or in the colors red/white when the lighting is switched off via forcing

Fig. 2-5



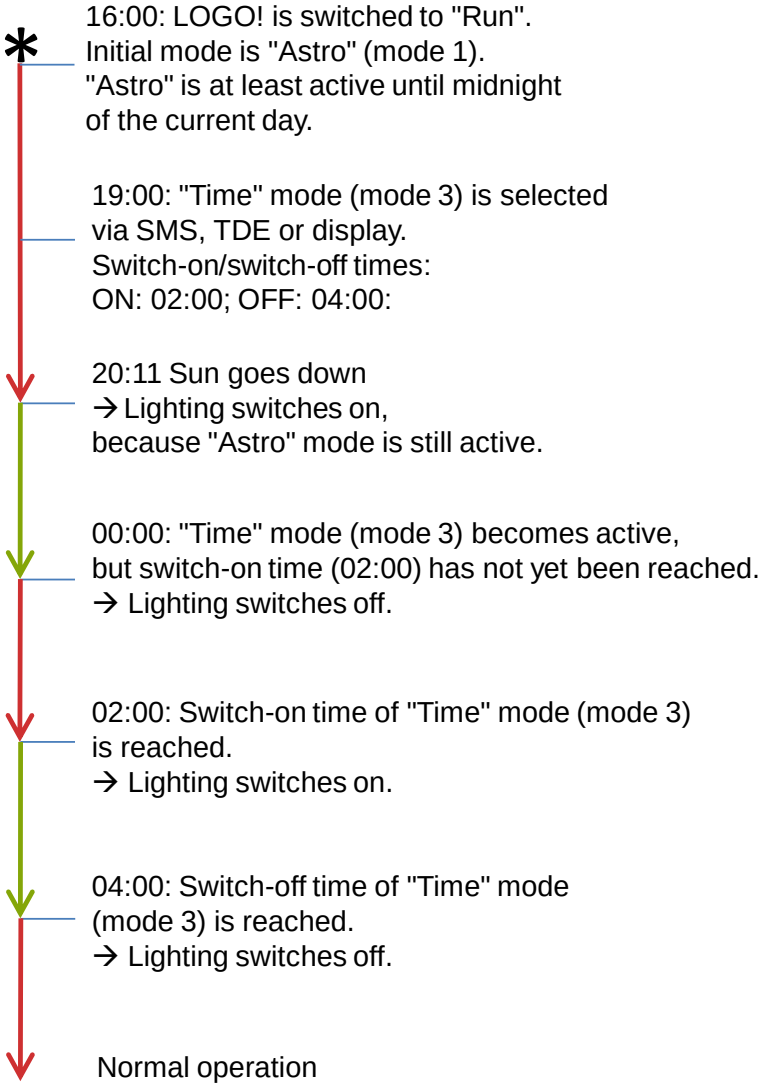
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2.5.4 System behavior during start-up of the LOGO!

The particularity at start-up of LOGO! is the following: From the time the LOGO! switches to the "Run" state, until at least midnight of the current day, "Astro" mode (mode 1) is active. It is possible to change the mode during this time. The newly selected mode is activated as soon as the system time of the LOGO! reaches 00:00.

The Fig. below shows schematically and as an example the system behavior when the LOGO! starts. The red arrows show that the output Q1 is false, the green arrows show that the output Q1 is true:

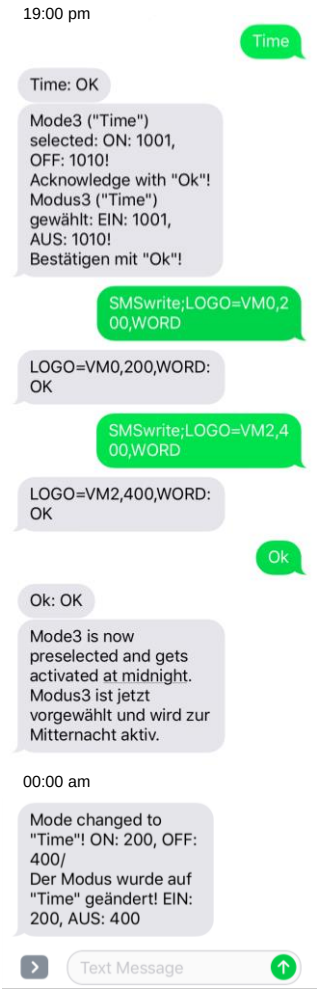
Fig. 2-6: System behavior at start-up of the LOGO!



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The following Fig. shows the SMS dialog with the LOGO! CMR for the example from Fig. 2-6.

Fig. 2-7



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2.6 Error handling

2.6.1 SMS messages

Table 2-2:

Message	Possible cause
ON time input is wrong! Please insert time in format "hhmm" EIN-Uhrzeit falsch eingegeben! Bitte Uhrzeit im Format "hhmm" eingeben. (hh=0-24,mm=0-59).	The switch-on- time entered was not entered in the correct format.
OFF time input is wrong! Please insert time in format "hhmm" AUS-Uhrzeit falsch eingegeben! Bitte Uhrzeit im Format "hhmm" eingeben. (hh=0-24,mm=0-59).	The entered switch-off time was not entered in the correct format.
OK	The SMS command was successfully executed
Invalid Command	SMS keyword could not be recognized. Check upper/lower case and syntax.
Invalid Parameter	Transfer parameters not correct; password not correct.
No Success	Values could not be set or read.
Try Again	Currently a reconfiguration of the CMR is being executed. Request cannot be processed.
No connection to LOGO! BM	• LOGO! BM not activated or wrong IP address set • Cable unplugged between LOGO! BM and LOGO! CMR
No GPS Signal	• GPS not configured • GPS signal cannot be received because there is no visual connection 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 type BIT, you need at least one LOGO! BM with the hardware product version FS:04 and the firmware version V1.81.01.

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3 Additional information

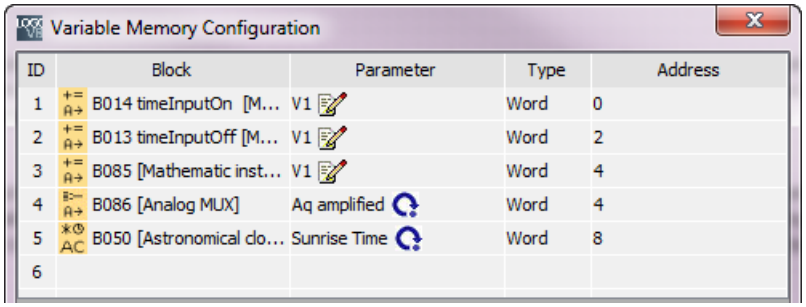
3.1 Basics

3.1.1 Parameter VM mapping

In order to be able to access block parameters, e.g. via SMS, the appropriate parameter must be mapped to a VM address in the parameter VM mapping. The parameter can then be manipulated via SMS by changing the value in the VM address.

The parameter VM mapping can be found in LOGO! Soft Comfort under "Tools > Parameter VM Mapping...".

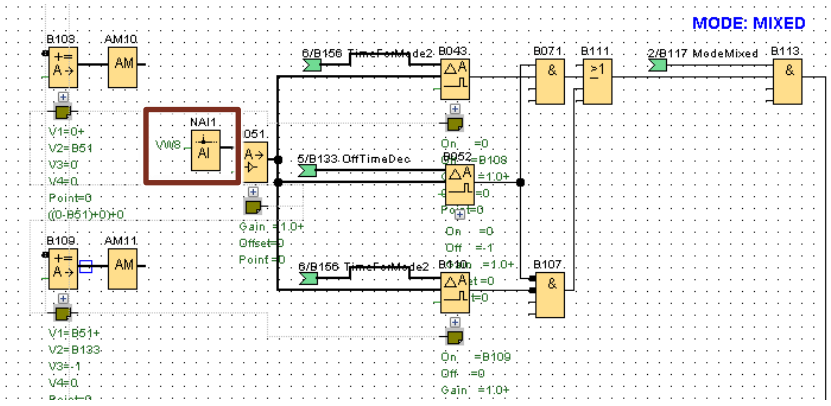
Fig. 3-1 Parameter VM mapping



Thus a block parameter can also be used at another point in the program. For this, network inputs or outputs are parameterized with the appropriate VM address, to which a block parameter is mapped, and linked in the program.

The Fig. below shows how the calculated parameter of the sunrise time of the Astro clock is calculated via the analog network input NAI1 (see Fig. 3-1 Parameter VM mapping) is further used in the program.

Fig. 3-2

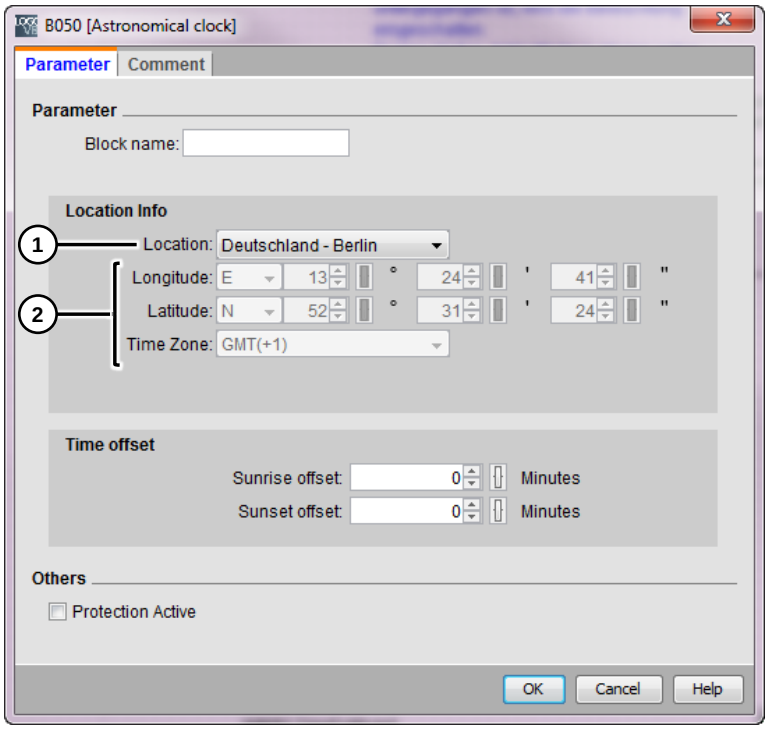


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3.1.2 Parameterization of the astronomical clock

The special "Astronomical clock" function is used to set an output to 1 based on the local time at the geographical location of the LOGO! between sunrise and sunset. The initial state of this function block also depends on the configuration of the summer time/wintertime switchover.

Fig. 3-3



1. Selection of a predefined location or user-defined coordinate input.
2. Setting the user-defined coordinates and selecting the time zone.

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3.2 Details on functionality

Note An overview of the parameter VM mappings can be found under Fig. 3-1 Parameter VM mapping

3.2.1 Selection of the mode

The mode is selected either via an SMS or local selection on the LOGO! TDE/display.

Locally the mode is selected via message texts that are linked to the cursor keys of the LOGO!.

The mode is selected via an SMS through the parameter "V1" of the arithmetic instruction "B085". In the parameter VM mapping , the parameter is linked to the VM address VW4. Via the SMS a value 1-3 (mode 1-3) is written into the address VW4. The value is evaluated via analog threshold value switches (B030, B055, B075) and the appropriate mode is selected.

The mode must be confirmed within five minutes by another SMS that sets the BIT V6.0. Via NI1 the address V6.0 is queried. If NI1 supplies a HIGH signal, the mode is selected.

After start-up of LOGO!, by default mode 1 (Astro) is activated. After the first time advance past midnight after start-up, mode 2 (Mixed) and mode 3 (Time) can also be activated. Before this mode 2 and 3 are only selected and activated after the first time advance past midnight.

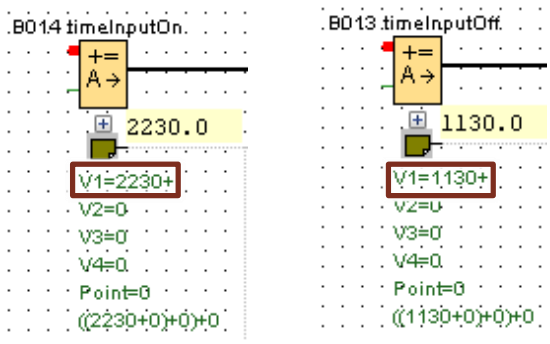
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3.2.2 Manual input for switch-on and switch-off time

Via SMS or via the LOGO! display/TDE you can manually specify at what time the lighting should switch on or off.
The values of the switch-on and switch-off time are transferred to the program via parameter "V1" of the arithmetic instruction "B014 timeInputOn" for the switch-on time, and "B013 timeInputOff" for the switch-off time.
Parameter "V1" is configured in the appropriate message texts for local adjustment of the time.
To adjust the time via SMS, the parameter "V1" in the parameter VM mapping is mapped to a VM address as follows:

- V1, B014 timeInputOn → VW0
- V1, B013 timeInputOff → VW2

Fig. 3-4



The valid format for the time input is "0-24" for hours and "0-59" for minutes. The range of valid times is between "00:01" and "24:00". If, for example, the time "11:30" should be set as the user-defined time, the value "1130" must be entered via SMS or via the LOGO! or LOGO! TDE.

The correctness of the time value input is checked in the LOGO! program with the aid of analog function blocks (analog comparators, analog MUX, etc.).

If an invalid time format is entered (e.g. "2430"), a warning message is output via SMS and locally on the LOGO! or LOGO! TDE. The lighting is not activated again until a valid time has been entered.

Note

Bear in mind that for the time value "00:00", the value "2400" must be entered as the analog value. If you enter the value "0000" as an analog value, you will get a warning message that the time format is wrong.

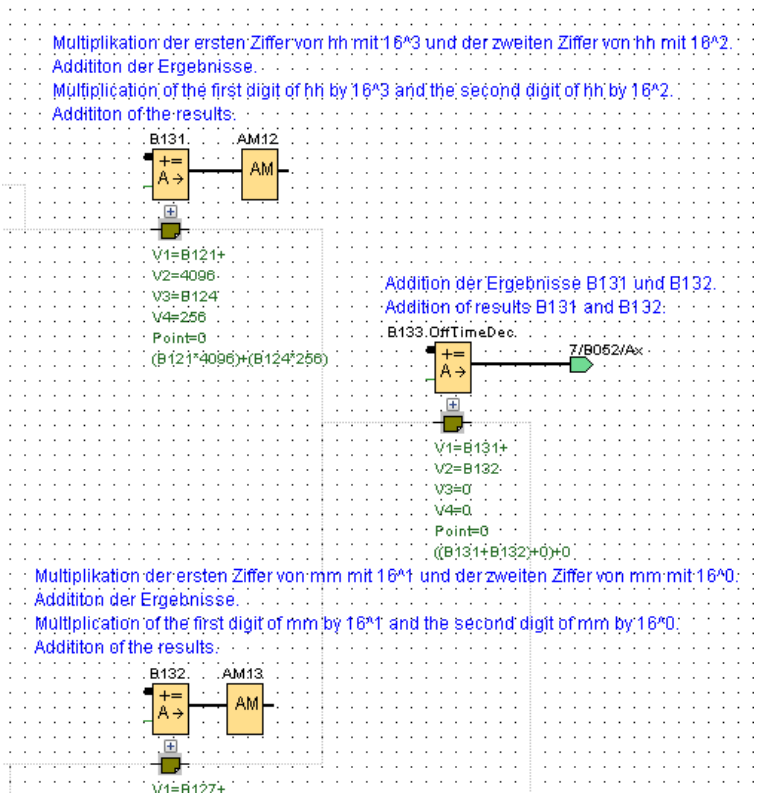
For further processing of the entered time in the program, the time value is converted into minutes; the minutes since midnight (00:00). To do this, the value entered is broken down into its components, hours and minutes. The number of hours is multiplied by 60 and the minutes are added to the product.

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Particularity for mode 2

For mode 2, the switch-off time entered must also be converted to match the format of the astronomical clock, since here the switch-on time of the lighting is defined by the astronomical clock. The sunrise and sunset times of the astronomical clock are interpreted in HEX format. Thus a sunrise time of 5:30 a.m. means 16#530 in HEX format. The HEX number is then converted into a decimal number by the LOGO! program. In order to approximate the entered switch-off time for mode 2 in the format, the time is interpreted in the form hh:mm (h=hours, m=minutes) as a HEX number and converted to a decimal number. The converted time is provided by the block "B133 OffTimeDec".

Fig. 3-5

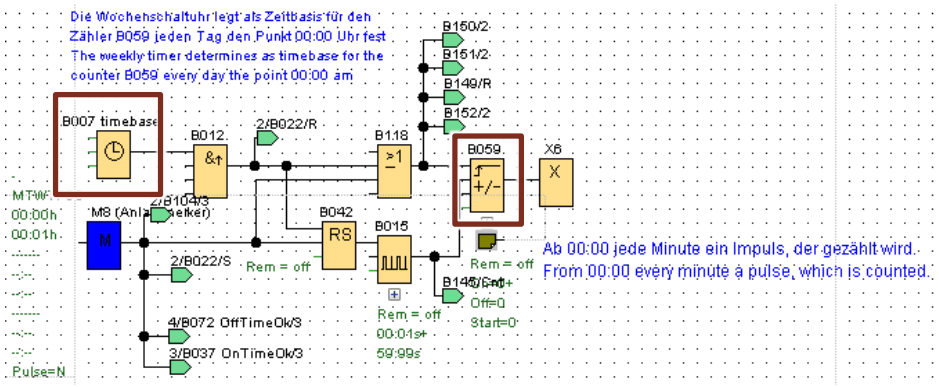


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3.2.3 Calculation of the current time

The current time is calculated with the "B059" counter. Starting from the first time advance beyond midnight (B007 timebase 00:00) the counter counts the minutes that have elapsed since then. With the subsequent advances beyond midnight the counter is reset and counting of the minutes starts again from the beginning.

Fig. 3-6



Note

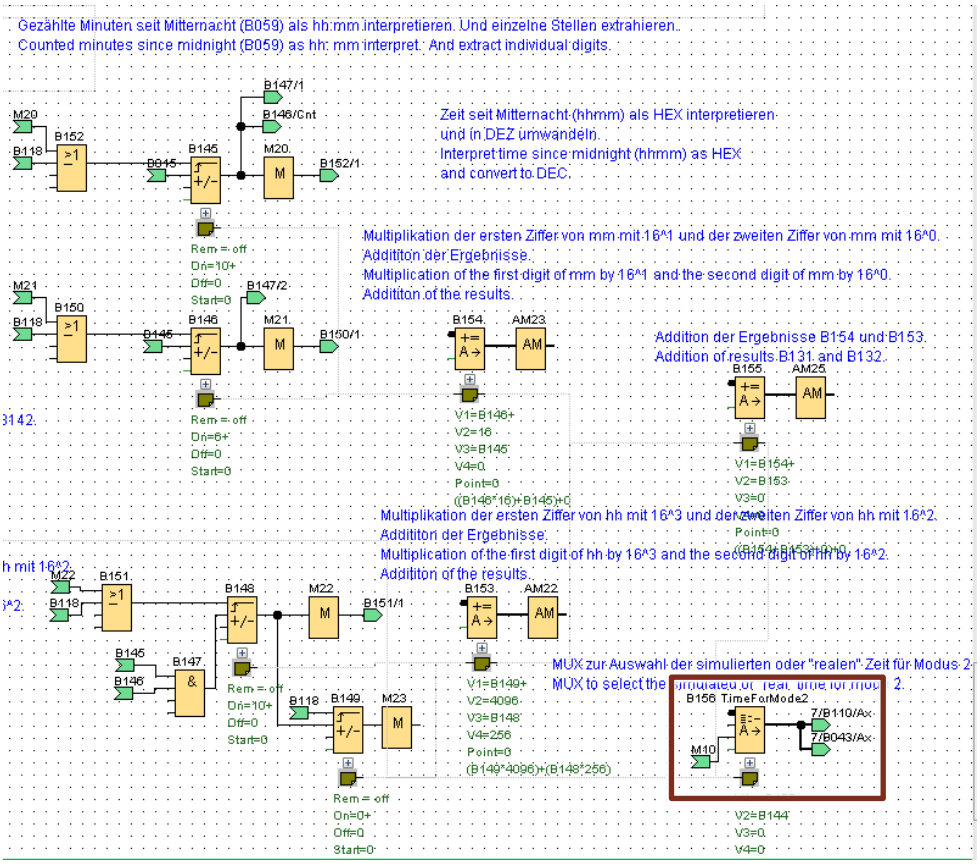
The pulse of the weekly timer for counting the pulse duration from the interval relay is transmitted every day at 00:00. If you select a mode with a manually set on/off time, it will only be activated after start-up of the LOGO!, after the first advance past midnight of the system clock.

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Particularity for mode 2

For mode 2, the switch-off time entered must also be converted to match the format of the astronomical clock, since here the switch-on time of the lighting is defined by the astronomical clock. The sunrise and sunset times of the astronomical clock are interpreted in HEX format. Thus a sunrise time of 5:30 a.m. means 16#530 in HEX format. The HEX number is then converted into a decimal number by the LOGO! program. To adjust the current counted minutes for mode 2 in the format, the counted minutes are converted to the presentation hh:mm (h=hours, m=minutes). The time in format hh:mm is then interpreted as a HEX number and converted to a decimal number.
The converted time (simulated or actual time) for mode 2 is provided by the MUX block "B156 TimeForMode2".

Fig. 3-7



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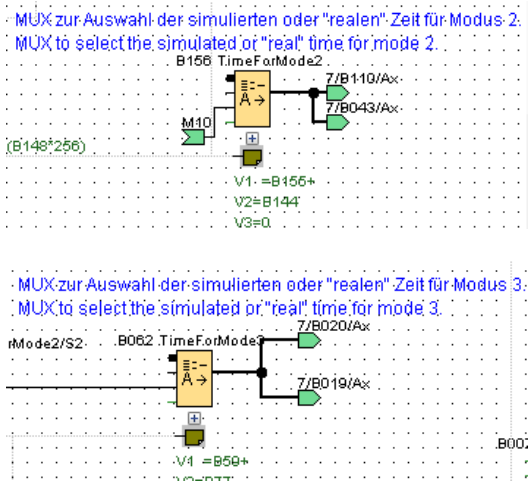
3.2.4 Calculation of the simulated time

The calculation of the time for simulation mode occurs in the same manner as calculation of the current time occurs. The only difference is that the time basis for the counter is not a weekly timer, but rather is activated by the user. In simulation mode, one minute is counted every 0.1 seconds.

Here, as well, conversion of the time for mode 2 (HEX → DEC) takes place accordingly (see "Particularity for mode 2)

The selection as to whether the current or the simulated time is used for evaluation takes place in the MUX blocks "B156 TimeForMode2" and "B062 TimeForMode3".

Fig. 3-8



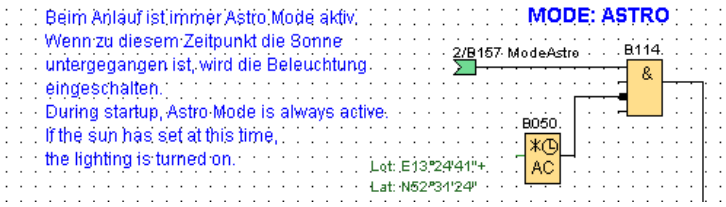
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3.2.5 Switching the lighting (Q1)

Mode 1: Astro

At start-up of the LOGO!, mode 1 (Astro) is always activated. If the LOGO! system time is between sundown and sunrise, the lighting (output Q1) is switched on.

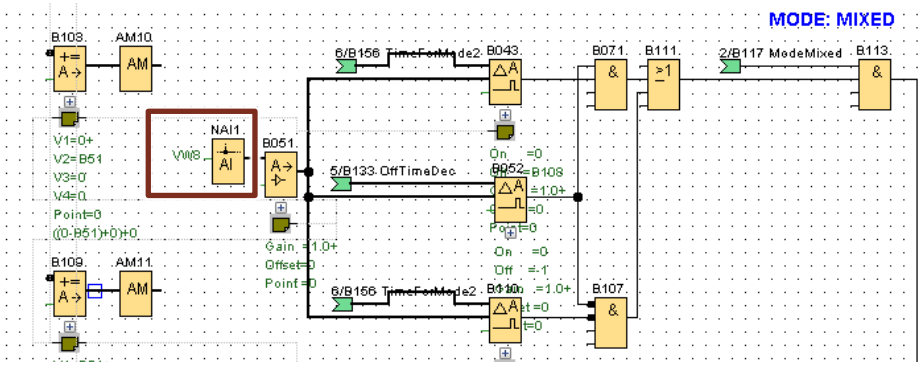
Fig. 3-9



Mode 2 Mixed

To switch the lighting in mode 2 (Mixed) the system checks whether the current time (minutes counted since 00:00) is between sundown time (astronomical clock "B050") and the entered switch-off time. If this is the case, at activated mode 2 the lighting is switched on. In the parameter VM mapping the sundown time is linked to the VM address VW8. The address VW8 is accessed via NAI1 and the time is used in the program for the comparison. The times are compared using analog comparators B043, B052 and B110.

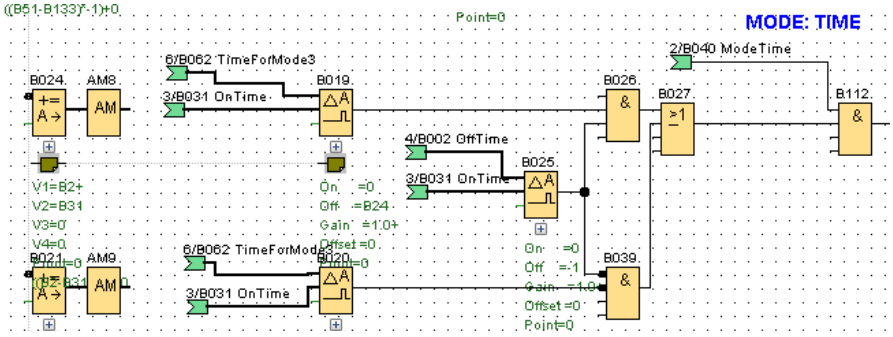
Fig. 3-10



Mode 3: Time

To switch the lighting in mode 3 (Time) the system checks whether the current time (minutes counted since 00:00) is between the entered switch-on time and the entered switch-off time. If this is the case, the lighting is switched on when mode 3 is activated. The times are compared using analog comparators B019, B020 and B025.

Fig. 3-11



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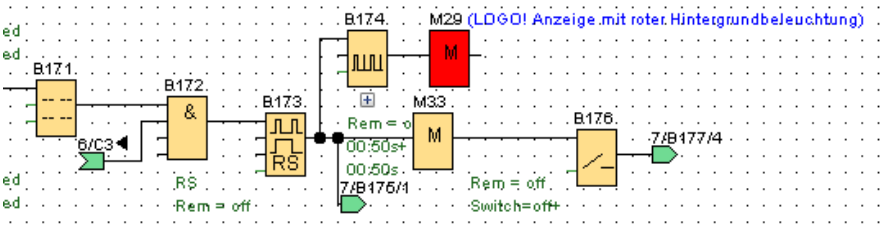
Forcing

Forcing can be used to permanently switch the state of output Q1 on and off, regardless of the selected mode.

Forcing is activated via the message text B171 of the LOGO! message box. This triggers the impulse relay B173. If the output of the impulse relay is active, forcing is switched on.

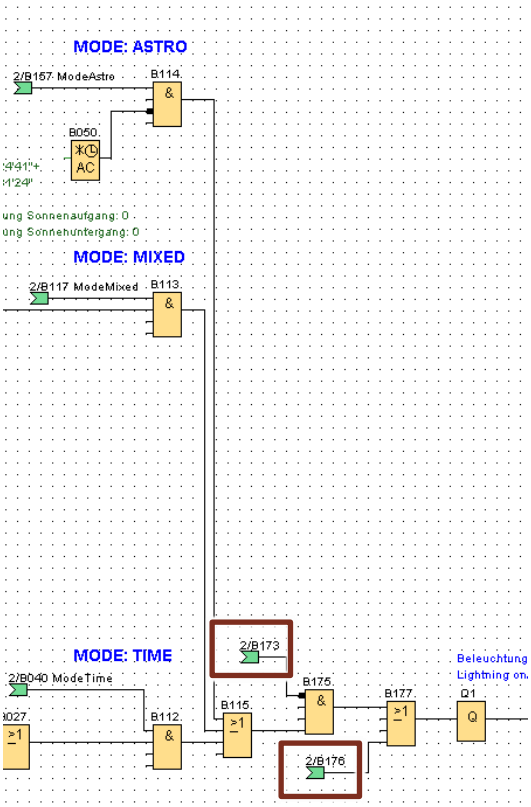
The selection of whether output Q1 should be switched on or off during forcing occurs via the software switch B176. This is likewise activated via the message text B171.

Fig. 3-12



The condition for forcing is interconnected immediately upstream of output Q1 and it overwrites the conditions for switching the output via modes 1-3.

Fig. 3-13



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4 Appendix

4.1 Service and Support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services. Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks: support.industry.siemens.com

SITRAIN – Training for Industry

We support you with our globally available training courses for industry with practical experience, innovative learning methods and a concept that's tailored to the customer's specific needs.

For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page: www.siemens.com/sitrain

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for Apple iOS, Android and Windows Phone: https://support.industry.siemens.com/cs/ww/en/sc/2067

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4.2 Links and literature

Table 4-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the article page of the application example https://support.industry.siemens.com/cs/ww/en/view/109063024
\3\	LOGO! 8 Manual https://support.industry.siemens.com/cs/ww/en/view/109741041
\4\	LOGO! CMR Manual https://support.industry.siemens.com/cs/ww/en/view/109477418
\5\	FW-Update 2.1.5 for LOGO! CMR2020. https://support.industry.siemens.com/cs/ww/en/view/109756594

4.3 Change documentation

Table 4-2

Version	Date	Change
V1.0	04/2015	First version
V2.0	09/2018	Extension of the functionality
V2.1	03/2019	Textual adjustments and updated links

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