LOGO! 8
Controlling a sliding gate using a reversing contactor circuit

LOGO! 8
LOGO! Soft Comfort V8.2

https://support.industry.siemens.com/cs/ww/en/view/109755868

Siemens Industry Online Support

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1 Introduction

1.1 Overview

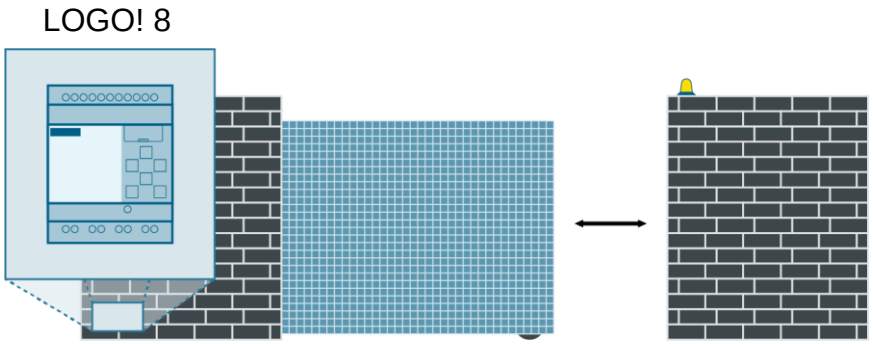
The integrated functions of a LOGO! 8 offer many additional options for solving automation tasks quickly and easily.

With LOGO!, readymade function blocks support project creation, e.g. a weekly time switch, a pulse generator, an astronomical clock, a seasonal time switch, a stopwatch, and simple logic gates.

With LOGO! 8.2 and higher, the integrated web server of LOGO! 8 additionally offers you the option of creating user-defined web pages for clear operator control and monitoring.[1] This allows you to call and control functions via the network.

This application example offers you a finished circuit for LOGO! 8 for controlling a sliding gate using a reversing contactor circuit.

Figure 1-1



Advantages of LOGO! versus a conventional electrical installation

Simple integration of LOGO! 8 offers you the following benefits:

- Supplementing the switching program with additional tasks
- An integrated web server for visualization and control
- Control and parameterization by means of the LOGO! display
- Integrating the LOGO! signals into a KNX system[2]

Target group

This application example is aimed at specialist electrical installation staff.

[1] With LOGO! 8.2 and higher, you create user-defined web pages using the LOGO! Web Editor. However, this is not covered in this application example.
[2] When using the LOGO! CMK2000 communications module

1.2 Mode of operation

LOGO! is used to control power contactors for clockwise or counterclockwise rotation of a three-phase motor. The motor moves a sliding gate. Mutual locking of the power contactors is carried out in the LOGO! switching program (reversing contactor circuit).

To minimize the risk of accidents, a signal light indicates that the gate is moving and a light barrier monitors vehicles driving through. If something passes though the light barrier during closing, the system opens the gate again.

If the system is switched on and the emergency stop button is not pressed, it is possible to open or close the gate by means of a brief pulse on the key switch/receiver of a remote control. In addition, you can control the gate using the buttons on the LOGO! or by means of the integrated web server (on a message text basis).

The sliding gate is opened or closed until the corresponding end positions have been reached.

Automatic closing mechanism

On reaching the “Open” end position, closing starts automatically after 15s. You can parameterize the time by means of a switch-on delay.

Path lighting

Path lighting is activated by darkness (the astronomical clock) when the sliding gate is opened. When the sliding gate has reached the “Open” end position, the path lighting remains lighted for another 30s. You can parameterize the time by means of a switch-off delay.

Parameters via message text

In ongoing operation, you can parameterize the times for the automatic closing mechanism and afterglow of the path lighting using the LOGO! display or the web server (on a message text basis).

1.3 Components used

This application example was created using the following hardware and software components:

Table 1-1: Hardware and software components

Component	Number	Article number	Note
LOGO! Soft Comfort V8.2	1	6ED1058-0BA08-0YA1	You will find an upgrade to V8.2 at: http://www.siemens.com/logo
LOGO! 8.2 12/24 RCE	1	6ED1052-1MD08-0BA0	-
LOGO!POWER 24 V / 0.6 A	1	6EP3330-6SB00-0AY0	-

Note

You need the components below to implement the sliding gate control. Due the wide range of different components that are available on the market, we will not list specific products:

- Limit switch
- Signal lamp
- Light barrier
- Power contactors
- Coupling relays
- Motor
- Fuse, motor circuit-breaker
- Buttons (key button, emergency OFF)

The components must be compatible with the corresponding LOGO! 24V or 230V variant that you are using.

This application example consists of the following components:

Table 1-2: Components of the application example

Component	File name	Note
Documentation	109755868_LOGO8_SlidingGate_en.pdf	-
LOGO! 8 switching program	109755868_LOGO8_SlidingGate_en.lsc	LOGO! Soft Comfort V8.2

2 Engineering

2.1 Hardware structure

Note Figure 2-1 shows a schematic diagram of the circuit structure.

Figure 2-1: Schematic structure

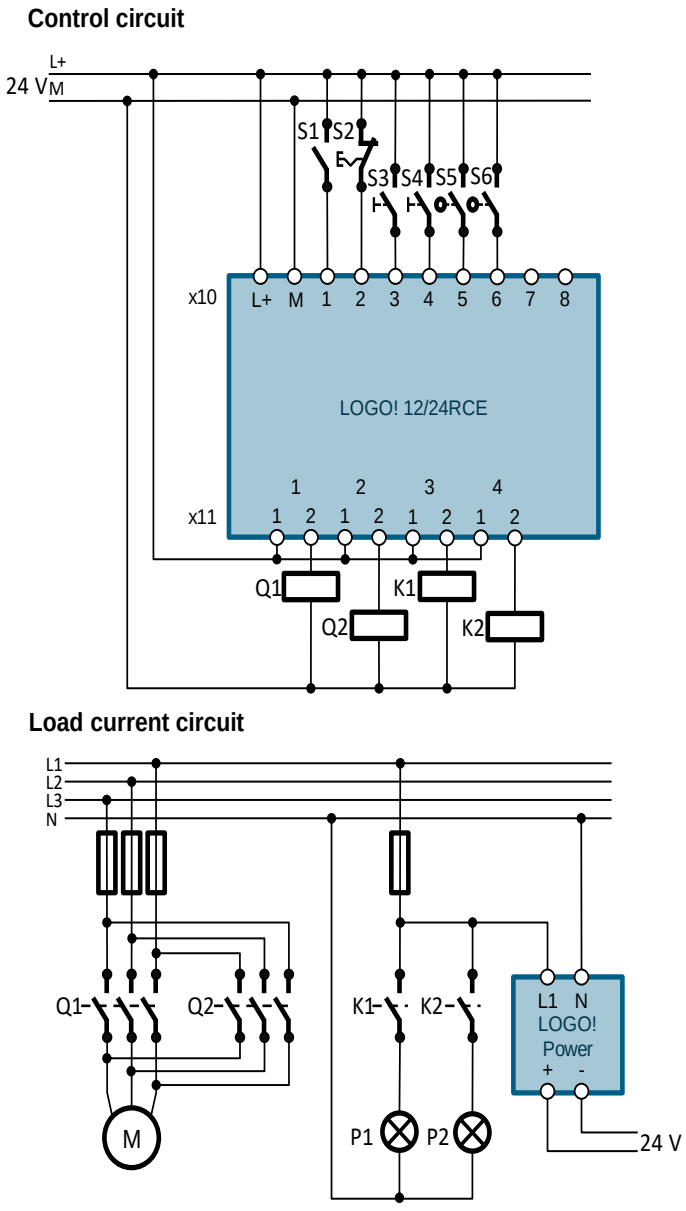


Table 2-1: Assignment list

Symbol	LOGO! input/output	Comment
S1	Input I1	Switch, normally open contact; system ON
S2	Input I2	EMERGENCY stop, normally closed contact
S3	Input I3	(Key) button, remote control receiver; normally open contact
S4	Input I4	Light barrier, normally open contact
S5	Input I5	Limit switch, normally open contact; gate open:
S6	Input I6	Limit switch, normally open contact; gate closed:
Q1	Output Q1	Power contactor for the three-phase motor
Q2	Output Q2	Power contactor for the three-phase motor
K1	Output Q3	Coupling relay for the signal light
K2	Output Q4	Coupling relay for the path lighting
P1	-	Signal light
P2	-	Path lighting
M	-	Three-phase motor

Note

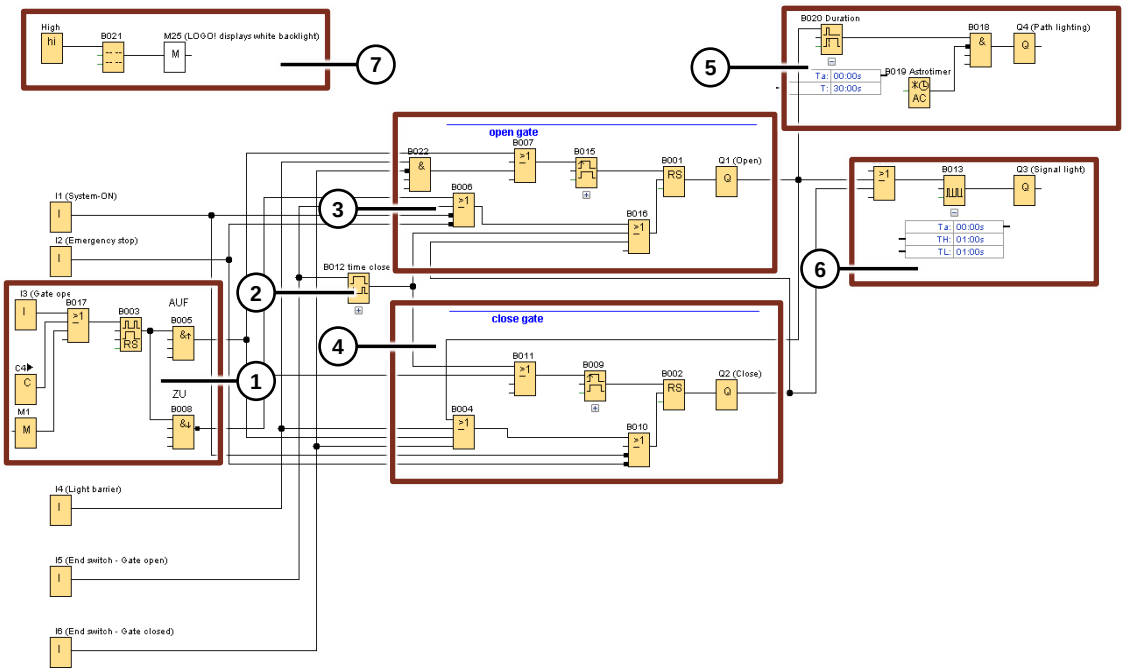
In the case of a LOGO! with relay outputs, coupling relays K1 and K2 are optional and are intended to save the integrated LOGO! relays.

In the case of a LOGO! with transistor outputs, you must use coupling relays or contactors.

2.2 Switching program

The illustration below shows the finished program for controlling a sliding gate using a reversing contactor circuit. We will go into the details of the individual program parts 1-7 below. To get a better understanding of the circuit, use simulation mode in LOGO! Soft Comfort.

Figure 2-2



1. You set or reset the latching relay by means of a brief pulse at input I1 or flag M1, or by pressing the ► cursor key on the LOGO! On setting, the rising edge is used to set the signal to open the gate. On resetting, the falling edge is used to set the signal to closed the gate.
   Flag M1 is used as the interface with the controller via a user-defined website.
2. Switch-on delay for automatic closing of the gate after a defined time. The switch-on delay sets the signal for closing the gate if the limit switch at input I5 is activated for the parameterized time.
3. Circuit for opening the gate.
   The signals below set the relay by logical ORing:
   - Pulse for opening from the program part (1)
   - Activated light barrier at input I4 and gate not closed

   The signals below reset the relay by logical ORing:
   - 0 signal at input I1 (system OFF)
   - Activated EMERGENCY OFF at input I2
   - Pulse for closing from the program part (1)
   - Active limit switch at input I5 (gate open)
   - 1 signal for automatic closing from the program part (2)
   - Activated output Q2 (closing) from the program part (4)

4. Circuit for closing the gate.
   The signals below set the relay by logical ORing:
   - Pulse for closing from the program part (1)
   - 1 signal for automatic closing from the program part (2)

   The signals below reset the relay by logical ORing:
   - 0 signal at input I1 (system OFF)
   - Activated EMERGENCY OFF at input I2
   - Pulse for opening from the program part (1)
   - Active limit switch at input I6 (gate closed)
   - Activated light barrier at input I4
   - Activated output Q1 (opening) from the program part (3)
5. Circuit for controlling the path lighting at output Q4. The astronomical clock prevents the lighting from being switched on during daylight hours. Path lighting is switched on after the sun goes down if the gate opens and remains switched on until the switch-off delay time has expired. The time starts as soon as output Q1 is no longer active (gate is open or closes again).
6. Pulse encoder for controlling the signal light at output Q3. The pulse encoder is activated when the gate opens or closes.
7. A message text showing the times that can be set for automatic closing of the gate and the duration of afterglowing of the path lighting. This makes it possible to conveniently carry out parameterization at runtime using the LOGO! display or the integrated web server (default web page).

Note

You can get a functional description of the circuit as a comment on the switching program in LOGO! Soft Comfort under “File> Properties > Comment”" or, alternatively under “Tools > Options > Comment”.

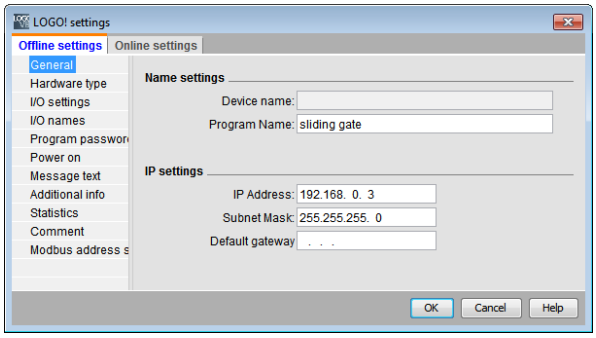
You can find the designations of the inputs and outputs in LOGO! Soft Comfort under “File > Properties > I/O Names”.

Hint: Under “Extras" > "Options" > “Print”, select the "Comment" check box to print the function description together with the program.

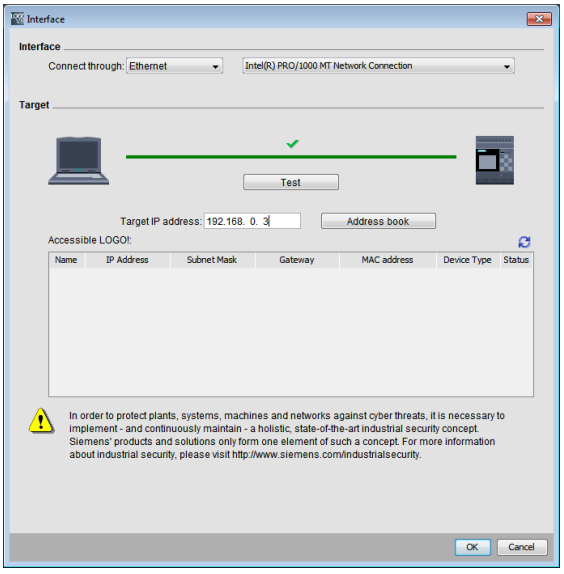
2.3 Commissioning

Carry out the steps below to commission the LOGO! and the supplied switching program:

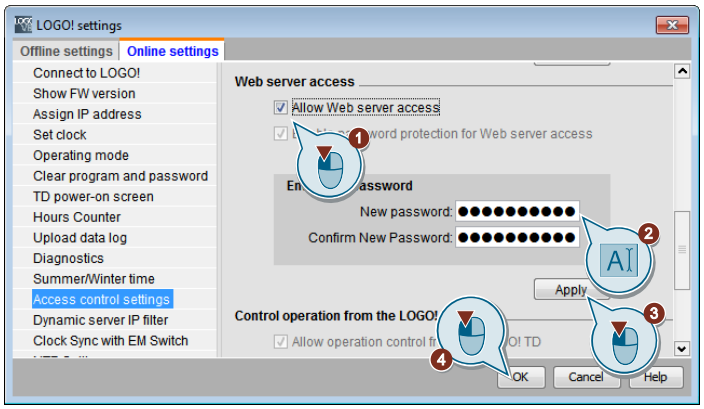
1. Connect the LOGO! and all of the other components of the sliding gate control according to the hardware configuration (see see chapter 2.1).
2. Switch on the supply voltage of the LOGO!
3. Set the time of day and date of the LOGO! correctly.
   Description in the LOGO! 8 manual:
   https://support.industry.siemens.com/cs/mdm/109741041?c=86268056075&lc=en-WW
4. Configure the network settings on the LOGO!, e.g.: IP address 192.168.0.3; subnet mask 255.255.255.0.
   Description in the LOGO! 8 manual:
   https://support.industry.siemens.com/cs/mdm/109741041?c=98458459403&lc=en-WW
5. Use an Ethernet cable to connect the programming unit on which LOGO! Soft Comfort V8.2 is installed to the LOGO! Make sure that the programming unit is located on the same subnetwork as the LOGO!
6. Open the supplied LOGO! switching program "109755868_LOGO8_SlidingGate_de.lsc" on your programming unit.
7. Under “File > Properties > Offline Settings > General”, make the IP settings according to the configuration from step 3. Click on OK to close the window



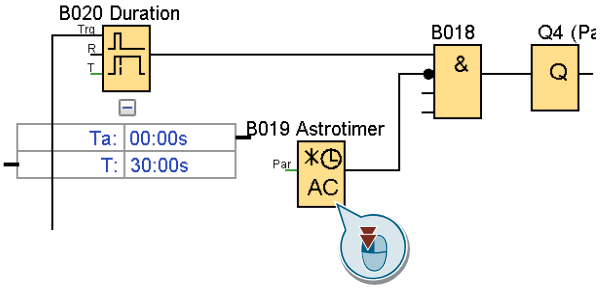
8. Open the “Options > Access Control” menu item. Use the interface of your programming unit to connect to LOGO! by clicking on "OK".



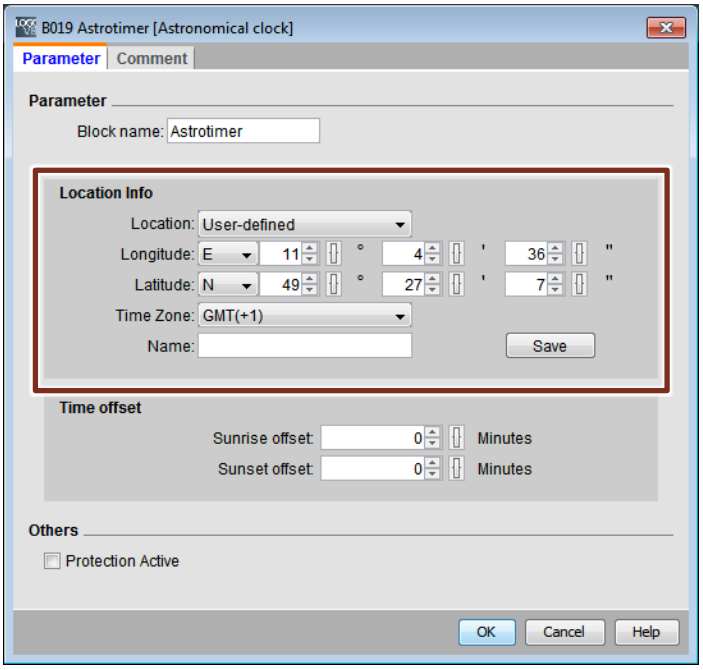
Select the “Allow Web Server Access” checkbox and enter a new password. Click on “Apply” to accept the settings and close the window by clicking “OK”.



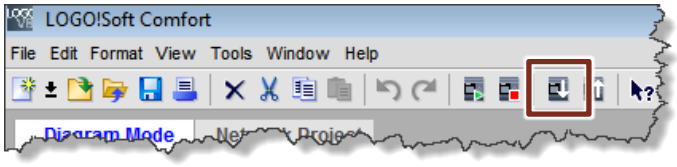
n the switching program, double-click to open the block properties of the astronomical clock [B019 Astrotimer].



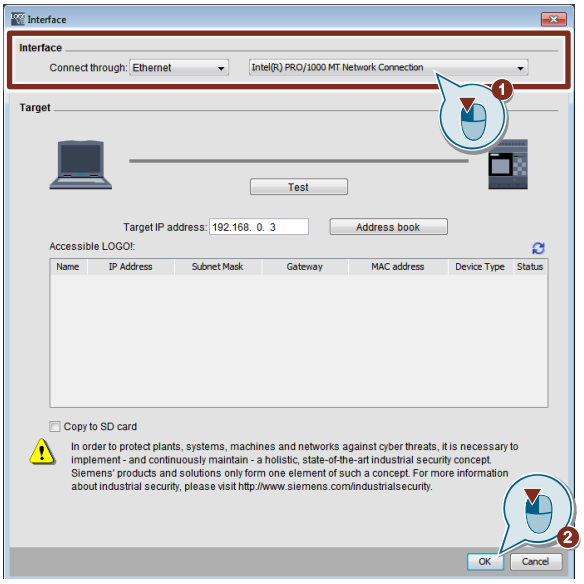
Parameterize the astronomical clock with the latitude and longitude of the location at which you installed the LOGO! You can store the user-defined location using any name you like. Click on “OK” to close the properties dialog.



9. Optionally: In the block properties of block [B012 time aut. CLOSED], parameterize the time for the automatic closing mechanism and parameterize the time for path lighting afterglow in the block properties of block [B020 afterglow].
10. Click on the “PC -> LOGO!” icon to load the switching program into LOGO!



11. Select the interface of your programming unit and click on “OK” to start the transfer. Confirm all of the dialogs below until loading has been completed and the LOGO! has entered “RUN” operating mode.



2.4 Operation

In addition to controlling the gate using connected buttons and switches, you can also control it using the buttons on the LOGO! or by means of the web server. In addition, you can change the time parameters in ongoing operation.

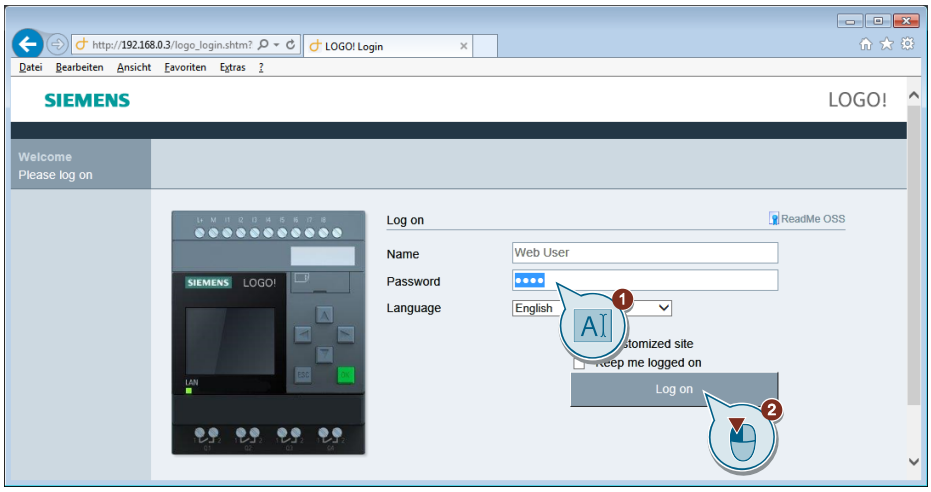
2.4.1 Web server

Requirements

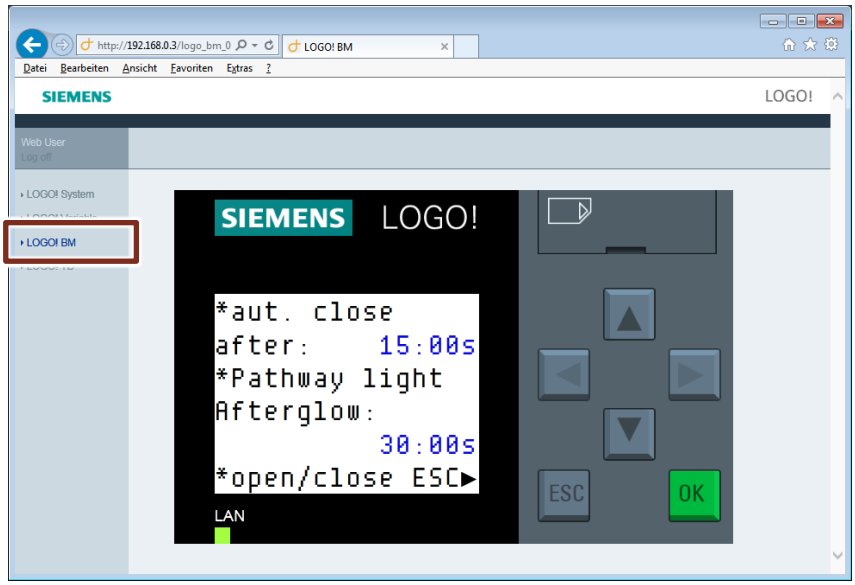
- Your device (PC, tablet, etc.) is connected to the LOGO! via a LAN or wifi[3]
- Your device is located on the same sub-network as the LOGO!

Operation

1. In a web browser, enter the IP address of the LOGO! and load the page.
2. Enter your web server password and log in.

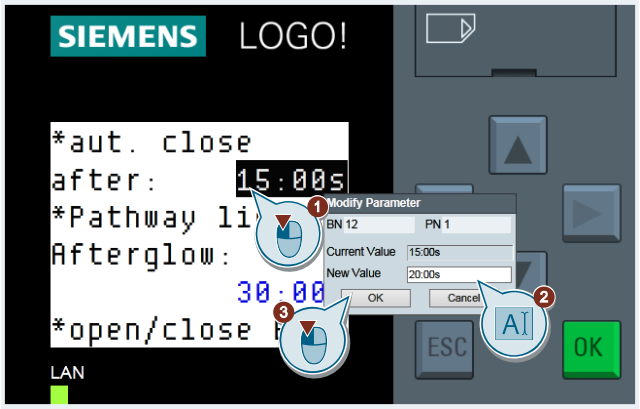


3. Navigate to the virtual view of LOGO! base module "LOGO! BM".



[3] LOGO! must be connected to a wireless LAN router.

4. Click on one of the times to parameterize a new one.

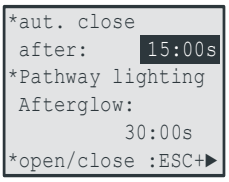


5. Tap "ESC" and then ► to open the sliding gate or to close it.

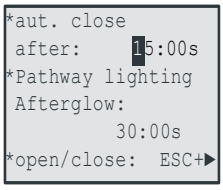
2.4.2 LOGO! display

Changing parameters

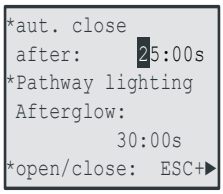
1. Press the "ESC" button for at least one second to activate change mode. Change mode is activated when a parameter has a dark background.



2. Use the ◄ or ► buttons to choose the relevant parameter and tap "OK" to change the selected parameter.



3. Change the parameter value using the ▲ and ▼ buttons. You use the ► button to get to the next digit of the parameter.



4. Tap "OK" to confirm your changes and tap “ESC” to exit change mode".

Operating the gate

To open or close the sliding gate using the LOGO! display, press the "ESC" and "►" buttons on the LOGO! at the same time.

3 Appendix

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3.2 Links and Literature

Table 3-1: Links and Literature

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the entry page for the application example https://support.industry.siemens.com/cs/ww/en/view/109755868
\3\	LOGO! 8 Manual, 11/2017 Edition https://support.industry.siemens.com/cs/ww/en/view/109741041
\4\	LOGO! Soft Comfort online help https://support.industry.siemens.com/cs/ww/en/view/100782807
\5\	LOGO! application examples https://support.industry.siemens.com/cs/ww/en/ps/13617/ae

3.3 Change documentation

Table 3-2: Change documentation

Version	Date	Change
V1.0	03/2018	First edition
V1.1	03/2019	Textual adjustments