LOGO! 8
Partition Wall Function for KNX

LOGO! 8, LOGO! CMK2000

https://support.industry.siemens.com/cs/ww/en/view/109748585
Warranty and Liability

Note

The Application Examples are not binding and do not claim to be complete regarding the circuits shown, equipping and any eventuality. The Application Examples do not represent customer-specific solutions. They are only intended to provide support for typical applications. You are responsible for ensuring that the described products are used correctly. These Application Examples do not relieve you of the responsibility to use safe practices in application, installation, operation and maintenance. When using these Application Examples, you recognize that we cannot be made liable for any damage/claims beyond the liability clause described. We reserve the right to make changes to these Application Examples at any time without prior notice.

If there are any deviations between the recommendations provided in these Application Examples and other Siemens publications – e.g. Catalogs – the contents of the other documents have priority.

We do not accept any liability for the information contained in this document. Any claims against us – based on whatever legal reason – resulting from the use of the examples, information, programs, engineering and performance data etc., described in this Application Example shall be excluded. Such an exclusion shall not apply in the case of mandatory liability, e.g. under the German Product Liability Act (“Produkthaftungsgesetz”), in case of intent, gross negligence, or injury of life, body or health, guarantee for the quality of a product, fraudulent concealment of a deficiency or breach of a condition which goes to the root of the contract (“wesentliche Vertragspflichten”). The damages for a breach of a substantial contractual obligation are, however, limited to the foreseeable damage, typical for the type of contract, except in the event of intent or gross negligence or injury to life, body or health. The above provisions do not imply a change of the burden of proof to your detriment.

Any form of duplication or distribution of these Application Examples or excerpts hereof is prohibited without the expressed consent of the Siemens AG.

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks. In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens’ products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place. Additionally, Siemens’ guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit http://www.siemens.com/industrialsecurity.

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

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under http://www.siemens.com/industrialsecurity.
# Table of Contents

Warranty and Liability ........................................................................................................ 2
1  Introduction......................................................................................................................... 4
   1.1  Task Description........................................................................................................... 5
   1.2  Mode of operation ....................................................................................................... 5
2  Setup and description.......................................................................................................... 6
   2.1  Components used ....................................................................................................... 6
   2.2  Hardware setup ............................................................................................................ 7
   2.3  LOGO! program.......................................................................................................... 8
   2.4  Mounting the LOGO! into KNX ............................................................................... 10
   2.4.1  Configuration of LOGO! CMK2000 .................................................................... 11
3  Commissioning.................................................................................................................. 12
4  Adjustments and expansions............................................................................................. 13
   4.1  Adjusting message texts ............................................................................................ 14
5  Appendix .......................................................................................................................... 15
   5.1  Service and support ................................................................................................... 15
   5.2  Links and Literature .................................................................................................. 16
   5.3  Change documentation ............................................................................................. 16
1 Introduction

This application example offers you a complete partition wall function for two and three rooms for LOGO! 8. An expanded application of the application example (see chapter 4) contains suggestions for useful and efficient expansion of the application using LOGO! 8.

The integrated functions of a LOGO! 8 offer many options for quick and easy solutions for automation tasks. Pre-programmed function blocks support you when creating a project, e.g. week timer, pulse generator, astro timer, yearly timer, stopwatch and simple logic gates.

The LOGO! text display unit (TDE) and the integrated LOGO! 8 web server offer additional options for control and monitoring with function keys and message texts.

The communication module CMK2000 from Siemens provides a solution for communication in building automation with LOGO! 8. The communication module enables communication between a LOGO! 8 and any KNX device via the KNX building system bus.

Figure 1-1: Hardware setup for the application example

Advantages

The combination of the partition wall function in LOGO! 8 and the CMK2000 module offers you the following advantages:

- Function can be expanded to more rooms
- Function can be expanded by additional tasks
- Integration of LOGO! inputs and output into a KNX system

Target group

This application example is aimed at experienced KNX users who seek to expand their KNX system with the functionalities of a LOGO! 8.
1 Introduction

1.1 Task Description

A room is to be divided into smaller rooms using dividers and the lighting is to be controlled in accordance with the room dividers.

This application example shows how to realize a partition wall function for two and three rooms with LOGO! 8.

The partition wall function for two rooms is shown on the left in Figure 1-2.

The expansion of the partition wall function to three rooms can be found in chapter 4.

Figure 1-2: Hardware setup for the application example

1.2 Mode of operation

If the light is on in a room and the partition wall is opened, the light in the neighboring room is also switched on to illuminate the whole area. All lights can then be controlled from any switch in the area.

If the light is on and the partition wall is closed, the light remains on in both rooms. The lights are then controlled with the light switches in the respective room.

The lighting is switched on and off using configured KNX buttons or buttons connected to the digital inputs of the LOGO!.

In this application example, the lighting in the rooms can additionally be switched on and off using LOGO! TDE function keys or the web server.

Message texts show the current switching states of the lighting and the room divider positions.

Note

A functional description of the logic function can be found as a comment of the switching program under LOGO! Soft Comfort:

> "Tools" > "Select Hardware" > "Offline settings" > "Comment".

Tip: Activate the "Comment" option box under "Tools" > "Options" > "Print" for the function description to be printed together with the program.
2 Setup and description

2.1 Components used

This application example was created with the following components:

Table 2-1: Hardware and software components for the application example

<table>
<thead>
<tr>
<th>Component</th>
<th>Number</th>
<th>Article number</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGO! Soft Comfort V8.1</td>
<td>1</td>
<td>6ED1058-0BA08-0YA1</td>
<td>Upgrade to V8.1 can be found at <a href="http://www.siemens.com/logo">http://www.siemens.com/logo</a></td>
</tr>
<tr>
<td>LOGO! Power</td>
<td>1</td>
<td>6EP3332-6SB00-0AY0</td>
<td>-</td>
</tr>
<tr>
<td>LOGO! 8 12/24 RCE</td>
<td>1</td>
<td>6ED1052-1MD00-0BA8</td>
<td>-</td>
</tr>
<tr>
<td>LOGO! CMK2000</td>
<td>1</td>
<td>6BK1700-0BA20-0AA0</td>
<td>Product data base ETS5: <a href="http://www.siemens.com/gamma-td">http://www.siemens.com/gamma-td</a></td>
</tr>
<tr>
<td>LOGO! TDE</td>
<td>1</td>
<td>6ED1055-4MH00-0BA1</td>
<td>Optional component.</td>
</tr>
<tr>
<td>Siemens GAMMA KNX Power Supply</td>
<td>1</td>
<td>5WG1 125-1AB12</td>
<td>320 mA</td>
</tr>
<tr>
<td>Siemens GAMMA KNX bus coupler</td>
<td>1</td>
<td>5WG1 117-2AB12</td>
<td>-</td>
</tr>
<tr>
<td>Siemens GAMMA KNX 3-Gang Button</td>
<td>1</td>
<td>5WG1 223-2DB13</td>
<td>Product data base ETS5: <a href="http://www.siemens.com/gamma-td">http://www.siemens.com/gamma-td</a></td>
</tr>
<tr>
<td>Siemens GAMMA KNX/IP interface</td>
<td>1</td>
<td>5WG1 148-1AB12</td>
<td>Required for programming the KNX devices. Alternatively: USB interface</td>
</tr>
</tbody>
</table>

This application example consists of the LOGO! and ETS programs.

Table 2-2: Components for the application example

<table>
<thead>
<tr>
<th>Component</th>
<th>File name</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>109748585_LOGO8-KNX_PartitionWall_DOC_en.pdf</td>
<td>-</td>
</tr>
<tr>
<td>LOGO! 8 programs</td>
<td>109748585_LOGO8_PartitionWall-2Rooms_CODE_en.lsc</td>
<td>Requirement: LOGO! Soft Comfort V8.1</td>
</tr>
<tr>
<td></td>
<td>109748585_LOGO8_PartitionWall-3Rooms_CODE_en.lsc</td>
<td></td>
</tr>
<tr>
<td>ETS5 projects</td>
<td>109748585_ETS5_LOGO-KNX_PartitionWall-2Rooms_en.knxproj</td>
<td>Requirement ETS5 software</td>
</tr>
<tr>
<td></td>
<td>109748585_ETS5_LOGO-KNX_PartitionWall-3Rooms_en.knxproj</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Hardware setup

Figure 2-1 shows the hardware setup for this application example.
The assignment of the digital input and output signals of LOGO! 8 for the controller with two rooms can be found in Table 2-3.
The assignment of the KNX communication objects and the group addresses can be found in Table 2-4.

Figure 2-1: Hardware setup

Note
LOGO! TDE is an optional component.
You can also use its functions (message texts and function buttons) via the integrated LOGO! web server.
2.3 LOGO! program

The partition wall function is created with simple logic function blocks (AND, OR, XOR and current surge relay). There are interdependencies of room dividers and buttons and the condition to lock switching states of blocks against each other.

Partition wall open (function principle)

Figure 2-2 shows active connections (signals) in red, passive connections in blue. The partition wall is open and button 1 is pressed which switches on both lamps [Q1] and [Q2].

Pressing one of the two buttons again actuates the current surge relays before the lamps again and switches both lamps off.

Figure 2-2: Two rooms - partition wall open
Partition wall closed (function principle)

If the partition wall is closed (Figure 2-3), the light is switched on or off with the button in the respective room.

The switching program has a high signal at block [B005] (position 1) which is switched through as soon as the partition wall is opened again. If the lighting in room 1 is on, block [B006] (position 2) is switched through and the lighting in room 2 is switched on.

Flags [M20] and [M21] are required because they are signals that have been fed back after the current surge relays for evaluation of the actual switching state.

Figure 2-3: Partition wall closed (function principle)

The following table shows the input and output signals of the partition wall function for two rooms:

Table 2-3: Signals in the LOGO! (Two rooms with a partition wall)

<table>
<thead>
<tr>
<th>Signals</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input [I1]</td>
<td>Switching the lighting in room 1 (output [Q1]). Input [I1] is controlled with a button on the LOGO!. Function key [F1] is pressed on the LOGO! TDE or, alternatively, via the LOGO! web server. Flag [M51] serves for the connection to KNX (Table 2-4).</td>
</tr>
<tr>
<td>Function key [F1]</td>
<td></td>
</tr>
<tr>
<td>Flag [M51]</td>
<td></td>
</tr>
<tr>
<td>Input [I2]</td>
<td>Switching the lighting in room 2 (output [Q2]). Input [I2] is controlled with a button on the LOGO!. Function key [F2] is pressed on the LOGO! TDE or, alternatively, via the LOGO! web server. Flag [M52] serves for the connection to KNX (Table 2-4).</td>
</tr>
<tr>
<td>Function key [F2]</td>
<td></td>
</tr>
<tr>
<td>Flag [M52]</td>
<td></td>
</tr>
<tr>
<td>Input [I4]</td>
<td>Signal connection to the sensor for the partition wall.</td>
</tr>
<tr>
<td>Output [Q1]</td>
<td>Output signal for switching the room lighting Lamp 1 [Q1]. Signal connection to KNX (Table 2-4).</td>
</tr>
<tr>
<td>Output [Q2]</td>
<td>Output signal for switching the room lighting Lamp 2 [Q2]. Signal connection to KNX (Table 2-4).</td>
</tr>
</tbody>
</table>
2.4 Mounting the LOGO! into KNX

LOGO! 8 is integrated into a KNX system via the LOGO! communication module CMK2000.

The bi-directional data exchange between LOGO! and the KNX devices is made via configurable communication channels of the LOGO! CMK2000. For the channels, you parameterize inputs and outputs, flags or variable memories as signals in the LOGO!.

The following Table 2-4 shows the signals of the LOGO! for this application example and the communication direction between LOGO! and KNX.

Table 2-4: KNX group addresses and LOGO! channels for communication

<table>
<thead>
<tr>
<th>Signals in the LOGO!</th>
<th>KNX Group address</th>
<th>Channel Communication between LOGO! and KNX</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flag [M51]</td>
<td>1/1/1</td>
<td>KNX to LOGO!</td>
<td>Button A1 at KNX button for switching Lamp 1</td>
</tr>
<tr>
<td>Flag [M52]</td>
<td>1/1/2</td>
<td>KNX to LOGO!</td>
<td>Button A2 at KNX button for switching Lamp 2</td>
</tr>
<tr>
<td>Output [Q1]</td>
<td>1/1/7</td>
<td>LOGO! to KNX</td>
<td>Status LED A1 at KNX button. Indication Lamp 1 on/off.</td>
</tr>
</tbody>
</table>

Note

In this application example, a 3-gang button with status LEDs is used as KNX device for switching KNX signals.
2.4.1 Configuration of LOGO! CMK2000

Note
In this application example, the KNX devices and the LOGO! communication module CMK2000 have been integrated into the ETS software as "devices".

The basic prerequisites for the signal exchange between LOGO! 8 and the KNX system bus are shown below.
The LOGO! CMK2000 communication module is configured via the ETS software.

Configuration of LOGO! CMK2000:
- General settings for LOGO! CMK2000 and the settings for the channels for the communication between LOGO! 8 and KNX are made in the "Parameters" window.
- Select the LOGO! basic module with which the signal and data exchange is to be performed in the general parameters.
- You have to assign valid IP addresses for the LOGO! base module and the LOGO! CMK2000.
- Enter a password for the web interface.
- One channel of the CMK2000 is configured in the ETS software for the direction "from LOGO! to KNX" and one for the direction "from KNX to LOGO!".
- The LOGO! CMK2000 communication channels are connected with the group addresses of the KNX devices in the "Communication objects" window.
3 Commissioning

Proceed as follows to commission the application example:

**LOGO!**

1. Start LOGO! Soft Comfort V8.1
2. Open the LOGO! example program included in the delivery: "109748585_LOGO8_PartitionWall-xRooms_CODE_en.lsc"
3. Load the program to the LOGO!

**Note**

In this application example, the LOGO! IP address has been preconfigured as 192.168.0.1.

How to set the IP address of a LOGO! 8 can be found in the manual in chapter: 3.8.1 "Configuring network settings".

**KNX**

The following requirements apply to the KNX application:

- The physical addresses "1.1.1" and "1.1.2" are freely available in your KNX system.
- The communication interface has been defined in the ETS software. (Menu bar: "ETS > Bus")
- The bus connection with KNX participants has been established. (e.g.: via the USB interface or the IP interface).

1. Start the ETS software.
2. Click "ETS" in the ETS menu bar.
3. Select the "Overview" tab.
4. Click on the "Import project" symbol.
5. Navigate to the path of the KNX project: "109748585_ETS5_LOGO8-KNX_PartitionWall-xRooms_en.knxproj"
6. In the "Devices" window, select the button and the LOGO! CMK2000.
7. Click the "Download" button and select "Download all".
8. Follow the instructions in the container "Pending Operations" and press the programming button of the respective device.

**Note**

Further information on the programming button can be found in the "LOGO! CMK2000" manual:

Technical product information GAMMA KNX 3-Gang Button:
(in the manual called Commissioning key "F9")

You can check the actual switching states of the lighting and the partition wall positions using the message texts from the switching program.
4 Adjustments and expansions

Starting with a switching program with two rooms Figure 2-2, you can expand the program by further rooms and integrate additional functions.

Note
Please note that this variant is only one possible use of the solution.

Expanded switching program

The function principle in the expanded switching program with three rooms remains the same. If a partition wall is closed, the lighting can only be controlled with the button(s) in the respective room.

For an additional room, observe the additional interdependencies of room buttons and partition walls as shown in Figure 4-1 (position 1).

Structure your program using functional areas (e.g. Room 1, Room 2, Partition wall 1, etc.) for better overview and readability.

In this application example, signals are fed back from the surge current switches in order to consider certain switching states from a previous step, see (position 2). The time-based discrimination of switching states can be achieved, for example, by the "switch-on delay" block [B044].

Figure 4-1: Three rooms with two partition walls
4.1 Adjusting message texts

As operator, you can easily monitor the switching states of the lighting and the partition wall positions using message texts.

The content of the message texts is displayed on the LOGO! display, on the LOGO! TDE or in the web server (LOGO! TD).

The partition wall positions are represented by bar charts as a motion simulation in this application example.

Figure 4-2: Parameters in the message texts (switching states)

You realize the motion simulation with the individually configured “analog ramp” block to specify the ramp up and ramp down times.

The “Change speed” parameter is used to simulate an immediate signal or a slowly closing partition wall.

The analog ramp is started by a digital input signal and outputs a rising analog value.

Figure 4-3: Parameterizing the change speed of the analog ramp
5 Appendix

5.1 Service and support

Industry Online Support
Do you have any questions or need support?
Siemens Industry Online Support offers access to our entire service and support know-how as well as to our services.
Siemens Industry Online Support is the central address for information on our products, solutions and services.
Product information, manuals, downloads, FAQs and application examples – all information is accessible with just a few mouse clicks at:
https://support.industry.siemens.com/

Technical Support
Siemens Industry’s Technical Support offers quick and competent support regarding all technical queries with numerous tailor-made offers – from basic support to individual support contracts.
Please address your requests to the Technical Support via the web form:
www.siemens.com/industry/supportrequest

Service offer
Our service offer comprises, among other things, the following services:
• Product Training
• Plant Data Services
• Spare Parts Services
• Repair Services
• On Site and Maintenance Services
• Retrofit & Modernization Services
• Service Programs and Agreements
Detailed information on our service offer is available in the Service Catalog:
https://support.industry.siemens.com/cs/sc

Industry Online Support app
Thanks to the “Siemens Industry Online Support” app, you will get optimum support even when you are on the move. The app is available for Apple iOS, Android and Windows Phone.
https://support.industry.siemens.com/cs/ww/en/sc/2067
5 Appendix

5.2 Links and Literature

Table 5-1: Links and literature

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Siemens Industry Online Support [<a href="https://support.industry.siemens.com%5C">https://support.industry.siemens.com\</a>]</td>
</tr>
<tr>
<td>2</td>
<td>This entry [<a href="https://support.industry.siemens.com/cs/ww/en/view/109748585%5C">https://support.industry.siemens.com/cs/ww/en/view/109748585\</a>]</td>
</tr>
</tbody>
</table>

5.3 Change documentation

Table 5-2: Document version and change history

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>07/2017</td>
<td>First version</td>
</tr>
</tbody>
</table>