

SIEMENS



LOGO!

Modular Communication Modules

LOGO! CMK2000

Operating Instructions

Edition

11/2015

Answers for industry.

SIEMENS

LOGO!

CMK2000

Operating Instructions

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Legal information

Warning notice system

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

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

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

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Introduction

1.1 Preface

Purpose of this documentation

These operating instructions contain all the information required for configuring, installing, commissioning and operating the CMK2000.

These operating instructions are intended for qualified personnel in the following target groups:

- Commissioning engineers
- Operating and service personnel
- Network administrator (optional)
- KNX integrator

Basic knowledge required

The following knowledge is required in order to understand the operating instructions:

- Knowledge in application of the KNX bus system for building automation
- Knowledge of the Siemens LOGO! 8 logic module
- General knowledge in the field of automation technology
- General knowledge of network engineering

Validity of the documentation

This documentation describes the current delivery condition of the CMK2000.

These instructions describe the device based on the data valid at the time of release.

Trademarks

LOGO!® is a registered trademark of Siemens AG.

History

Edition	Remarks
11/2015	First edition

Naming conventions and abbreviations

The term "CMK2000" or "device" is sometimes used in this documentation instead of the full product name "LOGO! CMK2000 KNX module".

If "LOGO! 8" is meant, only the term "LOGO!" is used.

Safety notes

2.1 Safety instructions

 CAUTION
Observe the safety instructions on the inside front cover of this documentation.

CMK2000 devices correspond to the approvals printed on the rating plate. If you have questions about whether it is permissible to install the device in the planned environment, please contact your service representative.

NOTICE
Alterations to the devices are not permitted. Failure to observe this requirement shall constitute a revocation of the CE approval and manufacturer's warranty.

Repairs

 WARNING
The device contains no user-serviceable parts. May cause death or serious injury Unauthorized opening or improperly performed repairs can cause considerable damage to property and/or danger to users. In the case of faults, please contact Siemens Support (Page 86).

Safety extra-low voltage

Note

Only connect the device via a safety extra-low voltage

The device is designed for operation using directly connectable safety extra-low voltage (SELV) with safe electrical isolation according to IEC 60950-1 / EN 60950-1 / VDE 0805-1.

The following applies to use in North America: The power supply unit for supplying the device with power must comply with NEC Class 2 in accordance with National Electrical Code (ANSI / NFPA 70).

You must, therefore, only connect the supply terminals and the process and communication signals (including Ethernet) to safety extra-low voltages (SELV) with safe electrical isolation to IEC 60950-1 / EN 60950-1 / VDE 0805-1.

Note

Safety extra-low voltage

Contact with live components can result in a mild electric shock.

- Disconnect from the power supply before starting work.
 - Ensure that no wires or strands protrude from the terminals that can be touched.
-

Working on the device or on connected components

 WARNING
Risk of electric shock
May cause death or serious injury
<ul style="list-style-type: none">• Voltages > 60 V are present in the control cabinet. Therefore appropriate safety precautions must be taken to prevent contact during commissioning and maintenance work.• Before carrying out any work on the device or on connected components, make sure that the installation is in a zero-voltage state.• UL-approved cable types must be used for UL-certified systems (60/75°C).

2.2 IT security

IT security guidelines

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit <http://www.siemens.com/industrialsecurity>.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit <http://support.automation.siemens.com>.

Protective measures for CMK2000

NOTICE
Only authorized personnel are permitted to access the system and carry out modifications. Use a "strong" password for access to the web server of the CMK2000. See General parameter assignments (Page 41)

System overview

3.1 Field of application



Image 3-1 LOGO! 8 and CMK2000

The CMK2000 is a communication module from the LOGO! series with KNX interface.

The LOGO! 8 can be integrated into the KNX system using the CMK2000. It is then possible to exchange information and data between LOGO! 8 and KNX. The LOGO! 8 is then a universal and flexible control unit in the KNX network.

The combination between LOGO! 8 and CMK2000 allows:

- Logic combination of the signals from KNX devices
- Evaluation of KNX values in the LOGO!
- Control of KNX actuators from the LOGO! Soft Comfort series
- Use of inexpensive actuators and sensors in the KNX environment
- Simple expansion of KNX functions without ETS knowledge

3.2 Features

- CMK2000 together with LOGO! allows the use of inexpensive actuators and sensors in the KNX environment
- KNX devices can access the signal states of all inputs and outputs of the LOGO! 8.
- Standard LOGO! functions can be used, e.g.: logic functions, ON/OFF delays.
- Various KNX data point types can be made available by CMK2000 and LOGO!.
- Various LOGO! variable types can be sent to KNX devices, e.g. LOGO! analog values as settings for KNX devices as float values.
- Time synchronization between KNX and LOGO! is possible.
- No inputs or outputs are occupied in the process image of the LOGO! 8 for the KNX communication (saving is possible in the variable memory).

Note

Not more than one CMK2000 KNX device may be connected to a LOGO!.

3.3 System configuration

System configuration

The following picture shows a basic system configuration with a CMK2000 as the communication module between LOGO! and KNX.

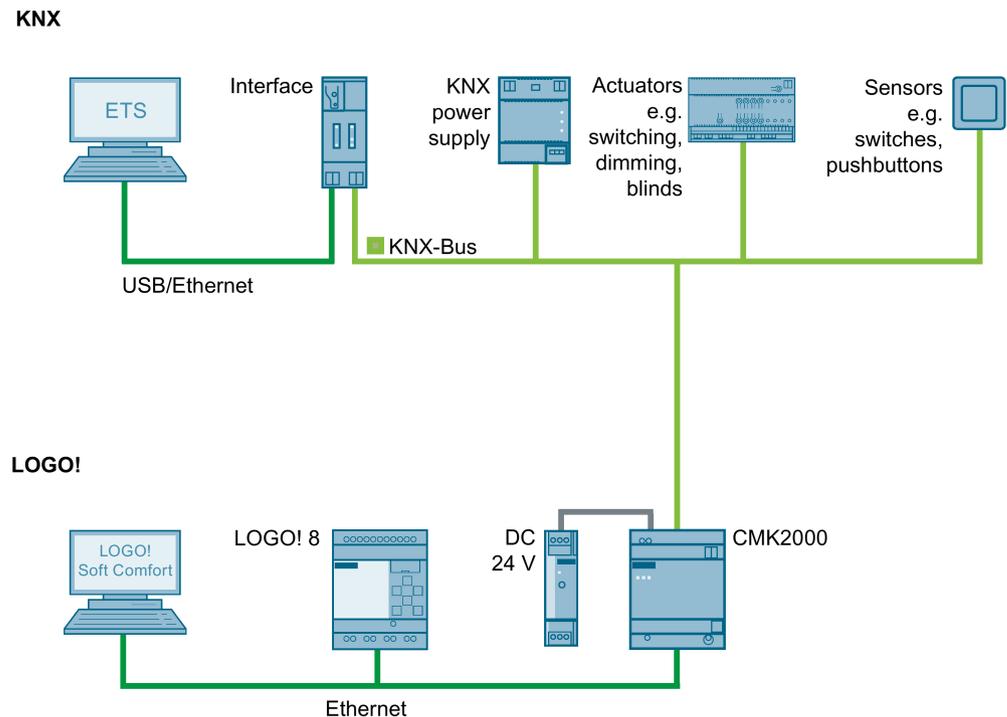


Image 3-2 CMK2000 configuration example

Tasks and meanings of the system components

The CMK2000 communication module allows the transfer and system-compatible scaling of data between KNX and LOGO!.

Depending on the parameter assignment in the ETS, the data flow is either from LOGO! to KNX or vice versa from KNX to LOGO!.

The CMK2000 is connected over Ethernet to the LOGO! 8. The power supply to the CMK2000 is made using an external power unit with 24 V DC.

The bus cable between CMK2000 and the KNX system is implemented as a two-wire connection (twisted pair). The bus cable provides the KNX nodes with data and also the operating voltage of 29 V DC from the KNX power supply.

Configuration / parameter assignment / commissioning of the CMK2000 is carried out using a personal computer with the ETS (Engineering Tool Software) via a KNX interface such as USB or IP interface.

3.4 System requirements

System requirements

- LOGO! 8
- 24 V power supply
- KNX bus
- KNX interface (USB or Ethernet)
- Windows PC (for commissioning, maintenance and diagnostics)
- LOGO! Soft Comfort (for programming user functions)
- ETS4 or ETS5
- A switch from the LOGO! series is recommended for commissioning, maintenance and diagnostics

Note

Compatibility with the previous versions of the LOGO! 8 does not exist.

Note

All communication partners of the CMK2000 must be set to autonegotiation.

Differences between the EIB module and CMK2000

The following table provides an overview of the differences in the performance features of the EIB module and the CMK2000:

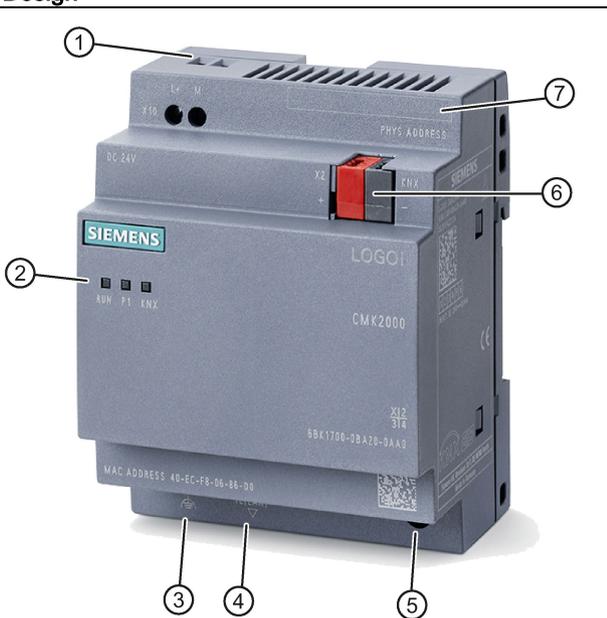
Performance feature	EIB module	CMK2000	Comment
2-bit solar protection function	-	✓	-
2-bit dimmer function	-	✓	-
Adjustable dimming speed	✓	Fixed dimming speed 100%	-
4-byte integer support	-	✓	-
4-byte float value support	✓	-	-
Access to variable memory	-	✓	-
Freely definable channels	50 "predefined" channels (4/8/12/16/20) classification	50 freely definable channels	-
Direct access to inputs/outputs	✓	Only direct read access possible	User solution: Use of flags/variable memory in the LOGO Soft Comfort program
Minimum monoflop time	10 ms	30 ms	-
Maximum monoflop time	255 ms	2500 ms	-
Percentage and floating functions	Predefined value per interpolation value	2 freely definable interpolation values	-
Number of analog values	Max. 10 analog values, of which only 2 can be used as outputs	50 analog values are possible	-
Status display via web interface	-	✓	-
Updating of operating software via KNX and web interface	-	✓	-
Connection to LOGO!	Connection via back-plane bus	Connection to LOGO! over Ethernet	-
Communication	Connection via back-plane bus	Communication via Ethernet	-
Transfer of the bus state can be activated/deactivated	- (Transfer of bus state always to input I24 and always active)	✓	-
Transfer of the bus state	Transfer of bus state always to input I24 and always active	Activation of transfer of the bus state reduces the number of available channels by 1	-

3.4 System requirements

Bus voltage return/loss can be separately configured for each channel	- Bus voltage failure/loss globally configurable	✓	-
Update rate	Update rate to LOGO! synchronous with back-plane bus rate	Update rate to LOGO! adjustable between 50 and 300 ms in steps of 50 ms	-
LEDs for status display	2 LEDs for status display: Run + KNX bus	3 LEDs for status display: Communication to KNX, communication to LOGO!, and Run	-
Percentage value	Percentage value occupies one analog input/output	Percentage value occupies 1 byte in the variable memory	-
	Percentage value can be processed directly by the LOGO!	Percentage value cannot be processed directly by the LOGO!	User solution: Use of analog amplifier in a LOGO! Soft Comfort program
Data type support	I3E data type support	DPT data type support	-
LOGO! support	LOGO! 7 support	LOGO! 8 support	-
Operation supported for LOGO Soft Comfort, CMK2000, LOGO! 8 with switch	-	✓	-
Programming key	Programming key accessible from below	Programming key accessible from front	-
KNX bus connection	Screw terminal	Bus terminal	-
Dimensions	2 WM	4 WM	-
Positioning independent of LOGO! location	Positioning possible on LOGO! single tier	✓	-
Use of LOGO! maximum configuration possible	Reduction in LOGO! quantity framework when using the module	✓	-

3.5 Design

CMK2000 design

Design															
 <p>CMK2000 design</p>	<table border="1"> <tr> <td>①</td> <td>24 V DC connection</td> </tr> <tr> <td>②</td> <td>Status LEDs</td> </tr> <tr> <td>③</td> <td>Functional ground FE connection</td> </tr> <tr> <td>④</td> <td>Ethernet connection (LOGO! 8)</td> </tr> <tr> <td>⑤</td> <td>Programming key / Reset key</td> </tr> <tr> <td>⑥</td> <td>KNX bus connection</td> </tr> <tr> <td>⑦</td> <td>Labeling field for physical address</td> </tr> </table>	①	24 V DC connection	②	Status LEDs	③	Functional ground FE connection	④	Ethernet connection (LOGO! 8)	⑤	Programming key / Reset key	⑥	KNX bus connection	⑦	Labeling field for physical address
	①	24 V DC connection													
	②	Status LEDs													
	③	Functional ground FE connection													
	④	Ethernet connection (LOGO! 8)													
	⑤	Programming key / Reset key													
	⑥	KNX bus connection													
⑦	Labeling field for physical address														

3.6 Operator controls and display elements

3.6.1 Status LEDs

The CMK2000 indicates the following operating modes on three LEDs:

	<ul style="list-style-type: none"> • RUN: CMK2000 status • P1: Connection to LOGO! • KNX: Status of KNX communication
---	--

CMK2000 operating mode

RUN LED	P1 LED	KNX LED	Meaning
■	x	x	Fault: Version conflict with firmware components
■	x	■	Device faulty
⚡	x	x	Communication fault or LOGO! in "Stop" mode
⚡	x	x	Maintenance status: Firmware update running
■	x	x	Incomplete configuration or programming mode active
■	x	x	Fault-free operating mode

Connection status to LOGO!

RUN LED	P1 LED	KNX LED	Meaning
x	⚡	x	LAN link present and LAN communication active
x	■	x	LAN link present
x	■	x	No LAN link present

Connection status KNX / programming mode / warm restart

RUN LED	P1 LED	KNX LED	Meaning
x	x		No KNX bus connected
x	x		KNX bus connected
x	x		Programming mode active
x	x		Incomplete configuration

Meaning of LED icons

Icon	Meaning
	LED is off
	LED lights up (red, orange or green)
	LED flashes in single color (red, orange or green)
	LED flashes in two colors (orange/green)
x	LED status is irrelevant

3.6.2 Programming key / Reset key

The key on the front of the CMK2000 has the following functions depending on how long it is pressed:

	<ul style="list-style-type: none">• Programming key for assigning the physical address via the ETS• Restart CMK2000
---	--

Assign physical address (KNX)

By briefly pressing the programming key (< 10 seconds), the module switches to the KNX programming mode. In this mode, you can enter the physical address (KNX) using the ETS. Refer to chapter Programming the physical address (Page 40).

As soon as this address has been assigned, the module returns to the normal operating mode.

Note

The programming mode can be canceled by briefly pressing the programming key again.

Note

Label the module with the assigned physical address. Do this using the labeling field provided. See Design (Page 21).

Restart CMK2000

Hold the key pressed for at least 10 seconds. The CMK2000 then carries out a warm restart.

NOTICE
Do not carry out a warm restart during a firmware update.

Parameters of the factory setting

IP address	KNX module: 192.168.0.10
Subnet mask	255.255.255.0
Web server password:	Admin
Physical KNX address	15.15.255

Application planning

4.1 General installation guidelines

General installation guidelines

The following guidelines must be observed when mounting and connecting the CMK2000:

- When connecting the CMK2000, make sure that you observe all applicable and legally binding standards. Adhere to the relevant national and regional regulations when installing and operating the device. Check with the local authorities regarding the standards and rules to be followed in your particular case.
- Ensure a zero-voltage state during assembly and connection work.

4.2 Installation location

Selection of the installation site / mounting position

The device can be mounted on a standard mounting rail or on a wall.

- Permissible installation positions: horizontal or vertical
- Ensure that the permissible ambient temperature range is observed:
 - Horizontal installation: 0 °C to 55 °C
 - Vertical installation: 0 °C to 45 °C
- Ensure that condensation is not produced at a relative humidity between 10% and 95%.
- Ensure that the atmospheric pressure is between 795 hPa and 1080 hPa.
- Observe sufficient clearance above and below (minimum 35 mm). Provide sufficient space for the power supply, Ethernet and KNX bus connections.

Table 4- 1 Device dimensions

CMK2000 dimensions	
Width	72 mm
Height	90 mm
Depth	60 mm (incl. protrusions)

NOTICE

Damage due to overheating

You must comply with all the instructions regarding the installation site and mounting position. Otherwise the device may malfunction or incur permanent damage as a result of overheating.

Pollution degree

The CMK2000 is designed for pollution degree 2. Pollution degree 2 according to the EN 50178 standard is non-conductive contamination in the normal case which can briefly become conductive as a result of condensation when the device is not in operation.

Electromagnetic compatibility (EMC) / overvoltage protection

NOTICE

Damage to the device

Inadequately dimensioned overvoltage protection can result in severe damage to the device. Always ensure, therefore, that the overvoltage protection is adequate (see Chapter Connecting the power supply (Page 32)).

Installation in control cabinet / device connection box

Note

The device is suitable for installation in a control cabinet or device connection box.

It is important to note that installation in a control cabinet or device connection box is essential for compliance with the UL regulations.

The control cabinet / device connection box must satisfy the regulations regarding fire-protection housing.

Ensure that all cables and leads that protrude externally are equipped with adequate strain relief.

4.3 Transportation

The devices must be transported in a clean and dry state, preferably in their original packaging. The transport temperature must be between - 40 °C and + 70 °C. Temperature fluctuations greater than 20 K per hour are not permitted.

4.4 Storage

The devices must be stored in clean and dry rooms, preferably in their original packaging. The storage temperature must be between -40 °C and +70 °C.

4.5 Scope of delivery

- CMK2000 device
- Insert
- Bus connector

Unpacking and checking the delivery

1. Unpack the device.
2. Check the delivery for completeness.
3. Check the device for transport damage by visual inspection.

NOTICE
Damage to the system
Damaged parts can result in damage to the system. Do not use devices that show evidence of damage!

Installing/mounting

5.1 Installing the CMK2000

The CMK2000 can be mounted on a 35 mm standard mounting rail according to DIN EN 60715 or on a wall / control panel.

Permissible installation positions: Horizontal and vertical. Flat mounting is not permissible.

Information on selection of the mounting location and on minimum spacing can be found in chapter Installation location (Page 25).

Mounting on a standard mounting rail

Proceed as follows:

1. Hook the CMK2000 onto the rail.
2. Swivel the CMK2000 backward until you hear it click in place.

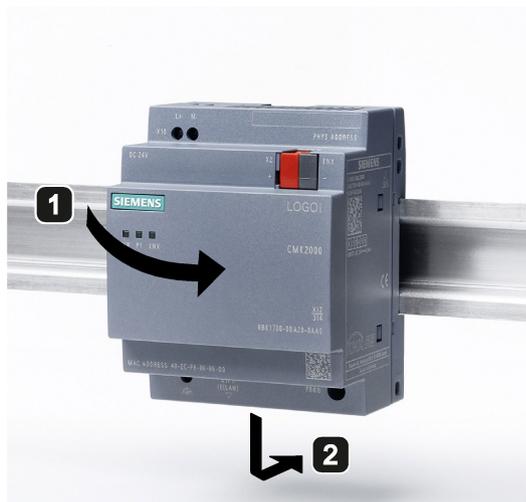


Image 5-1 Mounting CMK2000 on a standard mounting rail

Mounting on a control panel / wall

Proceed as follows:

1. Move the sliders ① to the outside until they latch in place.
2. The dimensions for the holes are shown in the following picture. Hole for M4 screw, tightening torque 0.8 Nm to 1.2 Nm.

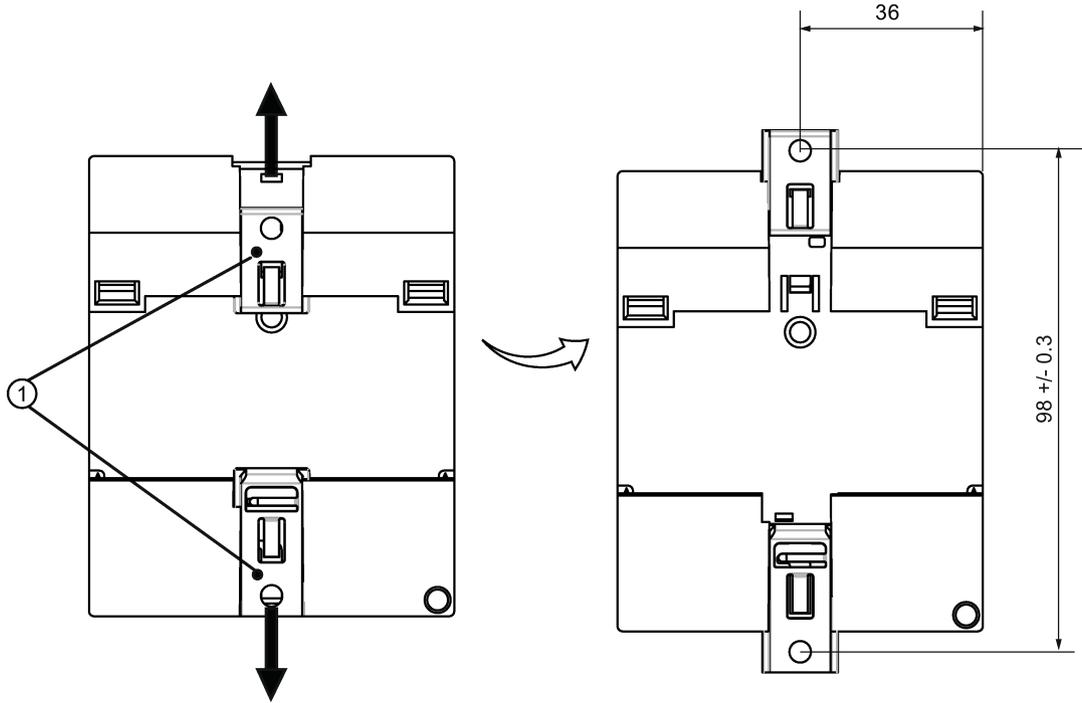


Image 5-2 CMK2000 wall mounting

NOTICE

If the CMK2000 is not mounted on the wall, the mounting sliders must always be left in the factory-set positions, i.e. within the range shown in the above picture. Otherwise the mounting sliders could become deformed if they are exposed to hot and moist ambient conditions for a longer period of time.

Connection

6.1 Safety instructions and guidelines

Safety instructions

 WARNING
Risk of electric shock May cause death or serious injury <ul style="list-style-type: none">• Voltages > 60 V are present in the control cabinet. Therefore appropriate safety precautions must be taken to prevent contact during commissioning and maintenance work.• Before carrying out any work on the CMK2000 or on connected components, make sure that the installation/system is in a zero-voltage state.• UL-approved cable types must be used for UL-certified systems (60/75°C).

6.2 Connecting the power supply

24 V DC power supply

The power supply to the CMK2000 device is made using an external 24 V DC supply for the LOGO! side.

Note

The CMK2000 bridges brief voltage interruptions (< 1.5 ms) in its 24 V DC supply without influencing the function. Longer voltage interruptions must be buffered by an appropriate power supply unit, e.g. from the LOGO!Power series.

Safety instructions



WARNING

Connection to safety extra-low voltage / protective extra-low voltage only

May cause death or serious injury

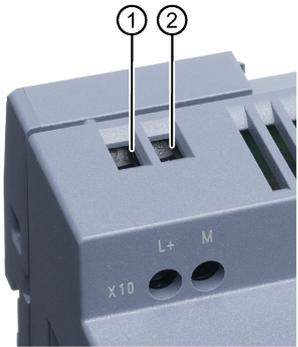
The device is designed for operation using directly connectable safety extra-low voltage (SELV) with safe electrical isolation according to IEC 60950-1 / EN 60950-1 / VDE 0805-1.

The following applies to use in North America: The power supply unit for supplying the device with power must comply with NEC Class 2 in accordance with National Electrical Code (ANSI / NFPA 70).

You must only connect the supply terminals and the process and communication signals (including Ethernet) to safety extra-low voltages (SELV) with safe electrical isolation (Class 2 Power Supply in North America).

Connection

Connect the CMK2000 to the power supply as shown below:

24 V DC connection	Description	
	① L+	Connection using 2-pole screw terminal (0.5 ... 2.5 mm ²), max.. torque 0.5 Nm
	② M (ground)	

External lightning protection module

An external lightning protection module can be connected upstream into the 24 V DC supply line as protection against high-energy pulses on the lines:

A suitable module is the Dehn Blitzductor BXT ML2 B 180, article number 920 211 (on BXT BAS base part) or an equivalent protection module.

Manufacturer:

DEHN+SOEHNE GmbH+Co.KG, Hans-Dehn-Str.1, Postfach 1640, D-92306 Neumarkt, Germany

The lightning protection module must be installed and used in accordance with the manufacturer's specifications.

6.3 Connecting the functional ground

Connect the functional ground (e.g. from the standard mounting rail) in order to discharge EMI such as bursts or surges to the FE terminal ①.

Permissible conductor cross-section: 0.5 ... 6.0 mm²



Image 6-1 Position of FE terminal ①

Note

EMC-compliant functional grounding

- Use as short a stranded-wire conductor as possible with a large cross section.
 - Compliance with the technical specifications of the device can only be assured if a correct functional grounding is adhered to.
-

6.4 Connecting LOGO! to CMK2000 via Ethernet

The connection between LOGO! 8 and the CMK2000 is via Ethernet. Use a shielded Ethernet cable (CAT5e) with a shielded connector.



Image 6-2 Position of the Ethernet interface ①

NOTICE

Do not violate the minimum bending radius limit of the Ethernet cable, otherwise this will result in attenuation of the shielding effect. Furthermore there is a danger that the cable shield will break.

Note

We recommend using RJ45 connectors from the Siemens FastConnect system as the plug-in connectors for the Ethernet cabling.

6.5 Connecting the KNX bus

The CMK2000 is connected to the KNX bus using the red/black KNX terminal.

	<p>① Red terminal (+), red cable ② Black terminal (-), black cable</p> <p>Recommended bus cables:</p> <ul style="list-style-type: none">• YCYM (2 x 2 x 0.8 mm²)• J-Y(ST)Y (2 x 2 x 0.8 mm²)• JH(St)H (2 x 2 x 0.8 mm²)• A-2Y(L)2Y or A-2YF(L)2Y <p>Stripping length: 5 mm</p>
--	--

Note

- Only the red-black core pair is used; the white-yellow core pair is not connected.
- Do not connect the shield of the KNX cable.

NOTICE

Do not use electrically conductive objects such as screwdrivers to lever out the KNX terminal. Otherwise there is a danger that the two KNX pins may short-circuit and thus destroy the KNX bus.

Generation of user functions with LOGO!

7.1 Software and hardware requirements (LOGO!)

Requirements

- A PC is connected to the LOGO! 8.
- The LOGO! Soft Comfort programming software Version V8.0 or later is installed on the PC.

Note

CMK2000 is not compatible with previous versions of the LOGO! 8.

7.2 Overview of LOGO! configuration steps

Determine/specify IP address of LOGO!

The IP address of the LOGO! specified in LOGO! Soft Comfort or on the device is required for communication between LOGO! and CMK2000. You enter this later into the configuration of the CMK2000 in ETS.

Create the logic functions with LOGO! Soft Comfort

Data exchange via KNX is carried out independently of the use of the inputs and outputs in the LOGO! Soft Comfort program. Direct writing to inputs is not possible. Writing to outputs is only possible using network inputs or flags.

The variable memory addresses specified in ETS can be accessed in LOGO! Soft Comfort via the network blocks. The digital/analog network inputs must be used to transfer the data from KNX to LOGO!. The digital/analog network outputs must be used to transfer the data from LOGO! to KNX. Only channels with a size of 2 bytes can be processed via the analog network inputs/outputs.

If data is exchanged via the variable memories, the variable memory addresses can also be assigned to the parameters of logic objects.

Testing the function

LOGO! Soft Comfort allows you to simulate the generated program (e.g. inputs).

As an alternative you have direct access in online test mode to the variable memory and can modify its values.

7.3 Compatibility with LOGO! 0BA7 projects

The following describes how you can proceed with existing LOGO! 0BA7 projects.

LOGO! 0BA7 projects can be used further.

Changes are only required for the communication direction KNX → LOGO!.

Direct writing to analog or digital inputs and outputs by the KNX module is no longer possible.

Analog outputs to be written can therefore be alternatively linked to analog flags or analog network inputs.

Digital outputs can be linked to digital flags or digital network inputs.

Note

Compatibility of the special functions (e.g. dimming, solar protection control) is not assured.

Configuring and commissioning using ETS

8.1 Software and hardware requirements (ETS)

Requirements

- A commissioning PC is connected via a KNX interface to the CMK2000.
- ETS (Version 4 or higher) is installed on the PC.

ETS product database

The product database for the LOGO! CMK2000 KNX module is available starting with ETS 4 as a knxprod file for downloading.

- <http://www.siemens.com/gamma-td> (search text "LOGO")

8.2 Overview of ETS configuration steps

Listed below are the steps which always have to be carried out to configure the CMK2000 via ETS:

Offline configuration steps without connection to KNX

1. Importing of product database of LOGO! CMK2000 KNX module in ETS
2. Creation of an ETS project and insertion of the device into the project
3. Checking or specifying the physical address using the assignment according to the KNX topology (e.g. 1.1.1)
4. Editing the parameters (IP address, data types, etc.)
5. Assigning the group addresses

Online configuration steps with connection to KNX

1. Loading to the device
(programming of physical address and the application)
2. Testing the function

8.3 Programming the physical address

Set the device to programming mode using the key on the front of the CMK2000. In this programming mode it is possible to assign (program) the address to the CMK2000 using the ETS. The physical address (1.0.1 to 15.15.254) unambiguously identifies a KNX in a KNX installation. The physical address is assigned using the topology configured in ETS.

Requirements

- PC with ETS is connected to the KNX installation via a KNX interface
- CMK2000 is connected to KNX

Programming the physical address

1. Set CMK2000 to programming mode:
Briefly press the key on the front of the CMK2000 (< 10 seconds).

Note

You can deactivate programming mode by briefly pressing the key again.

NOTICE

Programming mode must not be activated when updating the firmware using the web interface.
--

2. Program the physical address by selecting the device in ETS and then "Programming" → "Physical address".

Note

- Parameter assignments can only be transferred to the device following successful setting of the physical address.
- If an error occurs when programming the physical address, the CMK2000 remains in programming mode. However, if the 24 V supply fails during programming of the physical address, the CMK2000 is no longer in programming mode following a hot restart.
- The physical address must be programmed once so that the device with the ETS is always accessible. The physical address is saved in the CMK2000 and automatically set again in the CMK2000 following a restart.

3. Label the CMK2000 with the assigned physical address in the labeling field (Page 21) provided for this purpose.

8.4 General parameter assignments

All KNX products can be configured and assigned parameters using the ETS. Depending on the parameter assignments, the device makes available communication objects with standardized data point types (DPT) for data exchange with other KNX devices.

The following general settings of the CMK2000 can be parameterized:

- IP address of the LOGO! base module
- Update rate for data exchange between CMK2000 and LOGO!
- Network parameters of the CMK2000 (IP address, subnet mask)
- Password for logon with web server
- Date and time synchronization

The parameters are transferred by ETS to the CMK2000 and saved there permanently.

General settings

IP address of LOGO! base module	<input type="text" value="192.168.0.1"/>
Update rate	<input type="text" value="150 ms"/>
Own IP address	<input type="text" value="192.168.0.10"/>
Subnet mask	<input type="text" value="255.255.255.0"/>
Password for web interface (a-z, A-Z, 0..9, !\$%&_ -)	<input type="text" value="Admin"/>
Date and time synchronisation	<input type="text" value="None"/>

Image 8-1 General settings

IP address of LOGO! base module

In this field you enter the IP address of the LOGO! which is to be used for data exchange.

Update rate

This parameter defines the minimum delay time between two transmission cycles.

Note

Sudden changes in value in the LOGO! occurring within a transmission cycle may not be recorded in certain circumstances and therefore not transmitted.

Note

Guideline for setting the update rate

- If the cycle time of the LOGO! is overloaded due to a high level of data exchange (high update rate), a larger value must be used for the update rate, e.g. 200 ms.
 - If the response time for LOGO! → KNX is too slow, e.g. for switching lights, a smaller value must be selected for the update rate, e.g. 50 ms.
-

The update rate can be set as follows:

- 50 ms
- 100 ms
- 150 ms (default)
- 200 ms
- 300 ms

Own IP address and subnet mask

In these fields you enter the IP address and subnet mask of the CMK2000.

Example of private Class C network:

	LOGO!	CMK2000
IP address	192.168.0.1	192.168.0.10
Subnet mask	255.255.255.0	

Password for web interface

It is necessary to enter a password to access the CMK2000 from a PC (using web browser). You define the password here.

The default password is "Admin"

NOTICE
<ul style="list-style-type: none">• Immediately change the default password to a new one.• Protect access to the web server by using a "strong" password. "Strong" passwords are at least eight characters long, consist of letters, numbers and special characters, are not words which can be found in a dictionary, and are not names or identifiers which can be derived from personal data. Keep the password secret and change it frequently.

Date and time synchronization

Two mechanisms are available for date and time synchronization:

- Synchronization of the time used in the KNX network with the time of the LOGO! 8.
- Synchronization of the time used in the LOGO! 8 with the time in the KNX network.

Note

- The CMK2000 does not have a real-time clock. Depending on the parameterized time/synchronization mechanism, the device fetches the time cyclically from the LOGO! or from the KNX network and passes it on to the respective other side.
 - An unchanged transfer of the date only occurs between 1.1.2000 and 31.12.2089.
-

Parameter assignment options:

- No synchronization (default)
- KNX specifies the time and date
The settings for time synchronization made in the LOGO! are ignored.
- LOGO! specifies the time and date

Synchronization of the time used in the LOGO! 8 with the time in the KNX network.

- Following device start from CMK2000 or LOGO!
- Following return of bus voltage
- Cyclically every hour
- Upon change in time

Note

The settings in LOGO! Soft Comfort with respect to date/time synchronization are made independently of synchronization via KNX. In the event of an unfavorable configuration, both time/date synchronization mechanisms act on the LOGO!.

8.5 Parameter assignments for the KNX channels

8.5.1 Data exchange between KNX and LOGO!

Data exchange between KNX and LOGO! is carried out using channels. Each of these channels is able to:

- Receive values from 1 bit up to 4 bytes from KNX or pass them on (transformed if necessary) to LOGO!.
- Pass on data from LOGO! (DI, DO, AI, AQ, VM,...) transformed as KNX data points.

Up to 50 channels are available which can be used as desired with respect to communication direction and data point type.

- Maximum number of group addresses: 250
- Maximum number of links: 250

Note

The operating mode of LOGO! 8 (RUN or STOP) cannot be transferred to the KNX bus.

8.5.2 Activate/deactivate channels and specify communication direction

The communication direction can be defined using a parameter for each KNX channel. As standard, all KNX channels are set to "Inactive". The corresponding communication objects for the KNX channel only become visible following specification of the communication direction.



8.5.3 LOGO! data types, inputs and outputs

Overview

The CMK2000 exchanges data with LOGO! via a network connection and thereby directly accesses the variable memory.

Inputs/outputs and flags of the LOGO!

For all physical inputs and outputs of the LOGO! (I, Q, AI, AQ), as well as for all analog and digital flags, you can specify the number of the object (e.g. M64) from which the values are to be read or to which they are to be written.

Note

Inputs and outputs of the LOGO! cannot be written from the KNX bus.

LOGO! data type	Digital flag ▼
Digital flag M	64 ▲▼

Value ranges	
Digital input I	1...24
Analog input AI	1...8
Digital output Q	1...20
Analog output AQ	1...8
Digital flag M	1...64
Analog flag AM	1...64

LOGO! variable memories

LOGO! also makes data available in the so-called variable memory, e.g. intermediate results or scaled or calculated display values for an HMI panel.

For all data types in the variable memory you can specify the address of the variable memory of the LOGO! 8 from which the values are to be read or to which they are to be written.

LOGO! data type	Variable memory 1 byte
LOGO! VM 1 byte address	850

Note

Note that all channels access the same variable memory, i.e. if the same byte address of the variable memory is specified for the communication direction KNX → LOGO! in two different channels, the values in the variable memory will be mutually overwritten.

Other devices and the LOGO! 8 can access the same variable memory.

Note

When transferring 1-byte values from KNX to LOGO!, note that the LOGO! processes 2-byte values.

8.5.4 Value update with data transfer from LOGO! to KNX

In order to optimize the bus load (message frame rate) on KNX, it is possible to activate sending of values when they change. Each KNX channel can be parameterized such that a KNX message frame is only sent upon certain changes in value. On the other hand, values can also be sent cyclically in order to synchronize smaller changes in value which are not time-critical.

Send	Cyclic and if value has changed ▼
cyclical, with cycle time in min	5 ▲▼
when change is at least	255 ▲▼

Image 8-2 Value update on the KNX bus

Sending

For each channel you can define the cycle in which the value is to be sent to KNX. Criteria for updating on the KNX bus can be a change in value on the one hand or the reaching of a parameterized cycle time on the other. The following options are available for updating a value:

	Parameter	Range of values
Cyclic	Time value is parameterized (Time unit: minute)	• 1...240
If value has changed	Difference in values is parameterized (Value without unit)	• 1 byte: 1...255 • 2 bytes: 1...65535 • 4 bytes: 1...4294967295
Cyclic and if value has changed	Time value and difference in values are parameterized. The transfer is made as soon as a criterion is satisfied. The cycle time is restarted following the transfer of a value.	The ranges apply as for cyclic / if value has changed.

Note

- Digital values are not affected by this parameterization of the value update. Digital values are automatically transferred to the KNX bus upon each change in value.
- A change in value can only be reliably detected if it is present for longer than the update rate at which the values are read out from the LOGO! by the CMK2000.
- The minimum change in value refers to the LOGO! range of values.

8.5.5 Value scaling of the channels

LOGO! and KNX work internally with different ranges of values. Therefore scaling is required for transferring certain data types between KNX and LOGO!. Linear scaling can be parameterized using two interpolation points.

Parameter assignment

Transfer from LOGO! to KNX

Value A on LOGO! side	0
corresponds on KNX bus	0
Value B on LOGO! side	100
corresponds on KNX bus	255

Transfer from KNX to LOGO!

Value A on KNX bus	0
corresponds on LOGO! side	0
Value B on KNX bus	255
corresponds on LOGO! side	100

Linear scaling can be parameterized for the following linked objects.

Transfer between LOGO! and KNX			
KNX data type	Range of values for scaling on the KNX bus	LOGO! data type	Range of values for scaling in the LOGO!
1 byte 0...100% DPT 5.001	0 ... 255	1-byte variable memory	0 ... 255
2-byte float value - DPT 9.xxx	-671088.64 ... 670760.96	2-byte variable memory	-32768 ... 32767

Linear scaling between two interpolation points

Scaling is specified using 2 interpolation points as parameters per channel. The reference values for the interpolation points are specified in the KNX context and in the LOGO! 8 context. The following directions must be observed:

Direction	Input value (X value)	Output value (Y value)
LOGO! → KNX	Corresponds to LOGO! values	Corresponds to KNX values
KNX → LOGO!	Corresponds to KNX values	Corresponds to LOGO! values

Transformation of the values is carried out using the linear equation: $y = a \cdot x + b$ (a = gradient; b = offset)

Starting with the interpolation points $(X_A; Y_A)$ and $(X_B; Y_B)$, the constants in the equation are calculated using the following formulae:

Gradient (a):

$$a = \frac{(Y_B - Y_A)}{(X_B - X_A)}$$

Offset (b):

$$b = \frac{(Y_A \times X_B - X_A \times Y_B)}{(X_B - X_A)}$$

Example:

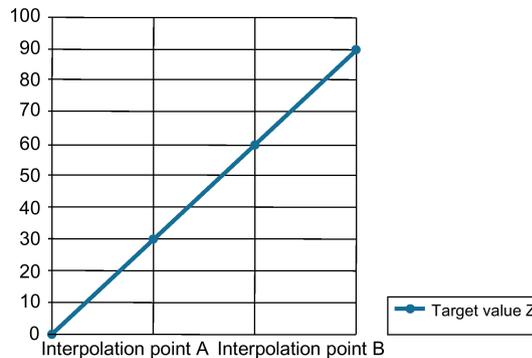


Image 8-3 Scaling with two interpolation points

Scaling is, on the one hand, dependent on the two interpolation points as described above, but also on the format of the referenced data in the LOGO! (8, 16 bits) and KNX (1, 2 bytes).

Response with different data widths and/or different signs

If the selected data format is insufficient for successful scaling, the value is automatically set to the maximum or minimum value, even though the original value would require a higher or lower value. In this case the target value of the scaling is limited and remains in this constraint until the maximum/minimum value is undershot or exceeded again.

Example:

In the example, a signed value from the KNX bus (> 8 bits data width) is scaled to an unsigned 8-bit value in the LOGO! 8. The offset (b) in this example is "0" and the gradient (a) is "1".

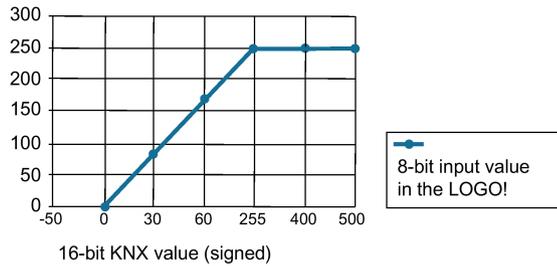


Image 8-4 Scaling with different data width

Response with floating-point values

In the case of floating-point values, the interpolation points on the KNX side are specified with decimal places and the values transferred to the LOGO! are rounded off if necessary by the CMK2000.

Response with vertically superimposed interpolation points

User error which cannot be intercepted by the ETS. The maximum value is transferred.

8.5.6 Response upon loss of KNX bus voltage

The response upon loss of the KNX bus voltage can be set for the communication direction KNX to LOGO!.

On KNX bus loss	<input checked="" type="radio"/> Send last value of KNX to LOGO!
	<input type="radio"/> Send value 0 to LOGO!

Upon loss of KNX bus voltage

Upon loss of the KNX bus voltage, you can specify whether

- the last KNX value is sent to LOGO! or
- the value "0" is sent to LOGO!

8.5.7 Response after startup of LOGO!, CMK2000 or KNX

The response of the CMK2000 can be set for the following situations.

Communication direction LOGO! to KNX

After startup of LOGO!, CMK2000 or KNX:

- Return of KNX bus voltage
- Return of 24 V DC power supply
- Return of Ethernet connection to LOGO!
- LOGO! in transition from STOP mode to RUN mode

After startup of LOGO!, CMK2000 or KNX	<input type="radio"/> No action	<input checked="" type="radio"/> Send current value of LOGO!
--	---------------------------------	--

Setting options:

- Send current LOGO! value
- No action

Communication direction KNX to LOGO!

After startup of CMK2000 or KNX:

- Return of 24 V DC power supply
- Return of KNX bus voltage

After startup of CMK2000 or KNX	<input type="radio"/> No action	<input checked="" type="radio"/> Request current value of KNX
---------------------------------	---------------------------------	---

Setting options:

- Request current value of KNX
- No action

8.6 Transfer of data from LOGO! to KNX

8.6.1 Overview

Data transfer from LOGO! to KNX

The CMK2000 allows the transfer of simple digital values. In addition, the linking of two digital values is used which are defined in KNX as "Key operation with two independent keys" (2-bit).

Function			DPT in KNX	Parameter assignment in the ETS tool
Normal	1 bit	The output information of the LOGO! 8 CPU is mapped 1:1 to the KNX bus.	DPT 1.xxx	Transfer of 1-bit values (Page 55)
Dimming	1 bit	Switch over (brief pressing of key)	DPT 1.001	Dimming (1 bit) (Page 56)
		Dim brighter/darker (long pressing of key)	DPT 3.007	
	2 bits	Switch on/off (brief pressing of key)	DPT 1.001	Dimming (2 bits) with stop message frame (Page 58)
		Dim brighter/darker (long pressing of key)	DPT 3.007	
Shutter/blind / solar protection	1 bit	Solar protection up / down (long pressing of key)	DPT 1.008	Solar protection control (1 bit) (Page 59)
		Stop or slats open / close (brief pressing of key)	DPT 1.009	
	2 bits	Solar protection up / down (long pressing of key)	DPT 1.008	Solar protection control (2 bits) (Page 61)
		Slats open/close (brief pressing of key)	DPT 1.009	
Percentage value	8 bits	1 byte unsigned	DPT 5.001	Transferring percentage values (Page 63)
Integer value	8 bits	1 byte signed	DPT 6.010	Transferring integer values (Page 65)
		1 byte unsigned	DPT 5.010	
	16 bits	2 bytes unsigned	DPT 7.xxx	
		2 bytes signed	DPT 8.xxx	
	32 bits	4 bytes unsigned	DPT 12.xxx	
		4 bytes signed	DPT 13.xxx	
Float value	16 bits	2 bytes signed	DPT 9.xxx	Sending float values (Page 66)

Detailed information on the standardized data point types (DPT) can be found at www.knx.org.

8.6.2 Supported LOGO! data types

Supported LOGO! data types

The following data types are supported for the transfer of data from the LOGO! to KNX:

Communication direction	From LOGO! to KNX
LOGO! data type	<ul style="list-style-type: none">Digital inputDigital input ✓Digital outputDigital flagDigital inputs (2) for dimmingDigital flags (2) for dimmingDigital inputs (2) for solar protectionDigital flags (2) for solar protectionAnalog inputAnalog outputAnalog flagVariable memory 1 bitVariable memory 2 bits for dimmingVariable memory 2 bits for solar protectionVariable memory 1 byteVariable memory 2 bytesVariable memory 4 bytes

Image 8-5 Data transfer LOGO! → KNX: supported data types

Values from the LOGO! variable memory

If a value to be transferred is to be read from the variable memory of the LOGO!, the corresponding byte address must be specified.

The following byte addresses are possible:

- For 1-byte variable memory: 0 to 850
- For 2-byte variable memory: 0 to 849
- For 4-byte variable memory: 0 to 847

If a 1-bit value is involved, the corresponding bit address must be specified in addition.

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 2 bits for dimming
LOGO! VM 1 byte address	850
LOGO! VM bit address for switching on / dimming brighter	0
LOGO! VM bit address for switching off / dimming darker	1
KNX data type	Dimming with stop function - DPT 1.001 and D...

Image 8-6 Data transfer LOGO! → KNX: Values from the LOGO! variable memory

8.6.3 Transfer of 1-bit values

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 1 bit
LOGO! VM 1 byte address	850
LOGO! VM bit address	0
KNX data type	1 bit - DPT 1.xxx
After startup of LOGO!, CMK2000 or KNX <input type="radio"/> No action <input checked="" type="radio"/> Send current value of LOGO!	

Image 8-7 Data transfer LOGO! to KNX: 1-bit values

LOGO! data type

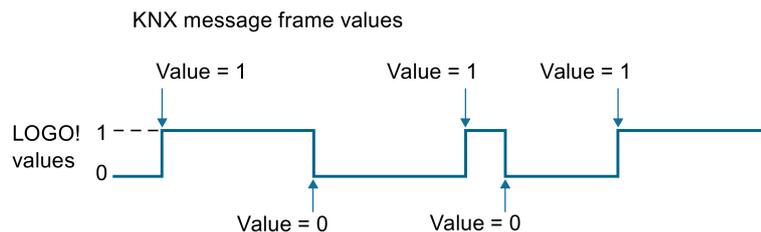
Set a 1-bit LOGO! data type as the preselection for the transfer:

- Digital input
- Digital output
- Digital flag
- 1-bit variable memory

KNX data type

1 bit - DPT 1.xxx

The output information of the LOGO! 8 is mapped 1:1 to the KNX bus:



See also

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.6.4 Special functions: dimming and solar protection

8.6.4.1 Dimming (1 bit)

This function makes it possible to switch lamps or groups of lamps on and off or to adjust their dimming using just one bit in the LOGO!.



Communication direction	From LOGO! to KNX
LOGO! data type	Digital input
Digital input I	1
KNX data type	Dimming - DPT 1.001 and DPT 3.007

Image 8-8 Data transfer LOGO! to KNX: Dimming - DPT 1.001 and DPT 3.007

LOGO! data type

Set a 1-bit LOGO! data type as the preselection for the "Dimming" function:

- Digital input
- Digital flag
- 1-bit variable memory

KNX data type

Two communication objects are provided in the ETS:

- Switch - DPT 1.001 and
- Dimming - DPT 3.007

The configured binary variable can be used for 1-bit dimming. A distinction is made between short and long setting:

Switch (short setting up to 500 ms) - DPT 1.001

With short setting, the value currently in the switched object (switch over) is inverted and then sent. The on or off message frame is only generated when the binary value is reset (= falling edge).

Dimming (long setting 500 ms or more) - DPT 3.007

With long setting, dimming is brighter or darker depending on the object value and the last controlled dimming direction. If the dimming actuator was switched off, long setting results in brighter dimming. If the actuator was switched on by short setting, the first long setting results in darker dimming. If the dimming actuator is set to a dimming value between 0 and 100%, the last dimming direction is inverted and dimming is then in the new direction. The "Stop" command is sent when the binary value is reset (= falling edge).

Note

When configuring the first respective communication object for 1-bit dimming and 1-bit solar protection, the check mark for "Update" must be set in the ETS so that the channel functions properly, especially when starting.

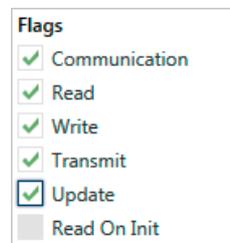


Image 8-9 Check mark for "Update" set

8.6.4.2 Dimming (2 bits) with stop message frame

The two configured binary tags can be used together with short setting to switch on or off or, together with long setting, to dim brighter or darker. You can select which binary variable is to be used for switching off and dimming darker or for switching on and dimming brighter. In the case of "Dimming (2 bits) with stop message frame", a dimming message frame "Brighter" or "Darker" is sent as soon as long setting of a binary variable value is detected (value 1), and a stop message frame upon resetting of the binary variable value (value 0 = falling edge).

Communication direction	From LOGO! to KNX
LOGO! data type	Digital inputs (2) for dimming
Digital input for switching on / dimming brighter	1
Digital input for switching off / dimming darker	2
KNX data type	Dimming with stop function - DPT 1.001 and D...

Image 8-10 Data transfer LOGO! to KNX: Dimming with stop function

LOGO! data type

Set one of the following LOGO! data types as the preselection for "Dimming with stop function":

- Digital inputs (2) for dimming
- Digital flags (2) for dimming
- Variable memories (2) for dimming

KNX data type

Two communication objects are provided in the ETS: Switch - DPT 1.001 and Dimming - DPT 3.007

A distinction is made between short and long setting:

Switch (short setting up to 500 ms) - DPT 1.001

The switching message frames "On" and "Off" are sent via the group address linked to this object. Which of the two binary variables is assigned to the on or off function in the case of brief pressing of the key can be set in the ETS.

Dimming (long setting 500 ms or more) - DPT 3.007

The dimming message frames are sent via the group address linked to this object. Which of the binary variables generates brighter or darker dimming in the case of long pressing of the key can be set in the ETS.

8.6.4.3 Solar protection control (1 bit)

This function enables you to lower or raise solar protection, to stop the movement, or to open and close slats using just one binary variable.

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 1 bit
LOGO! VM 1 byte address	850
LOGO! VM bit address	0
KNX data type	Solar protection - DPT 1.008 and DPT 1.009

Image 8-11 Data transfer LOGO! to KNX: Solar protection

LOGO! data type

Set a 1-bit LOGO! data type as the preselection for the function "1-bit shutter/blind / solar protection":

- Digital input
- Digital flag
- 1-bit variable memory

KNX data type

Two communication objects are provided in the ETS:

- Solar protection up / down - DPT 1.008 and
- Slats open / close - DPT 1.009.

The configured binary variable can be used for 1-bit solar protection control. A distinction is made between short and long setting:

Solar protection up / down (long setting 500 ms or more) - DPT 1.008

In the case of long setting, and depending on the last direction of movement saved in the object "Solar protection up / down", this is inverted and the solar protection is driven up or down until the respective end position has been reached and the drive is switched off by the limit switch. If a stop command is received before an end position has been reached with activation of the limit switch, the movement is terminated immediately, the reached position is retained, and the last direction of movement is saved.

Stop or Slats open / close (short setting up to 500 ms) - DPT 1.009

In the case of short setting, a message frame is sent which results in stopping of the drive when the solar protection is moving or, when the solar protection is stationary, results in a short movement step opposite to the previous direction of movement saved in the moved object. With closed blind slats, this would result e.g. in opening of the slats by one step. The "Stop" or "Slats open / close" message frame is only generated when the binary value is reset (= falling edge). A further "Slats open / close" message frame is sent with each further short setting, where the direction of movement is not changed. The software of the solar protection actuator determines whether and how several successive "Slats open / close" message frame are interpreted and executed.

Note

When configuring the first respective communication object for 1-bit dimming and 1-bit solar protection, the check mark for "Update" must be set in the ETS so that the channel functions properly, especially when starting.

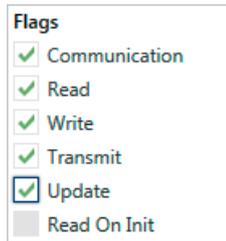


Image 8-12 Check mark for "Update" set

8.6.4.4 Solar protection control (2 bits)

The two configured binary tags can be used together with long setting to raise or lower the solar protection up to the respective end position or, together with short setting, to terminate the movement or to adjust the slats by one step. It is possible to select which binary variable is used to lower the solar protection or close the slats by one step or - in the opposite sense - to raise the solar protection or open the slats by one step.

Communication direction	From LOGO! to KNX
LOGO! data type	Digital inputs (2) for solar protection
Digital input for solar protection up / slats open	1
Digital input for solar protection down / slats close	2
KNX data type	Solar protection - DPT 1.008 and DPT 1.009

Image 8-13 Data transfer LOGO! to KNX: 2-bit solar protection

LOGO! data type

Set one of the following data types as the preselection for the function "Solar protection" with 2 bits:

- Digital inputs (2) for solar protection
- Digital flags (2) for solar protection
- 2-bit variable memory for solar protection

KNX data type

Two communication objects are provided in the ETS:

- Solar protection up / down - DPT 1.008 and
- Slats open / close - DPT 1.009.

A distinction is made between short and long setting:

Solar protection up / down (long setting 500 ms or more) - DPT 1.008

The "up / down" commands for raising or lowering the solar protection are sent via the group address linked to this object. Which of the binary tags generates a raise or lower message frame in the case of long setting can be set in the ETS.

Slats open / close (short setting up to 500 ms) - DPT 1.009

The "Stop" or "Slats open / close" commands are sent via the group address linked to this object. Short setting of the corresponding binary tags in the LOGO! always generates a command to stop the movement or adjust the slats by one step. Which of the binary tags generates an open or close message frame in the case of short setting can be set in the ETS.

8.6.5 Transferring percentage values

Percentage values are handled in the LOGO! in the range 0...255. Percentage values DPT 5.001 are frequently used in KNX, where the values for KNX are expected in the range 0...255. Scaling is therefore necessary.

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 1 byte
LOGO! VM 1 byte address	850
KNX data type	1 byte 0...100% - DPT 5.001
Value A on LOGO! side	0
corresponds on KNX bus	0
Value B on LOGO! side	100
corresponds on KNX bus	255
Send	Cyclic and if value has changed
cyclical, with cycle time in min	5
when change is at least	255
After startup of LOGO!, CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Send current value of LOGO!

Image 8-14 Data transfer LOGO! to KNX: Percentage values

LOGO! data type

"1-byte variable memory" is predefined as the LOGO! data type.

KNX data type

1 byte 0...100% - DPT 5.001

The values transferred to KNX are in the range 0 ... 255.

See also

Value scaling of the channels (Page 48)

Value update with data transfer from LOGO! to KNX (Page 47)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.6.6 Transferring integer values

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 1 byte
LOGO! VM 1 byte address	850
KNX data type	1 byte signed - DPT 6.010
Send	Cyclic and if value has changed
cyclical, with cycle time in min	5
when change is at least	10
After startup of LOGO!, CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Send current value of LOGO!

Image 8-15 Data transfer LOGO! to KNX: Integer values

LOGO! data type / KNX data type

LOGO! data type	KNX data type
Analog input	<ul style="list-style-type: none"> • 2 bytes unsigned - DPT 7.xxx (default) • 2 bytes signed - DPT 8.xxx
Analog output	
Analog flag	
1-byte variable memory	<ul style="list-style-type: none"> • 1 byte unsigned - DPT 5.010 • 1 byte signed - DPT 6.010
2-byte variable memory	<ul style="list-style-type: none"> • 2 bytes unsigned - DPT 7.xxx (default) • 2 bytes signed - DPT 8.xxx
4-byte variable memory	<ul style="list-style-type: none"> • 4 bytes unsigned - DPT 12.xxx (default) • 4 bytes signed - DPT 13.xxx

See also

Value update with data transfer from LOGO! to KNX (Page 47)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.6.7 Sending float values

Communication direction	From LOGO! to KNX
LOGO! data type	Variable memory 2 bytes
LOGO! VM 2 bytes address	0
KNX data type	2 bytes float value - DPT 9.xxx
Value A on LOGO! side	0
corresponds on KNX bus	0
Value B on LOGO! side	1000
corresponds on KNX bus	1000
Send	Cyclic and if value has changed
cyclical, with cycle time in min	5
when change is at least	100
After startup of LOGO!, CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Send current value of LOGO!

Image 8-16 Data transfer LOGO! to KNX: Float values

LOGO! data type / KNX data type

LOGO! data type	KNX data type
2-byte variable memory	2-byte float value - DPT 9.xxx

See also

Value scaling of the channels (Page 48)

Value update with data transfer from LOGO! to KNX (Page 47)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.7 Data transfer KNX to LOGO!

8.7.1 Overview

Data transfer from KNX to LOGO!

Function			DPT in KNX	Configuration in ETS
Normal	1 bit	The input information of the KNX bus is mapped 1:1 to the input image of LOGO! 8.	DPT 1.xxx	Transfer of 1-bit values (Page 69)
		Digital input with monoflop response.	DPT 1.xxx	Using digital inputs of the LOGO! 8 as monoflop (Page 70)
Special function bus state	1 bit	Digital input directly indicates the current KNX bus state.	--	Transfer of KNX bus state (Page 72)
Percentage value	8 bits	Percentage value	DPT 5.001	Transferring percentage values (Page 73)
Integer value	8 bits	Counter value signed	DPT 6.010	Transferring integer values (Page 74)
		Counter value unsigned	DPT 5.010	
	16 bits	2 bytes signed	DPT 8.xxx	
		2 bytes unsigned	DPT 7.xxx	
	32 bits	4 bytes signed	DPT 13.xxx	
		4 bytes unsigned	DPT 12.xxx	
Float value	16 bits	2 bytes	DPT 9.xxx	Sending float values (Page 75)

8.7.2 Supported KNX data types

You can use the variable memory and the flags of the LOGO! 8 to exchange data with the KNX bus.

Supported KNX data types

The following data types are supported for the transfer of data from the KNX bus to the LOGO!:

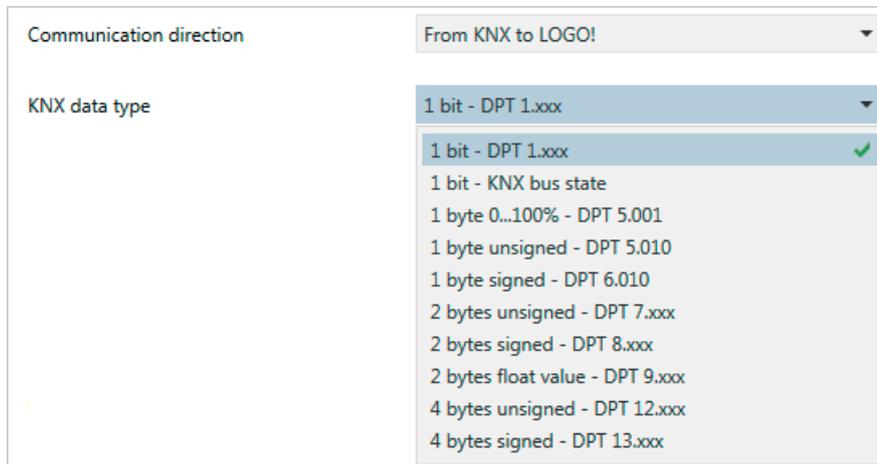


Image 8-17 Data types KNX to LOGO!

Settings which are always available

All settings are available in the same manner for values in the variable memory and for flags. If a transferred value is to be saved in the variable memory of the LOGO!, the corresponding byte address must be specified.

The following byte addresses are possible for variable memories:

- 1 byte: 0 to 850
- 2 bytes: 0 to 849
- 4 bytes: 0 to 847

If a binary value is concerned, this is always saved in the least significant bit (bit 0) of the specified address.



Image 8-18 Data transfer from KNX to LOGO!: Settings

8.7.3 Transfer of 1-bit values

Communication direction	From KNX to LOGO!
KNX data type	1 bit - DPT 1.xxx
LOGO! data type	<input checked="" type="radio"/> Digital flag <input type="radio"/> Variable memory 1 byte
Digital flag M	64
Monoflop function	<input type="radio"/> Yes <input checked="" type="radio"/> No
On KNX bus loss	<input checked="" type="radio"/> Send last value of KNX to LOGO! <input type="radio"/> Send value 0 to LOGO!
After startup of CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Request current value of KNX

Image 8-19 KNX to LOGO!: Transfer of 1-bit values

KNX data type / LOGO! data type

KNX data type	LOGO! data type
1 bit - DPT 1.xxx	<ul style="list-style-type: none"> • Digital flag (default) • 1-byte variable memory

Monoflop function

- No (default)
- Yes

See also

Using digital inputs of the LOGO! 8 as monoflop (Page 70)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

Response upon loss of KNX bus voltage (Page 51)

8.7.4 Using digital inputs of the LOGO! 8 as monoflop

The monoflop response can be used to map a digital trigger of KNX in the LOGO! 8 direction as a signal with defined duration.

The monoflop can be retriggered, i.e. the monoflop time is restarted if another trigger signal is received within the monoflop time.

If the bus voltage returns and the current value of KNX is read and is still set, the monoflop time restarts.



Image 8-20 Data transfer from KNX to LOGO!: Monoflop function

Monoflop time in ms

The range of values for the monoflop time is 30 to 2500.

Preferred state

The CMK2000 uses the preferred state to determine the initial basic level and the direction the trigger edges must have so that a trigger is detected.

Example

Input with monoflop response, preferred state = 1, monoflop time = T_m

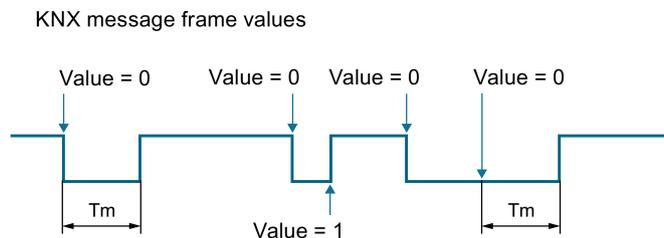


Image 8-21 Monoflop response: Preferred state = 1

8.7.5 Transfer of KNX bus state

If the special function "KNX bus state" is configured, the current KNX bus state is transferred directly to the LOGO!. This means that the value is "1" if communication to KNX is OK. The value is "0" if an error has occurred.

Note

- It may be the case that an error on the KNX bus is only detected following a delay of several seconds.
- The last transferred KNX bus state is retained in the event of loss of the Ethernet connection.

Communication direction	From KNX to LOGO!
KNX data type	1 bit - KNX bus state
LOGO! data type	<input type="radio"/> Digital flag <input checked="" type="radio"/> Variable memory 1 byte
LOGO! VM 1 byte address, bit 0	0

Image 8-23 KNX to LOGO! bus state

KNX data type / LOGO! data type

KNX data type	LOGO! data type
1 bit - KNX bus state	<ul style="list-style-type: none">• 1-byte variable memory• Digital flag M (default)

8.7.6 Transferring percentage values

Percentage values with DPT 5.001 are transferred to KNX as 1-byte values and must therefore be rescaled so that they can be optimally processed further as LOGO! analog values.

Communication direction	From KNX to LOGO!
KNX data type	1 byte 0...100% - DPT 5.001
LOGO! data type	Variable memory 1 byte
LOGO! VM 1 byte address	850
Value A on KNX bus	0
corresponds on LOGO! side	0
Value B on KNX bus	255
corresponds on LOGO! side	100
On KNX bus loss	<input checked="" type="radio"/> Send last value of KNX to LOGO! <input type="radio"/> Send value 0 to LOGO!
After startup of CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Request current value of KNX

Image 8-24 Data transfer from KNX to LOGO!: Percentage values

KNX data type / LOGO! data type

KNX data type	LOGO! data type
1 byte 0...100% - DPT 5.001	1-byte variable memory

See also

Value scaling of the channels (Page 48)

Response upon loss of KNX bus voltage (Page 51)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.7.7 Transferring integer values

The screenshot shows the configuration window for transferring integer values from KNX to LOGO!. The settings are as follows:

- Communication direction:** From KNX to LOGO!
- KNX data type:** 4 bytes signed - DPT 13.xxx
- LOGO! data type:** Variable memory 4 bytes
- LOGO! VM 4 bytes address:** 0
- On KNX bus loss:**
 - Send last value of KNX to LOGO!
 - Send value 0 to LOGO!
- After startup of CMK2000 or KNX:**
 - No action
 - Request current value of KNX

Image 8-25 KNX to LOGO! integer values

KNX data type / LOGO! data type

KNX data type	LOGO! data type
1 byte unsigned - DPT 5.010	1-byte variable memory
1 byte signed - DPT 6.010	1-byte variable memory
2 bytes signed - DPT 8.xxx	2-byte variable memory
2 bytes unsigned - DPT 7.xxx	<ul style="list-style-type: none"> Analog flag 2-byte variable memory (default)
4 bytes unsigned - DPT 12.xxx	4-byte variable memory
4 bytes signed - DPT 13.xxx	4-byte variable memory

See also

Value scaling of the channels (Page 48)

Response upon loss of KNX bus voltage (Page 51)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

8.7.8 Sending float values

Communication direction	From KNX to LOGO!
KNX data type	2 bytes float value - DPT 9.xxx
LOGO! data type	Variable memory 2 bytes
LOGO! VM 2 bytes address	0
Value A on KNX bus	0
corresponds on LOGO! side	0
Value B on KNX bus	1000
corresponds on LOGO! side	1000
On KNX bus loss	<input checked="" type="radio"/> Send last value of KNX to LOGO! <input type="radio"/> Send value 0 to LOGO!
After startup of CMK2000 or KNX	<input type="radio"/> No action <input checked="" type="radio"/> Request current value of KNX

Image 8-26 KNX to LOGO! float values

KNX data type / LOGO! data type

KNX data type	LOGO! data type
2-byte float value - DPT 9.xxx	2-byte variable memory

See also

Value scaling of the channels (Page 48)

Response upon loss of KNX bus voltage (Page 51)

Response after startup of LOGO!, CMK2000 or KNX (Page 51)

Service and maintenance

9.1 Diagnostics und maintenance via web

The device provides functions for

- Diagnostics
- Updating the firmware

via Ethernet communication.

Requirements

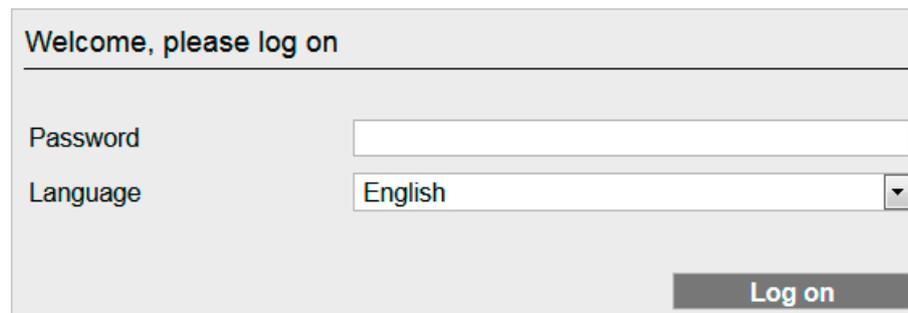
- Internet Explorer 10
- Mozilla Firefox portable Version 31
- Switch

Note

- The use of cookies must be permitted in the browser
 - The web interface is optimized for a resolution of 1280 x 1024 pixels.
 - Only the connection to a PC is simultaneously supported.
-

Logon

You can only logon to the device using the password assigned in ETS. You can also select one of the supported languages.



Welcome, please log on

Password

Language

Log on

Diagnostics

The diagnostics page with the following display appears following logon:

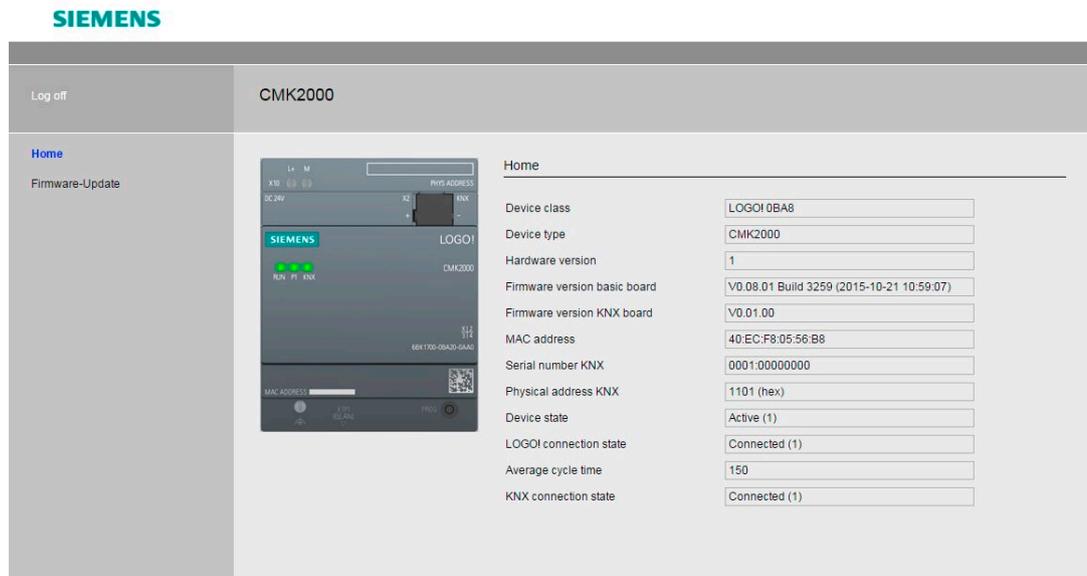


Image 9-1 Example of a diagnostics page

The LEDs shown in the picture correspond to the states described in section Status LEDs (Page 22).

If an error has occurred, you can obtain further information on the error codes from Support (<http://support.automation.siemens.com>).

Note

- The LED displays may show the current state with a delay depending on the status of the browser and the connection.
- The displayed diagnostics information may vary between different firmware versions.

Updating the firmware

You can trigger updating of the device using the selection "Firmware update".

The corresponding files and instructions for updating the firmware can be obtained at <http://www.siemens.com/gamma-fdt>.

9.2 Cleaning

The device is designed for maintenance-free operation.

- Nevertheless, clean the surfaces at regular intervals.
- Remove dirt from the enclosure to avoid impairment of the operator control functions and the enclosure ventilation.

9.3 Disposal

The devices described in these instructions can be recycled thanks to their low-pollution design.

For environmentally compliant recycling and disposal of your old devices, please contact a certified disposal company.

Technical data

10.1 Dimensional drawing

10.1.1 Dimensional drawing

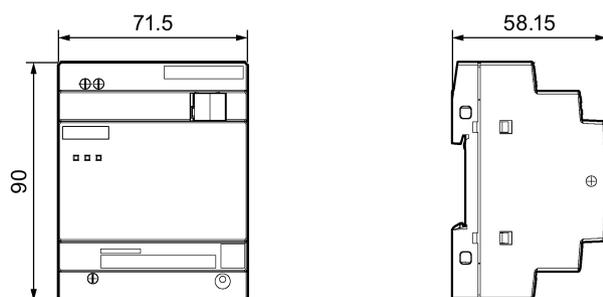


Image 10-1 Dimensional drawing of the CMK2000

10.2 Technical specifications

10.2.1 Technical specifications

Technical specifications

	6BK1700-0BA20-0AA0
General information	
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
Installation type/mounting	
Installation	On 35 standard mounting rail, 4 WM
Supply voltage	
Rated value (DC)	24 V
<ul style="list-style-type: none"> 12 V DC 24 V DC 	No Yes
Permissible range, lower limit (DC)	19.2 V
Permissible range, upper limit (DC)	28.8 V
Rated value (AC)	
<ul style="list-style-type: none"> 24 V AC 	No
Input current	
Current consumption, max.	0.04 A
Power loss	
Power loss, max.	1.1 W
Memory	
Flash	Yes
Time	
Time synchronization	
Supported	Yes
Interfaces	
Transmission rate, max.	100 Mbit/s refers to Ethernet, 9 600 bit/s refers to KNX
Protocols	
EIB/KNX	Yes
Additional protocols	
Other bus systems	Yes; EIB/KNX
Communications functions	
S7 basic communication	
Supported	No
LOGO! communication	
Supported	Yes

6BK1700-0BA20-0AA0	
Web server	
Supported	Yes
Interrupts/diagnostics/status information	
Diagnostics indicator LED	
RUN/STOP LED	Yes
EMC	
Emission of radio frequency interference according to EN 55 011	
Limit class B, for use in residential areas	Yes; to EN 61000-6-3
Degree of protection and protection class	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE marking	Yes
CSA approval	No
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	No
KC approval	No
EAC (formerly Gost-R)	No
To VDE 0631	No
Marine approval	
Marine approval	No
Ambient conditions	
Ambient temperature in operation	
Min.	0 °C
Max.	55 °C
Ambient temperature during storage/transport	
Min.	-40 °C
Max.	70 °C
Relative humidity	
Operation, max.	95%
Connection technology	
Bus connector	KNX terminal 0.6 mm ² - 1.0 mm ²
Power supply	2 screw terminals: L+, M 0.5 mm ² - 2.5 mm ² , 1 screw terminal: FE 0.5 mm ² - 6.0 mm ²
Dimensions	
Width	71.5 mm; 4 pitch
Height	90 mm
Depth	58.5 mm
Weights	
Weight, approx.	0.14 kg

Appendix

A.1 Certificates and approvals

Note

Approvals are only valid when marked on the product

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

CE marking

The CMK2000 device complies with the requirements and protection objectives of the following EC directives.

EMC Directive 2004/108/EEC

The product is designed for use in accordance with EN 50491-5-1 and EN 50491-5-2 (residential area) as well as EN 50491-5-3 (industrial area).

EMC requirements:

Field of application	Noise emission requirements	Immunity to interference
Residential area	EN 61000-6-3	-
Industrial area	-	EN 61000-6-2

The product meets these requirements if you adhere to the installation guidelines and safety instructions included in these operating instructions during installation and operation.

Declaration of Conformity

The EC Declaration of Conformity is kept available for the responsible authorities in accordance with the above-mentioned EC Directive at the following address:

SIEMENS AG
 DF FA
 BRESLAUER STR. 5
 90766 FUERTH
 GERMANY

A.2 Service & Support

A.2.1 Technical Support

Technical Support

You can contact the Technical Support experts in Germany at the following number:

- Phone: + 49 (0) 911 895 7222
- The contact data for Technical Support in other countries can be found in the Siemens contact database (http://w3.siemens.com/aspa_app/).

A.2.2 Siemens Industry Online Support

Siemens Industry Online Support

You can find various services on the Support home page (<http://support.automation.siemens.com>) on the Internet.

There you will find the following information, for example:

- The correct documents for you via product-related search functions
- Online support request form
- Your local representative
- A forum for global information exchange by users and specialists.
- Our newsletter containing up-to-date information on your products.

A.2.3 Online catalog and ordering system

Online catalog and ordering system

The online catalog and the online ordering system can be found on the Industry Mall homepage.

A.2.4 LOGO! CMK2000

LOGO! CMK2000 on the Internet

The latest information on LOGO! CMK2000 can be found on the Gamma TD site Technical product data and descriptions (www.siemens.com/gamma-td).

Glossary

Actuator

KNX actuators convert received commands into actions. Examples: Actuators for dimmers, shutters/blinds or switches

Data point type (DPT)

ETS

ETS (Engineering Tool Software) is vendor-independent software for commissioning all KNX products which are developed and marketed by the KNX Association.

For further information, see www.knx.org.

KNX

KNX is a global standard for home and building control installations. KNX allows flexible networking of all components of home and building control installations using the two cores of the bus cable.

KNX two-wire

Several transmission media and procedures are available for the KNX bus. With the KNX two-wire, data transfer is over a twisted two-wire data cable. The bus nodes are also provided with the KNX operating voltage over this bus cable.

LOGO!

LOGO! is the universal logic module from Siemens. You can use LOGO! to solve all tasks associated with home and building control installations, e.g. stairway lighting, outdoor lighting, sun blinds, shutters, shop window lighting etc. It additionally offers solutions for control cabinet installations and for the manufacture of machines and appliances, e.g. gate controls, air conditioning systems, and industrial water pumps.

LOGO! Soft Comfort

LOGO! Soft Comfort is the LOGO! programming software with which you can create, test, modify, save and print the switching programs on your PC rapidly and conveniently.

Physical address

Each KNX device in a KNX installation is assigned an unambiguous and unique number, the physical address. This address consists of three numbers separated by periods:

- The first number is the number of the area in which the associated participant is located
- The second number is that of the line
- The third number is a consecutive number within the line

Sensor

Sensors record, inter alia, physical measured variables such as pressure, temperature, humidity or brightness, and pass on this information over the KNX bus.

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