

Software manual



WAREMA KNX MSE 6M230

Der SonnenLichtManager



General information

Terms for the Sale, Delivery and Installation of Software Products

§ 1 Object of Contract

- (1) WAREMA Renkhoff SE is selling the customer a software product: see order confirmation. The specifications and data contained in these documents can be modified without prior notification.
- (2) Without the express permission of WAREMA Renkhoff SE, no part of these documents is permitted to be duplicated or transferred for any purpose, regardless of manner or means (electronic or mechanical).
- (3) Contractual use includes the creation of backup copies of the programs provided to the customer and the data contained therein.
- (4) The customer is authorised to combine the provided programs with other computer programs. The software application documentation contains a description of the interface provided for this purpose. Changes in the programs that go beyond the above-mentioned changes and corrections of errors are permitted only to the extent that they are required for the intended use of the programs.
- (5) The customer is not authorised to transfer the rights mentioned herein to third parties or to grant third parties the corresponding rights of use.
- (6) The customer is obliged to keep the protection marks such as copyrights and other reservation of rights contained in the documents unchanged and to include them in all complete or partial copies of machine-readable material created by the customer in unchanged form.

§ 2 Warranty

- (1) The contracting parties agree that it is not possible according to the current state of the art to develop software programs in such a way that they function without error for all application conditions. WAREMA Renkhoff SE thus assumes no guarantee that the software program functions without interruption and errors in all combinations and applications.
- (2) If the buyer is a company, the product description of the manufacturer is the only document that applies as a description of the quality of the goods. Public statements and advertisements by the manufacturer do not represent a contractual specification of the quality of the goods.
- (3) No guarantee will be assumed for the correctness of the content of this manual.
- (4) The customer is obliged to provide WAREMA Renkhoff SE with verifiable documents regarding the type and appearance of defects and to help in the localisation of faults.
- (5) The guarantee does not extend to defects caused by deviations from the conditions for use intended for the program and listed in the specifications.
- (6) If the buyer is a company, our warranty first consists in repairing or replacing the goods at our discretion. If the subsequent fulfillment fails, the customer can in principle demand a reduction in payment or a withdrawal from the contract as it chooses. In case of a minor infringement of the contract, especially in case of only minor defects, however, the customer has no right to withdraw from the contract.
- (7) Customers must inform Warema of obvious defects within a period of 10 days from the receipt of the goods; otherwise, the assertion of the warranty claim is excluded. The request for an extension must be submitted in a timely manner to be granted. The customer must provide complete proof for all prerequisites of the

claim, especially for the defect itself, the point in time the defect was discovered, and the timeliness of the complaint.

- (8) If the customer decides to withdraw from the contract due to a defect in title or material after a failed subsequent fulfillment, he is not entitled to any compensation due to the defect. If the customer chooses compensation after a failed subsequent fulfillment, the goods remain with the customer if reasonable to the customer.
- (9) For the customer, the warranty period is one year from the delivery of the goods.

§ 3 Limitation of Liability

- (1) In case of slightly negligent violations of the obligations, our liability is limited to the direct average damage that can be predicted from the type of goods and that is typical according to the contract. This also applies in case of slightly negligent violations of obligations on the part of our legal representatives, employees, subcontractors, and vicarious agents.
- (2) With regard to companies, we are not liable in case of the slightly negligent violation of non-essential contractual obligations.
- (3) These limitations of liability do not affect customer claims arising from the German Product Liability Act (Produkthaftungsgesetz). Furthermore, limitations in liability do not apply to personal injury, damage to health, or loss of life on the part of the customer that can be attributed to Warema.
- (4) WAREMA Renkhoff SE is not liable for a lack of economic success, lost profits, direct damages, follow-up damages, and the claims of third parties with the exception of claims arising from the infringement of the protection rights of third parties.
- (5) For the loss of data and its recovery, WAREMA Renkhoff SE is liable only if such a loss could not have been prevented through appropriate data backup measures on the part of the customer.
- (6) The amount of damage is limited to the purchase price according to the preceding subsections.
- (7) Damage claims by the customer due to a defect fall under the statute of limitations after a year from the delivery of the goods. This does not apply if we can be accused of fraud.
- (8) The software program and data carrier are checked for computer viruses carefully according to the state of the art before delivery. Liability for undiscovered viruses and the resulting damage is excluded. The customer is obliged to check the CD-ROM for computer viruses according to the state of the art before use on its own responsibility.

WAREMA Renkhoff SE
Hans-Wilhelm-Renkhoff-Straße 2
P.O. Box 1355
97822 Marktheidenfeld

Phone: +49(0)93 91/ 20-0
Telefax: +49(0) 93 91/20-4299
<http://www.warema.de>

1	Overview	7
1.1	General information on KNX MSE	7
1.2	Device models	7
1.3	Additional documentation	7
1.4	Working with this document	7
2	Safety instructions	8
2.1	Meanings of symbols and pictographs	8
2.2	Intended use	9
2.3	Targeted reader group	9
2.4	General safety instructions	10
3	General information	11
3.1	Technical data	11
3.2	Outputs	11
3.3	Inputs	11
4	Commissioning	12
4.1	Electrical connections	12
4.1.1	After commissioning	12
4.2	Master reset	12
4.3	The membrane keyboard	13
4.3.1	Delivery condition	13
4.3.2	After commissioning	13
4.4	Manual control panel MABE 12	13
5	Planning	14
5.1	Setting parameters	14
5.2	Group addresses/linking	14
5.3	Physical address	14
5.4	Application program	15
6	The MSE operating modes	16
6.1	Internal and external venetian blinds	16
6.2	Roller shutter, fabric sun shading system	17
6.3	Switch actuator	17
6.4	Safety functions	18
6.5	Sunblind push button	18
6.6	Buttons, switching, flanks	18
6.7	Sensor	18
6.8	WAREMA central control unit connection	19
7	Communication objects	20
7.1	Overview	20
7.2	Order of priorities	20
7.3	Safety objects A, B, C	20
7.4	Direct communication objects	22
7.4.1	Up/down move command	22
7.4.2	Switch-on time	22
7.4.3	Stop/step command	22
7.4.4	Switch light on/off/toggle – output	23

Contents

7.5	Operation communication objects	24
7.5.1	Up/down move command	24
7.5.2	Stop/step command	24
7.5.3	Switch light on/off/toggle – input	24
7.5.4	Send value	25
7.6	Automatic communication objects	26
7.6.1	Move to position	26
7.6.2	Move to blind length, move to slat position.....	26
7.6.3	Position toggle.....	27
7.7	Store position – communication objects.....	28
7.8	Information communication objects	29
7.8.1	Light status.....	29
7.9	Disable and enable communication objects	30
7.9.1	Disable object, output.....	30
7.9.2	Enable – input.....	30
7.9.3	Position enable.....	30
7.10	Communication objects for connecting the WAREMA central control unit	31
7.10.1	Safety centrally active	31
7.10.2	Central position	31
8	Setting parameters.....	32
8.1	Parameter dialogue, parameter groups.....	32
8.1.1	General parameter groups.....	32
8.1.2	Channel-specific parameter groups	32
8.1.2.1	For the "Switch actuator" operating mode.....	32
8.1.2.2	For the "Roller shutter, fabric sun shading system" operating mode 32	
8.1.2.3	For the "Internal and external venetian blinds" operating mode ..	33
8.1.2.4	For the "Sunblind push button" operating mode.....	33
8.1.2.5	For the "Buttons, switching, flanks" operating mode	33
8.1.2.6	For the "Sensor" operating mode.....	33
8.1.2.7	For the "WAREMA central control unit connection" operating mode	33
8.2	"General data, outputs" parameter window	33
8.3	"General data, inputs" parameter window	34
8.3.1	Minimum telegram interval.....	34
8.3.2	Delay after a bus voltage return	34
8.3.3	Time basis of repeated sending	34
8.4	"Safety object A", "Safety object B and C" parameter windows	34
8.4.1	Safety object A/B/C – highest/middle/lowest priority	34
8.4.2	Cyclical monitoring time	34
8.4.3	Behaviour when the bus or mains voltage returns	34
8.4.4	Behaviour when the bus voltage fails.....	35
8.4.5	Behaviour after programming	35
8.5	"Output n Safety" parameter window	35
8.5.1	Behaviour after alarm from safety object A/B/C.....	35
8.5.2	Behaviour after safety object A/B/C ends the alarm	35
8.6	"Output n" parameter window (page 1).....	36
8.6.1	Run time (seconds).....	36
8.6.2	Additional up run time (milliseconds), additional down run time (milliseconds)	36
8.6.3	Pause after stop (milliseconds)	36
8.6.4	Time for full slat tilt (seconds) + (milliseconds).....	36
8.7	"Output n" parameter window (page 2).....	37
8.7.1	Tilt up after down movement.....	37
8.7.2	Adjust slats with step command.....	37
8.7.3	Disable object monitoring time	37

8.7.4	Behaviour after a bus voltage drop	37
8.7.5	Behaviour after the bus or mains voltage returns.....	37
8.7.6	Return time for position enable.....	37
8.7.7	Behaviour after the position enable returns	38
8.8	"Position output n" parameter window.....	38
8.8.1	Position toggle delay.....	38
8.8.2	Move to positions	39
8.8.3	Store position 1+2 via telegram.....	39
8.8.4	Overwrite positions stored on-site when programming.....	39
8.9	"Output n" parameter window.....	39
8.9.1	Behaviour when the bus voltage fails/returns.....	39
8.10	"Status output n" parameter window	39
8.10.1	The status (ON/OFF) is sent.....	39
8.11	"Input n" parameter window.....	40
8.11.1	"No function" preselection.....	40
8.11.2	"Sunblind push button" preselection.....	40
8.11.2.1	Input signal is interpreted as long after	40
8.11.2.2	Telegram after a short press of the button.....	40
8.11.2.3	Telegram after a long press of the button	40
8.11.2.4	Factor for repeat sending	40
8.11.3	"Buttons/switching/flanks" preselection	41
8.11.3.1	Telegram after rising/falling flank.....	41
8.11.3.2	Factor for repeat sending	41
8.11.3.3	Telegram after the bus or mains voltage returns	41
8.11.4	"Sensor" preselection.....	41
8.11.4.1	Telegram after rising/falling flank.....	41
8.11.4.2	Telegram after the bus or mains voltage returns	42
8.11.5	"WAREMA central control unit connection" preselection.....	42
9	Planning examples.....	43
9.1	Operating venetian blinds with conventional sunblind push buttons.....	43
9.1.1	Settings	43
9.2	Toggle switching with 3 push buttons.....	44
9.2.1	KNX MSE 6M230 settings	44
9.3	Slat tracking based on the sun position.....	45
9.3.1	JSB/S1.1 settings	45
9.3.2	KNX MSE 6M230 settings	45
9.4	Light guidance.....	46
9.5	WAREMA sun shading control system connection.....	47
9.5.1	Settings on the Wisotronic dialog.....	47
9.5.2	KNX MSE 6M230 parameter settings when connected to Wisotronic dialog	48
9.5.3	Parameter settings of the remote KNX MSE 6M230	48
9.6	Wind speed monitoring.....	49
9.6.1	Parameter settings of KNX MSE 6M230 on Wisotronic.....	49
9.6.2	Parameter settings of the remote KNX MSE 6M230	49
9.7	Wind speed, window contact.....	50
9.7.1	Parameter settings of the remote KNX MSE 6M230	50
9.8	Use of terminal X11	51

KNX MSE 6M230

Operating instructions, manuals and software are protected by copyright. Copying, duplication, translation or conversion into any electronic medium or into a machine-readable format, as a whole or in part, without prior written consent by WAREMA is not permitted. All further rights to the software are specified in the supplied license agreement.

KNX is a registered trademark of the KNX Association. Other brand names and product names are trademarks or registered trademarks of other companies.

1 Overview

1.1 General information on KNX MSE

The KNX MSE 6M230 is used for the direct positioning of up to 6 mutually independent 230 VAC drives for internal and external venetian blinds, awnings and other sun shading systems and for controlling windows, ventilation flaps and lights. Conventional sunblind push buttons, light push buttons and switches can be connected directly.

1.2 Device models

The KNX MSE 6M230 is available in three device models:

- ▶ DIN rail-mounted device REG with membrane keyboard
- ▶ flush-mounted device AP without membrane keyboard
- ▶ flush-mounted device AP (model: FT) with membrane keyboard

These device models are functionally identical. The membrane keyboard enables operating the connected drive systems and lights directly.

The 230 V AC supply voltage provides backup power to keep the device in operation if the bus voltage should fail.

The dimensions of each model are provided in the installation instructions, art. no. 816859.

1.3 Additional documentation

Further information about installation and commissioning of the KNX MSE 6M230 can be found in the installation instructions, art. no. 816859.

1.4 Working with this document

If you are not an experienced user you should adhere to the following working method: Create a sample project as described in *Chapter 9 Planning examples on page 43*. This will familiarise you with basic procedures. You can then create your own projects. The exact procedure as well as all software functions are addressed in *Chapters 4 to 8*. Refer to them if you need details on the individual functions.

2 Safety instructions

We developed and tested this software in compliance with the fundamental safety requirements.

Nonetheless, some risks remain.

- For this reason, please read these instructions before commissioning and operating the control.
- **It is very important to adhere to the safety information listed here and the warning information in these instructions. Otherwise, any warranty claims on the part of the manufacturer become void.**
- Keep these instructions for future use.

2.1 Meanings of symbols and pictographs

The safety information in these instructions is marked with warning symbols. It is categorised into different warning types depending on the level of potential danger:



DANGER

warns of an **imminently dangerous situation**.

Possible consequences may include **serious or fatal injury (personal injury), and property or environmental damage**.



WARNING

warns of a **potentially dangerous situation**.

Possible consequences may include **light, serious or fatal injury (personal injury), property or environmental damage**.



CAUTION

Reminder to **be careful**.

Possible consequences of the failure to do so may include **property damage**.

The following pictograms and symbols may be affixed to the control unit itself or to the connected devices, alerting you to potential danger:



WARNING

Warning against dangerous electrical voltage!

NOTE The term **NOTE** marks important **notes** and helpful **tips**.

Example The term **Example** marks an **example**.

- The **square** marks an **instruction** or a **prompt for action**. Perform this step.
- ▶ The **triangle** marks an **event** or the **result** of a preceding action.
- ▶ The **black triangle** is a **bullet point** for lists or selections.

2.2 Intended use

The KNX MSE 6M230 is used for the direct positioning of up to 6 mutually independent 230 VAC drives for internal and external venetian blinds, awnings and other sun shading systems and for controlling window drives, ventilation flaps and lights.



WARNING

Please obtain the approval of the manufacturer if you have questions regarding the connection of devices not listed in these instructions.

All control devices are intended to be installed **indoors** unless otherwise specified.



CAUTION

When using window drives, the installer of the system must ensure that the safety regulations and precautions of DIN EN 60335-2-103 "Special requirements on drives for gates, doors and windows" as well as ZH 1/494 "(German) guidelines for power-operated windows, doors and gates" are complied with.



WARNING

The approval of the manufacturer must be obtained for uses outside of the purposes listed here. The consequences of unintended use may include personal injuries of the operator or of third parties as well as property damage to the control panel itself, to connected devices or to moveable mechanical parts of the entire system.

- Therefore, use our product only as intended.

2.3 Targeted reader group

These instructions are intended for persons who are commissioning a sun shading control system with KNX technology as well as for trained specialists. Knowledge of the KNX technology is essential.



WARNING

Commissioning or operation by insufficiently qualified and knowledgeable persons may cause serious damage to the system or may even result in personal injury.

- Commissioning may therefore only be performed by properly trained qualified technicians. These technicians must be able to recognize sources of danger that may be caused by the mechanical, electrical or electronic equipment.
- Persons commissioning the system must know and understand the content of these instructions.

KNX MSE 6M230

- The system parameters need to be modified only if the characteristics of the control system are to be adapted or if a change to the sensor equipment occurs.



WARNING

States of danger, malfunctions and material damage to the system are possible due to improperly executed mounting, connection, repair or maintenance work!

- Such work may only be carried out by the service department or by authorised qualified personnel.

2.4 General safety instructions

The KNX MSE 6M230 device does not have equipment, algorithms or similar features to switch off connected drives based on load. Thus, the danger of pinching and crushing must be prevented by on-site measures.

The control system controls your sun shading system automatically. You must therefore observe the following safety instructions



WARNING

An automatically controlled mechanism can start moving unexpectedly.

- Therefore, never place any objects in the area of an automatically controlled mechanism. Make sure that no persons are located in the motion range of automatically controlled sunblinds during commissioning.
- If measuring or test work needs to be carried out on the active system, make sure that applicable accident prevention regulations are observed under all circumstances.



CAUTION

The entire system becomes non-functional if power fails. Therefore, move your sun shading system to a safe position ahead of time if a storm is pending. If the sun shading system is operated when iced over, any warranty and liability claims become void. Changing individual parameters may impair the safety of the system or reduce its effectiveness. It is better to consult an expert if you are not sure about the effect of a change.

3 General information

3.1 Technical data

Technical data, connection diagrams and specifications for electrical cables and connectable devices can be found in the installation instructions, art. no. 816859.

3.2 Outputs

The outputs are grouped into 6 channels. Two electrical outputs, PE and N, are allocated to each channel.

Six channels can be activated independently of one another. The following combinations are possible:

- a) 6x sun shading system/window or similar, or
- b) 5x sun shading system/window or similar, + 2x light or
- b) 4x sun shading system/window or similar, + 4x light

Two membrane push buttons are allocated to each output channel.

Channel	Electrical output 1	Electrical output 2	Membrane push button
Output 1	X2 – A1.1	X2 – A1.2	A1.1 and A1.2
Output 2	X2 – A2.1	X2 – A2.2	A2.1 and A2.2
Output 3	X3 – Output 3 ▼	X3 – Output 3	3 ▼ and 3 ▲
Output 4	X3 – Output 4 ▼	X4 – Output 4	4 ▼ and 4 ▲
Output 5	X4 – Output 5 ▼	X4 – Output 5	5 ▼ and 5 ▲
Output 6	X4 – Output 6 ▼	X4 – Output 6	6 ▼ and 6 ▲

Fig. 1 Push button allocation

The ▼ symbol stands for the down direction or for opening the window; the ▲ symbol stands for the up direction or for closing the window.

Different sun shading operating modes can be set for each output. In addition, the switch actuator operating mode can be selected for each of the output channels 1 and 2.

3.3 Inputs

Standard sunblind push buttons, single or multi-channel push buttons or switches, floating contacts, etc., can be connected to 12 binary inputs.

The binary inputs are further grouped into 6 channels. Two electrical inputs are allocated to each channel.

Channel	Electrical input 1	Electrical input 2
Input 1.1/1.2	X5 – E1.1	X5 – E1.2
Input 2.1/2.2	X5 – E2.1	X5 – E2.2
Input 3.1/3.2	X5 – E3.1	X5 – E3.2
Input 4.1/4.2	X6 – E4.1	X6 – E4.2
Input 5.1/5.2	X6 – E5.1	X6 – E5.2
Input 6.1/6.2	X6 – E6.1	X6 – E6.2

Fig. 2 Allocation of inputs

Different sun shading operating modes can be set for each input.

KNX MSE 6M230

4 Commissioning

Before initial start-up of the KNX MSE 6M230, move all connected sun shading products to a safe position, e.g. move venetian blinds to their upper limit position.

4.1 Electrical connections

Technical data, wiring diagrams and specifications for electrical cables can be found in the installation instructions, art. no. 816859.

For the use of terminal X11, please read *Chapter 9.8 on page 51*.

4.1.1 After commissioning

The membrane push buttons of a channel continue to act directly on the outputs of the same channel, as per the set operating mode (*Chapter 3.2 on page 11*). The connected push buttons only act on the outputs to which they are linked.

4.2 Master reset

The master reset returns the KNX MSE 6M230 to its delivered state. This means that all group addresses in the device are deleted, all parameters are set to the default values and the physical address is set to 15.15.255.

A master reset is performed as follows:

1. Switch off the supply voltage
2. Press and hold the learn button
3. Switch on the supply voltage
4. Wait for the learn LED to begin flashing and release the button after approx. 3 seconds
5. Wait for the learn LED to go out
6. Switch off the supply voltage
7. The master reset is finished

After a master reset, the KNX MSE 6M230 must be recommissioned.

4.3 The membrane keyboard

NOTE The membrane keyboard ensures that the connected devices can be operated during the commissioning phase and in fault situations such as if the bus voltage should fail. It is not intended as a substitute for push buttons, switches, etc., that are connected to the device.

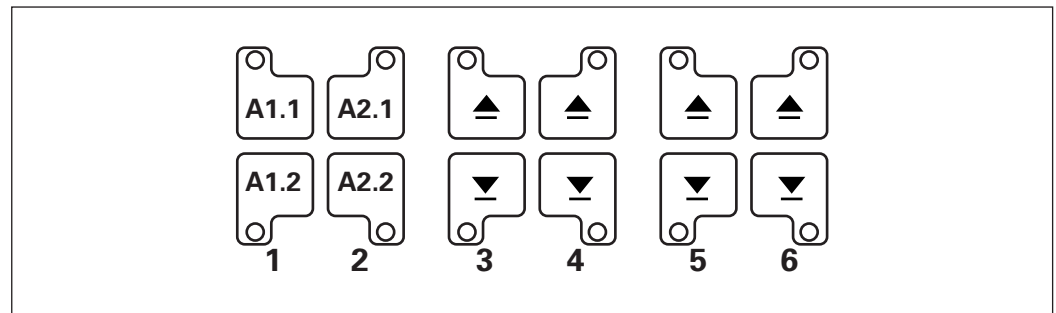


Fig. 3 Membrane keyboard

Two membrane push buttons are allocated to each output channel. Each membrane push button consists of one button element and a green LED. The digits 1 to 6 and the membrane push button symbol match the designation of the associated electrical output.

While a button element is pressed, the associated LED lights up, regardless of the switching state of the corresponding output channel.

4.3.1 Delivery condition

The membrane push buttons operate in dead man's mode when the equipment is first delivered and after a master reset.

The membrane push buttons of a channel act directly on the outputs of the same channel. Up and down relays of all channels are mutually locked.

4.3.2 After commissioning

The film push buttons of a channel continue to act directly on the outputs of the same channel (*Chapter 3.2 on page 11*). The connected push buttons only act on the outputs with which they are linked.

The switching state of an output channel can be read when none of the associated button elements is pressed. In this case, if an LED lights up, the corresponding output is active.

4.4 Manual control panel MABE 12

A MABE 12 connected to plug-in connector ST1 acts directly on the inputs E1.1, E1.2, E2.1, etc. These, in turn, act directly on the outputs of the KNX MSE 6M230 in the delivered state.

In this way, MABE 12 makes it possible to operate the KNX MSE 6M230 in its delivered state without having to connect push buttons or switches.

KNX MSE 6M230

5 Planning

The WAREMA KNX MSE 6M230 device is commissioned using the Engineering Tool Software (ETS) V1.2a or later.
The required product data base can be downloaded from the Internet.
<http://www.warema.de>

5.1 Setting parameters

The parameters of the KNX MSE 6M230 are set in the parameter dialogue of the ETS. For the sake of clarity, the parameters there are presented in parameter groups.

The parameter settings should be created in the following order:

1. Select the operating mode of output channels 1 – 6
2. Select the operating mode of input channels 1 – 6
3. Activate or deactivate the safety objects and set the parameters
4. Allocate the safety objects to the outputs
5. Set the parameters of the output channels
6. Set the parameters of the output channels

Details on the parameters are provided in *Chapter 8 on page 32*.

5.2 Group addresses/linking

The operating modes of the input and output channels are set up in the parameter settings. For each selected operating mode, only a specific set of communication objects is required in the ETS. Communication objects that are not required are automatically hidden by the ETS. Thus, if the operating mode is changed, links that already exist may be deleted from the ETS project.

5.3 Physical address

The physical address is used for the exact identification of a device. The KNX MSE 6M230 obtains its physical address when you

- ▶ select [Program individual address] in the ETS and
- ▶ press the learn button until the red learn LED lights up

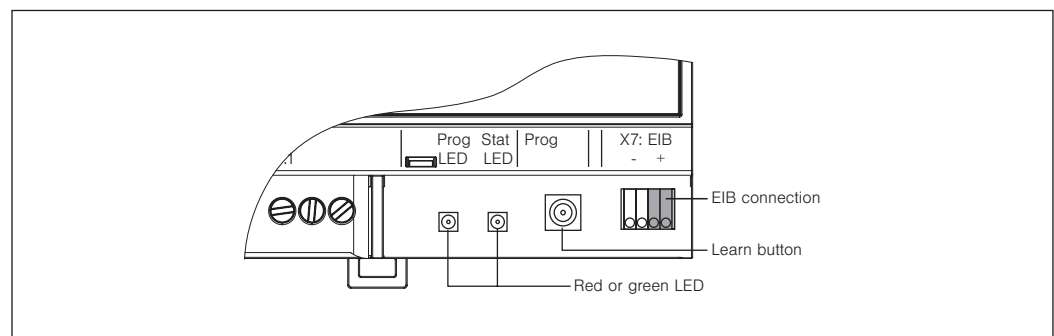


Fig. 4 Membrane keyboard: learn button

The device is delivered with the physical address 15.15.255. After the physical address is programmed, the KNX MSE 6M230 remains operable via the built-in membrane keyboard (KNX MSE 6M230 REG only) or the MABE 12.

5.4 Application program

The KNX MSE 6M230 is delivered with the application program partially loaded to accelerate the commissioning process.

During initial start-up of the KNX MSE 6M230, the physical address, communication objects, parameters and group addresses must be programmed. If a project is changed later on, only the group addresses and parameters need to be programmed.

6 The MSE operating modes

Different operating modes can be set for each channel.

- ▶ Internal and external venetian blinds
- ▶ Roller shutter, fabric sun shading system
- ▶ Switch actuator
- ▶ Safety functions
- ▶ Sunblind push button
- ▶ Buttons, switching, flanks
- ▶ Sensor
- ▶ WAREMA central control unit connection

In this way, different types of operating elements and different types of sun shading products, lighting equipment and window drives can be connected to the KNX MSE 6M230.

Sun shading products are moved up and down until:

- ▶ A stop command is received
- ▶ A move command is received for the current or opposite direction
- ▶ A limit position is reached and the motor is switched off by the limit switch
- ▶ The total move time that was set expires (10 seconds are added for the up direction)

After one of these conditions is met, there is no voltage at the relay of the corresponding channel.

The switch-on period for lamps is determined by telegrams for switching on, off or toggling the lamp.

Calibration for sun shading products: Every time the product moves up, the relay remains switched on for 10 seconds longer than the set run time.

When moving to a particular slat position, the product may first move to the minimum or maximum slat position and then to the target slat position.

6.1 Internal and external venetian blinds

Internal and external venetian blinds are sun shading or darkening elements with slats. They are controlled by raising, lowering or tilting the slats. Internal and external venetian blinds differ in their purpose and physical dimensions.

In the *Internal and external venetian blind* operating mode, the KNX MSE 6M230 raises, lowers and tilts the slats. Each channel can be used for controlling an internal or external venetian blind.

Each channel has communication objects for move commands and status messages.

6.2 Roller shutter, fabric sun shading system

A roller shutter is a rolling closure for the additional closure of window and door openings, for example. Among other things, it provides visual, sun, intrusion and insect protection.

Fabric sun shading products consist of a movable mechanism with a fabric cover. Depending on the model, they provide visual or sun protection.

In the `Roller shutter, fabric sun shading system` operating mode, the KNX MSE 6M230 raises and lowers or opens and closes the product. This operating mode can also be used for controlling window drives.

Each output can be used to control a roller shutter, a fabric sun shading system or a window drive.

Each channel has communication objects for move commands and status messages.



WARNING

The KNX MSE 6M230 does not have equipment, algorithms or similar features to switch off connected drives based on load. Thus, the danger of pinching and crushing must be prevented by on-site measures.

6.3 Switch actuator

In the `Switch actuator` operating mode, the KNX MSE 6M230 device can switch up to four halogen, fluorescent or incandescent lamps independently of one another. One halogen, fluorescent or incandescent lamp can be connected to each output A1.1, A1.2, A2.1 and A2.2.

While the `Switch actuator` operating mode is active at channel 1 or 2, channels 3 to 6 can still be used for controlling sun shading products or windows.

Each channel has communication objects for switch commands and status messages.



WARNING

The `Switch actuator` operating mode is only permissible if lighting equipment is connected to the corresponding channel and may not be set when a sun shading drive, window drive or similar is connected to the corresponding channel.

KNX MSE 6M230

6.4 Safety functions

The safety functions of the KNX MSE 6M230 are used to protect controlled systems against damage, such as in the case of a wind alarm.

Three safety communication objects are available with different priorities. These safety objects can start or end internal alarms according to the following criteria:

- ▶ Bus or mains voltage return
- ▶ Bus voltage failure
- ▶ Programming of the device
- ▶ Time intervals between received telegrams
- ▶ Contents of the telegrams to safety objects

For each sun shading channel, the behaviour of the product when an alarm starts or ends can be set.

6.5 Sunblind push button

Per KNX MSE 6M230 channel, a conventional sunblind push button with an up and a down rocker can be connected that operate as make contacts. Different telegrams can be sent depending on whether the button is pressed for a long or short period. Move commands can be sent repeatedly while the button is pressed. Simultaneous activation of the up and down buttons is not permissible and must be mechanically prevented.

6.6 Buttons, switching, flanks

Up to two conventional push buttons, switches or similar can be connected per channel of the KNX MSE 6M230 device (see also *Chapter 3.3 on page 11*). The connected push buttons or switches can be either make or break contacts since the telegrams can be set for a make or break contact.

Different 1-bit telegrams can be sent for opening or closing.

6.7 Sensor

Basically, this operating mode is the same as the *Buttons, switching, flanks* operating mode. However, 8-bit telegrams are sent instead of 1-bit telegrams.

6.8 WAREMA central control unit connection

The operating mode of the 1.1/1.2 inputs, 2.1/2.2 inputs, etc., can be set for connection to the WAREMA central control unit. In this way, signals from conventional WAREMA sun shading control systems such as the Wisotronic or Quatronic dialog can be connected to the KNX bus.

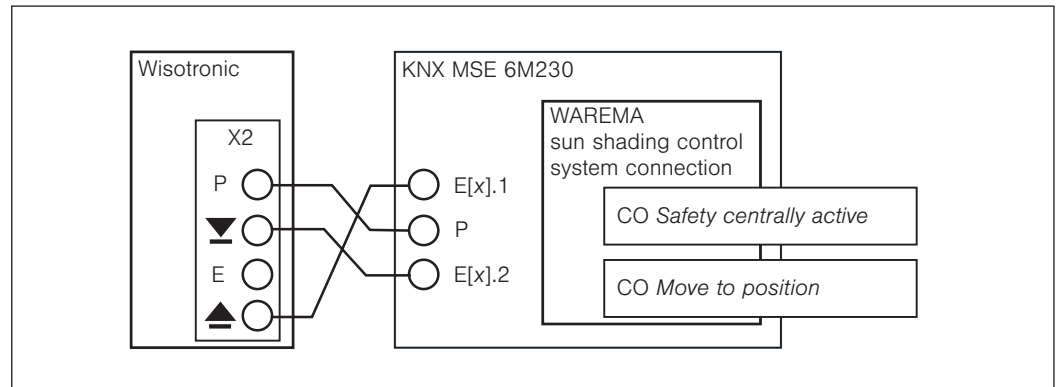


Fig. 5 Wisotronic connection example – KNX MSE 6M230

The term [x] is a place holder for one of the channels 1 – 6.

See also Setting parameters in *Chapter 8.11.5 on page 42* and the planning example in *Chapter 9 on page 43*, WAREMA central control unit connection.

7 Communication objects

7.1 Overview

A table is presented below for each **communication object (CO)**. It shows the following information for the telegrams of the **CO**: telegram length, possible telegram values and the meaning of the corresponding telegram contents. The "Channel" column shows the channels for which the particular communication object is available.

7.2 Order of priorities

- ▶ **Disable object** (highest priority, stops all move commands after activation)
- ▶ **Safety object A**
- ▶ **Safety object B**
- ▶ **Safety object C**
- ▶ All other communication objects

7.3 Safety objects A, B, C

Length	Channel allocation	Meaning
1 bit	-	1: Activation SO
		0: Deactivation SO

For each output channel, you can set which **safety objects (SO)** are to act on it and which move command is to be performed after activation or deactivation of the respective **SO**.

Example

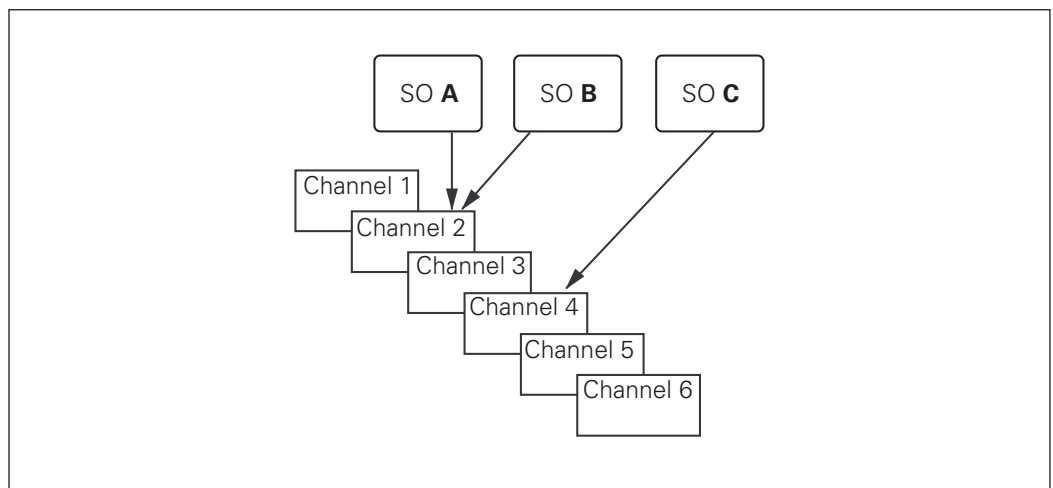


Fig. 6 Allocation example

For example, if **safety object A** is activated (1-telegram) while **safety object B** is already active, **safety object B** is overridden. Channel 4 remains unaffected by the change in state of **safety object A** or **B**.

The following parameter settings were used in Fig. 7:

- ▶ Behaviour after start of alarm from **SO A**: raise
- ▶ Behaviour after end of alarm from **SO A**: return to previous position
- ▶ Behaviour after start of alarm from **SO B**: lower
- ▶ Behaviour after end of alarm from **SO B**: return to previous position

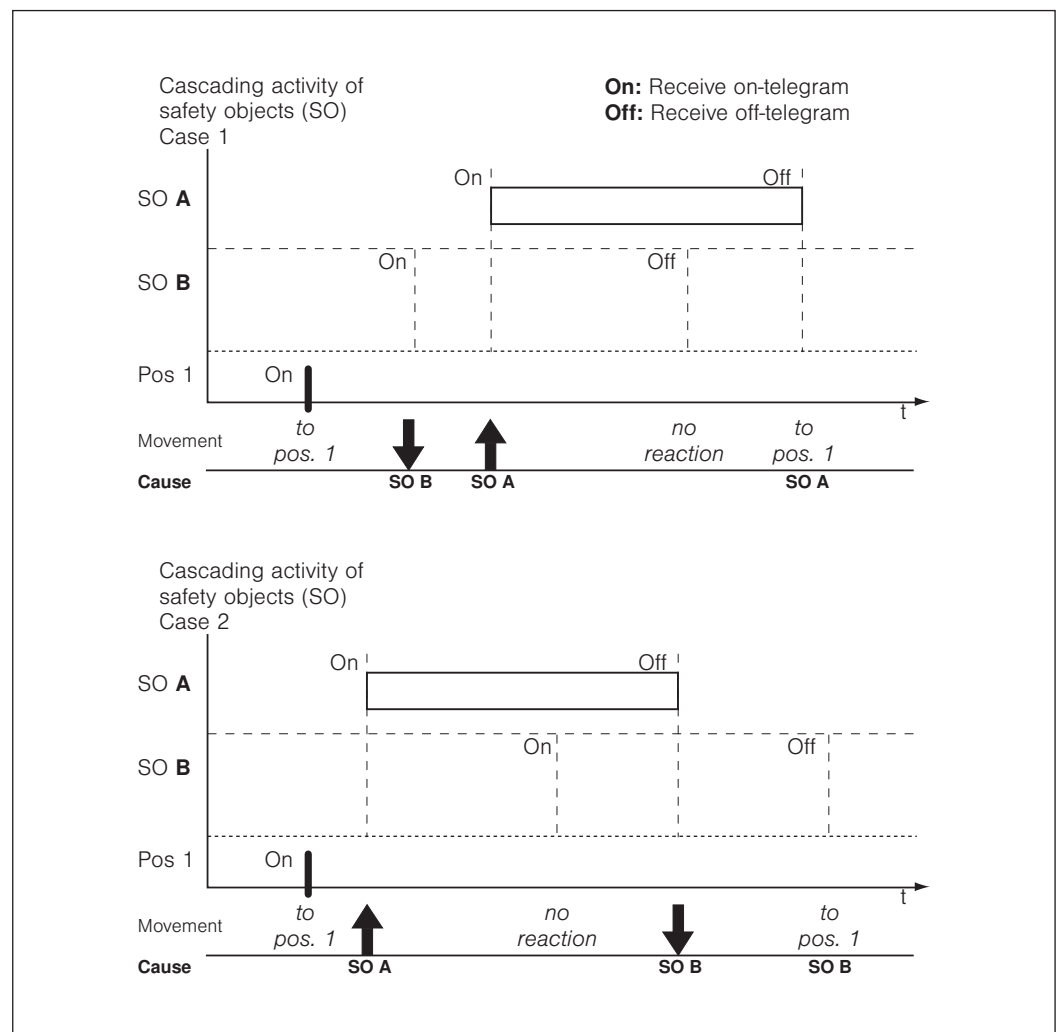


Fig. 7 Example of behaviour of safety objects

After a safety object ends, the move command with the lowest priority that is set for this event is executed. This means that it is only executed if no other safety objects are active when an alarm ends.

After a high priority alarm ends, the action that should have been executed when a safety object that is currently still active was first activated is now executed.

7.4 Direct communication objects

The electrical outputs are switched via direct communication objects.

Connected sun shading systems or lighting systems can be controlled by the transmission of telegrams to direct communication objects.

Move commands of the direct communication objects of a channel are only executed if:

- ▶ *Its* disable object is not active and
- ▶ Its allocated safety objects are not active and
- ▶ Its upper or lower limit position has not yet been reached and
- ▶ The difference between the current and target position is sufficiently large (significant change)

A significant change is a blind length movement of at least 1 second or a slat tilt time of at least 100 milliseconds.

7.4.1 Up/down move command

Length	Channel	Meaning
1 bit	1 - 6	1: "Down" move command
		0: "Up" move command

7.4.2 Switch-on time

The duration for lowering of the product equals the difference between the current blind length and the lower limit position minus the down *Follow-up time*.

The duration for raising of the product equals the difference between the current blind length and the upper limit position plus 10 seconds and minus the up *Follow-up time*.

7.4.3 Stop/step command

Length	Channel	Meaning
1 bit	1 - 6	1: "Down" stop or step
		0: "Up" stop or step

In the internal and external venetian blind operating mode, stop and step commands are executed via this **CO**. In the roller shutter, fabric sun shading system operating mode, only stop commands are executed via this **CO**.

A "down" or "up" step is the movement of the sun shading product for a certain time period. This duration can be set.

The stop command stops movements that were started by the following command:

- ▶ Up move command, down move command
- ▶ Move to blind length, move to slat position
- ▶ Move to position 1, move to position 2

When another stop/step command is received while a step command is running, the step command is not stopped. Instead:

- ▶ If the new step command acts in the same direction as the current one, the current step is extended
- ▶ If the new step command acts in a direction opposite to the current one, the product is stopped and a step is executed in the opposite direction after the `pause after stop` expires

7.4.4 Switch light on/off/toggle – output

Length	Channel	Meaning
1 bit	1, 2	1: On
		0: Off

Channels 1 and 2 can each switch two relay outputs independently of each other: output 1.1, output 1.2, output 2.1, output 2.2.

It can be set whether the status is sent after an output change, after reception of a telegram, or not at all.

7.5 Operation communication objects

The operation communication objects represent the operating elements of inputs E1.1., E1.2, E2.1, ... , D6.2 that are connected to the KNX MSE 6M230.

Below, the change from an open to a closed contact is referred to as a rising flank, and the change from a closed to an open contact is a falling flank.

7.5.1 Up/down move command

Length	Channel	Input state	Meaning
1 bit	1 - 6	Rising flank at contact E[x].1	0: "Up" move command
		Rising flank at contact E[x].2	1: "Down" move command

The term [x] is a place holder for channel numbers 1 to 6.

Transmission can be set to repeat.

The up/down move command is sent after the button is pressed for a certain period; this period can be set.

7.5.2 Stop/step command

Length	Channel	Input state	Meaning
1 bit	1 - 6	Rising flank at contact E[x].1	0: "Up" stop or step
		Rising flank at contact E[x].2	1: "Down" stop or step

The term [x] is a place holder for channel numbers 1 to 6.

Whether stop or step is executed depends on whether the controlled sun shading product is stationary or moving.

Transmission can be set to repeat.

The stop/step command is sent after the button is pressed for a certain period; this period can be set.

NOTE The step duration must be set in the output channel that receives **stop/step commands**.

7.5.3 Switch light on/off/toggle – input

Length	Channel	Meaning
1 bit	1 - 6	1: On
		0: Off

It is possible to set the type of telegram that should be sent after a rising or falling flank:

- ▶ On or off telegram or
- ▶ Toggle telegram or
- ▶ No telegram.

Repeated transmission can be set for the telegrams following a rising or falling flank.

NOTE When the [Write] communication flag is switched on, the inputs listen in when the controlled output is toggled by telegrams from other inputs. Consequently, an input does not send a value opposite to the value last sent but a value opposite to the controlled output.

When the [Write] communication flag is switched off, a value is sent that is opposite to the value last sent.

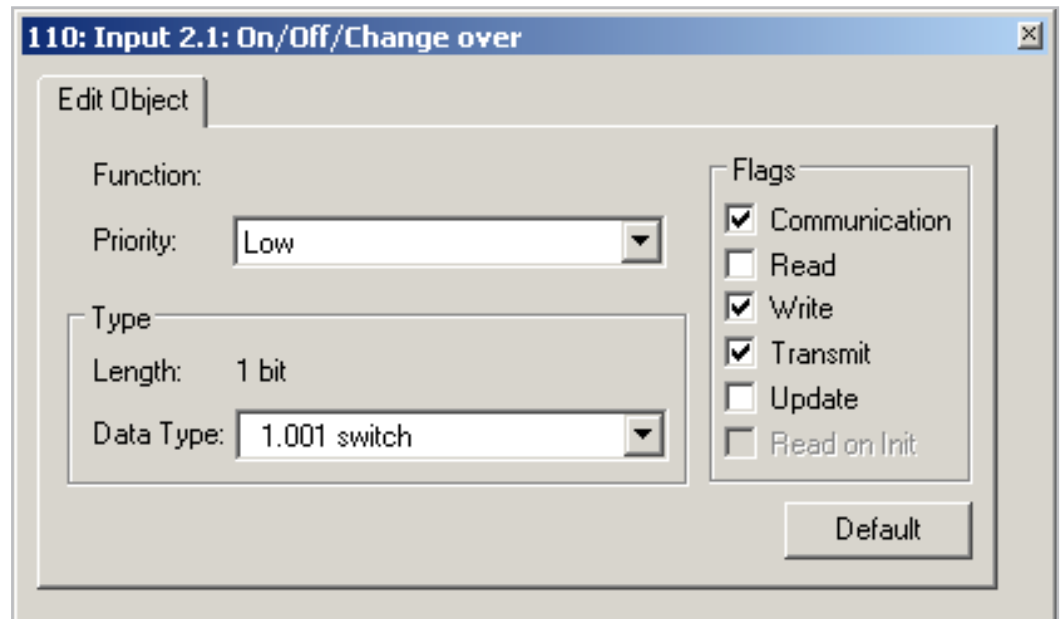


Fig. 8 Group address properties

7.5.4 Send value

Length	Channel	Meaning
1 byte	1 - 6	0, 1, 2, ..., 255

An 8-bit value is sent once for a rising or falling flank.

7.6 Automatic communication objects

7.6.1 Move to position

Length	Channel	Meaning
1 bit	1 - 6	1: Move to position [x]
		0: "Up" move command

The term [**x**] is a place holder for the position memories 1 and 2.

If 1-telegrams are sent to the **Move to position 1** or **Move to position 2** communication objects, the connected sun shading product is moved to the blind length and the slat position of the corresponding position memory.

If a channel is set to the Roller shutter, fabric sun shading system operating mode, the slat positions of the position memory are not used.

The move distance from the current to the target position can be set.

Unless the lower or upper limit position (**blind length status** 0 or 255) was reached, the blind moves to the upper limit position before the first move command, **Move to position 1/2**, is executed.

7.6.2 Move to blind length, move to slat position

- ▶ The **Move to blind length** communication object is used in the Internal and external venetian blinds and Roller shutter, fabric sun shading system operating modes.
- ▶ The **Move to slat position** communication object is only used in the Internal and external venetian blinds operating mode.

Length	Channel	Blind length values
1 byte	1 - 6	{0, 1, 2, 3,..., 254, 255} corresponds to {0, 0.5, 1.0, 1.5,...99.5, 100}%

Length	Channel	Slat position values
1 byte	1 - 6	{0, 1, 2, 3,..., 254, 255} corresponds to {0, 0.5, 1.0, 1.5,...99.5, 100}%

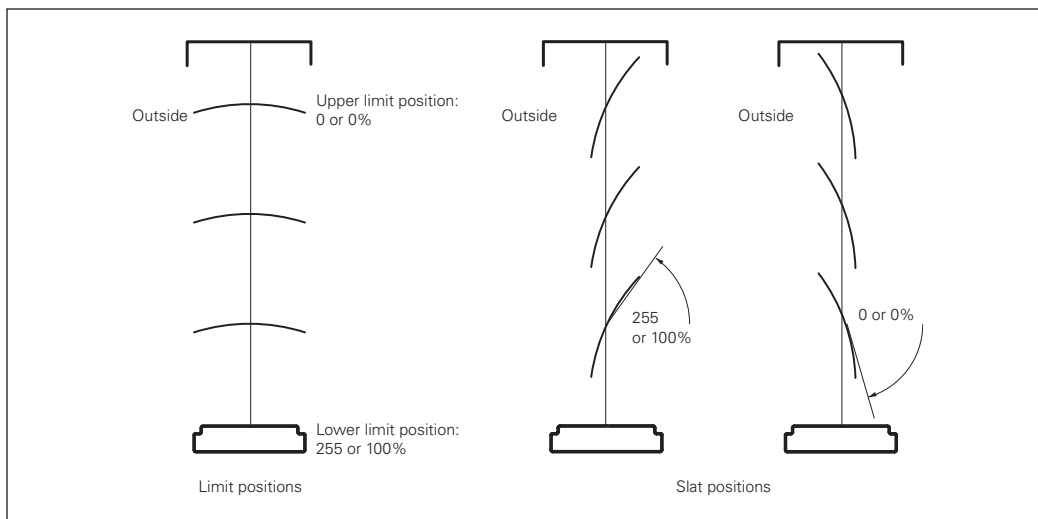


Fig. 9 Slat position, limit positions

The run time between the upper and lower limit position can be set.

The tilting duration between the 0 and 100% slat positions can be set.

Unless the lower or upper limit position (**blind length status** 0 or 100%) was reached, the blind moves to the upper limit position before the first move command, **Move to blind length/slat position**, is executed.

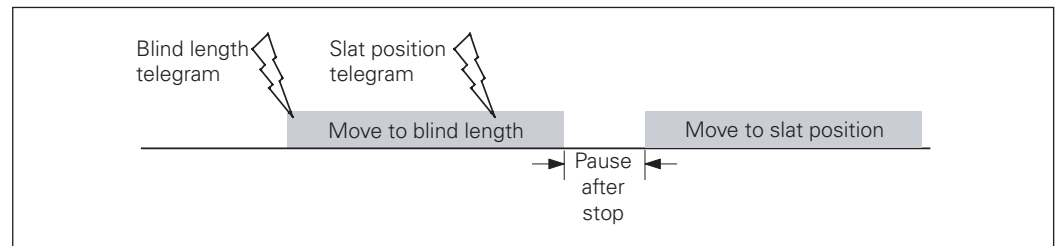


Fig. 10 Move to blind length and slat position

If a **Move to slat position** telegram is received while the product is moving to the necessary length, the product moves to the latest target blind length and then tilts to the latest target slat position.

If a **Move to slat position** telegram is received while the product is stationary, the product only moves to this latest target slat position. The current blind length remains unchanged.

If the blind length that is defined by **Move to blind length** is reached, the slats tilt to the **Slat position** received last. After mains power returns, this position would be slat position 0.

7.6.3 Position toggle

Length	Channel	Meaning
1 bit	1 - 6	0: Execute Move to position 1
		1: Execute blind length/slat position

After a 0-telegram, the product moves to the stored position 1.

After a 1-telegram, the product moves to the position that would result from the blind length received last and the slat position.

The minimum duration between two toggle procedures can be set.

See also *Chapter 9.3 Slat tracking based on the sun position* on page 45.

7.7 Store position – communication objects

Length	Channel	Meaning
1 bit	1 - 6	1: Store current blind length and slat position
		0: No change

After a 1-telegram is sent to the **Save position 1** or **Save position 2** communication object, the current blind length and slat position are stored in the `Position 1` or `Position 2` memory of the corresponding channel.

After 1-telegrams are sent to the **Move to position 1** or **Move to position 2** communication objects, the connected sun shading product is moved to the blind length and the slat position of the corresponding position memory.

If a channel is set to the `Roller shutter, fabric sun shading system` operating mode, the slat positions of the position memory are not used.

The storage of positions via telegrams can be suppressed by setting the appropriate parameter.

7.8 Information communication objects

Information communication objects provide status information on the device and on connected units. This status information can be sent and queried.

Blind length status, slat position status

- ▶ The **Move to blind length** communication object is used in the Internal and external venetian blinds and Roller shutter, fabric sun shading system operating modes.
- ▶ The **Move to slat position** communication object is only used in the Internal and external venetian blinds operating mode.

Length	Channel	Blind length values
1 byte	1 - 6	{0, 1, 2, 3,..., 254, 255} corresponds to {0, 0.5, 1.0, 1.5,...99.5, 100}% of the total move time between the upper and lower limit positions
Length	Channel	Blind length values
1 byte	1 - 6	{0, 1, 2, 3,..., 254, 255} corresponds to {0, 0.5, 1.0, 1.5,...99.5, 100}% of the total tilt time

The **blind length status** and **slat position status** are not updated by the KNX MSE 6M230 until after the upper or lower limit position has been definitely reached. To ensure this, the product must move a full up run time + 10 seconds or a full down run time.

Every time the sun shading product stops after this, the **blind length status** and **slat position status** are sent. These status telegrams are also sent after the internal status of a device changes, e.g. if an alarm from a safety object A occurs and **No reaction** is set for this.

After the mains power supply returns, the **Blind length status** and **Slat position status** COs are not valid until after the upper or lower limit position has been reached. Until then, this CO is not sent and reading of this CO is responded to with a 0.

7.8.1 Light status

Length	Channel	Meaning	Output state
1 bit	1, 2	1: On	Relay of output closed
		0: Off	Relay of output open

Here the output can be A1.1, A1.2, A2.1 or A2.2.

It can be set whether the status is sent after an output change, after reception of a telegram, or not at all.

7.9 Disable and enable communication objects

7.9.1 Disable object, output

Length	Channel	Meaning
1 bit	1 - 6	1: Disable of all movements
		0: Enable

After a 1-telegram, all movements of the corresponding channel are suppressed. Movements that were taking place while the telegram was being received are stopped.

After a 0-telegram, all movements are enabled. The position enable is not affected. If the KNX MSE 6M230 determines that the target blind length changed during a disable, the product moves to this position.

At least one telegram must be received for the **disable object** during a specific monitoring time; this monitoring time can be set.

After programming, a device reset, a master reset, or similar, all movements are enabled.

7.9.2 Enable – input

Length	Channel	Meaning
1 bit	1 - 6	1: Disable of sending of telegram
		0: Enable of sending of telegram

This CO is only available in the Venetian blind actuator operating mode.

A 0-telegram blocks the sending of **Up/down move command** and **Stop/step command**.

After a 1-telegram, an existing send disable is removed. The current input status is not sent until after the next status change.

After programming, a device reset, a master reset, or similar, the sending of telegrams is enabled.

7.9.3 Position enable

Length	Channel	Meaning
1 bit	1 - 6	0: Disable of the Move to positions 1+2, Move to blind length and Move to slat position COs.
		1: Enable of the Move to positions 1+2, Move to blind length and Move to slat position COs.

After a 0-telegram, all telegrams to the above-mentioned communication objects are ignored. Move commands that are running during the sending of the 0-telegram are stopped.

This CO is not connected to the Return time, position enable.

A synonym for position enable is the term "Automatic release".

7.10 Communication objects for connecting the WAREMA central control unit

The **Safety centrally active** and **Move to position** communication objects should only be used jointly per channel.

For a detailed explanation, see *Chapter 9.5 on page 47*, WAREMA central control unit connection.

7.10.1 Safety centrally active

Length	Channel	Meaning
1 bit	1 - 6	1: Safety active
		0: Safety not active

This CO is used for linking with **safety object** A/B or C.

The parameters that can be set are the switching duration of the central control unit and the repeated sending of this communication object.

7.10.2 Central position

Length	Channel	Meaning
1 bit	1 - 6	1: Move to position
		0: Up

This communication object is used for linking with **Move to position 1** or **Move to position 2**.

8 Setting parameters

8.1 Parameter dialogue, parameter groups

In the parameter dialogue of the WAREMA KNX MSE 6M230, general parameter groups are displayed as well as a set of parameter groups for each channel. Depending on the selected operating mode of an input or output channel, the parameter groups and communication objects are displayed or hidden.

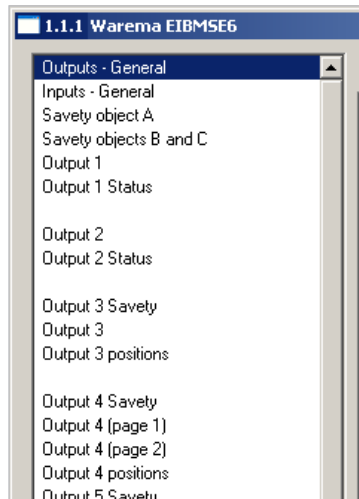


Fig. 11 Section of the parameter dialogue

8.1.1 General parameter groups

Parameter group	Parameter
General data, outputs	Operating modes of output channels 1 - 6
General data, inputs	Operating modes of input channels 1 - 6, sending behaviour
Safety objects A, B or C	Activation, cyclical monitoring, behaviour

8.1.2 Channel-specific parameter groups

8.1.2.1 For the "Switch actuator" operating mode

Parameter group	Parameter
Output 1 - 2	Behaviour
Output 1 - 2 status	Send behaviour

8.1.2.2 For the "Roller shutter, fabric sun shading system" operating mode

Parameter group	Parameter
Output 1 - 6 safety	Behaviour when safety alarms A, B or C start and end
Output 1 - 6	Product settings, behaviour
Output 1 - 6 position	Position memory 1, 2, positioning behaviour

8.1.2.3 For the "Internal and external venetian blinds" operating mode

Parameter group	Parameter
Output 1 - 6 safety	Behaviour when safety alarms A, B or C start and end
Output 1 - 6 (page 1, 2)	Product settings, behaviour
Output 1 - 6 position	Position memory 1, 2, positioning behaviour

The parameters that appear in a parameter group depend on the selected operating mode of the particular input.

8.1.2.4 For the "Sunblind push button" operating mode

Parameter group	Parameter
Input 1.1/1.2 - 6.1/6.2	Button activation duration, telegram selection, repeat sending

8.1.2.5 For the "Buttons, switching, flanks" operating mode

Parameter group	Parameter
Input 1.1/1.2 - 6.1/6.2	Telegram selection, repeat sending, behaviour

8.1.2.6 For the "Sensor" operating mode

Parameter group	Parameter
Input 1.1/1.2 - 6.1/6.2	Value selection, behaviour

8.1.2.7 For the "WAREMA central control unit connection" operating mode

Parameter group	Parameter
Input 1.1/1.2 - 6.1/6.2	Repeat sending, activation threshold

8.2 "General data, outputs" parameter window

- ▶ Setting of the operating mode of each output channel

KNX MSE 6M230

8.3 "General data, inputs" parameter window

8.3.1 Minimum telegram interval

Telegrams can be sent at shorter intervals than this setting if nothing or very little was previously sent. If the KNX MSE 6M230 tries to continuously send many telegrams, the send frequency is reduced in accordance with this parameter. The time basis of the calculation is 17 seconds.

Example With a Minimum telegram interval of 1 s, up to 17 telegrams can be sent at once until the limitation becomes active. After that, only 1 telegram can be sent per second. After a send pause of, for example, 5 seconds, 5 telegrams can be sent at once.

8.3.2 Delay after a bus voltage return

This parameter determines how much time must pass between the return of the bus voltage and the sending of the first telegram.

For example, if this parameter is set to different values on different devices, this prevents these devices from beginning to send telegrams at the same time.

8.3.3 Time basis of repeated sending

This parameter is used as a factor for the repeat sending of telegrams of the inputs:

- ▶ Sunblind push button operating mode: telegrams after the button is pressed for a long period
- ▶ WAREMA central control unit operating mode: 1/0-telegrams, central safety
- ▶ Buttons, switching, flanks operating mode: telegrams after rising flank

NOTE A setting of 2 seconds can result in high bus loads if, for example, multiple devices send telegrams at the same time.

8.4 "Safety object A", "Safety object B and C" parameter windows

8.4.1 Safety object A/B/C – highest/middle/lowest priority

On: Telegrams to safety objects are processed in output channels

Off: Telegrams to safety objects are without effect

8.4.2 Cyclical monitoring time

The safety object must receive at least one telegram during the set time. If this time expires without a telegram having been received, the respective alarm (A, B or C) is activated.

8.4.3 Behaviour when the bus or mains voltage returns

This parameter defines the behaviour of the safety objects after:

- ▶ Bus voltage return or
- ▶ Network voltage return or
- ▶ The device is reset via ETS

Alarm on: Output channels execute the move command that has been set for the alarm.

Alarm off: Output channels execute the move command that has been set for the alarm end.

No change: Output channels only react after the telegram to the safety object.

8.4.4 Behaviour when the bus voltage fails

This parameter defines the behaviour of the safety objects after the bus voltage fails.

Alarm on: Output channels execute the move command that has been set for the alarm.

Alarm off: Output channels execute the move command that has been set for the alarm end.

No change: Output channels only react after the telegram to the SO.

8.4.5 Behaviour after programming

This parameter defines the behaviour of the safety objects after the programming of applications, parameters or group addresses by the ETS.

Alarm on: Output channels execute the move command that has been set for the alarm.

Alarm off: Output channels execute the move command that has been set for the alarm end.

No change: Output channels only react after the telegram to the safety object.

8.5 "Output n Safety" parameter window

8.5.1 Behaviour after alarm from safety object A/B/C

Stop/raise/lower: Output channels execute the move command that has been set for the alarm start. Afterwards, only commands from safety objects of higher priority or from the disable object are processed.

No reaction: Alarms of the safety object are not processed. Lower priority commands continue to be processed, i.e.

- ▶ Running move commands are not interrupted
- ▶ Lower priority alarms and move commands are not overridden and continue to be executed
- ▶ Lower priority commands continue to be processed

8.5.2 Behaviour after safety object A/B/C ends the alarm

After the alarm of a safety object ends, lower priority commands are processed again. See *Chapter 7.2 on page 20*.

Stop/raise/lower: Output channels execute the move command that has been set for the alarm end.

No reaction: Output channels remain at the current product position.

Move to last position or value: The product moves to the product position that it should have moved to with the last telegram from:

- ▶ *Move to position 1* or
- ▶ *Move to position 2* or
- ▶ *Move to blind length + slat position*

NOTE The actions set here are executed **by the A/B/C safety object** independently of the **Behaviour after alarm** parameter

KNX MSE 6M230

8.6 "Output n" parameter window (page 1)

8.6.1 Run time (seconds)

This parameter defines how long the connected sun shading product requires to move once between the upper and lower limit positions.

During the up movement, the motor is supplied with power for 10 seconds longer than specified by the `Run time` parameter.

The time it takes the sun shading product to move may differ for the up and down directions. This is caused by motor properties, tolerances, mechanical play, and similar factors. If the 10-second addition is not sufficient to compensate for run time difference, the `Run time` parameter must be set to the run time that is greater.

8.6.2 Additional up run time (milliseconds), additional down run time (milliseconds)

For reasons of design, some motors continue running for a short period after the KNX MSE 6M230 relay has been switched off. This can result in differences between the actual and calculated product position. The follow-up parameter minimises this difference to achieve greater position accuracy for the **Blind length/slat position** commands.

Suitable settings are between 101 and 5000 milliseconds. A value of 0 switches off calculation of the follow-up. Values between 1 and 100 should not be set.

8.6.3 Pause after stop (milliseconds)

For reasons of design, some motors require a minimum time between being switched off and on. The `Pause after stop` parameter must be set to at least this duration.



CAUTION

The minimum duration can be obtained from the motor manufacturer or the manufacturer of the sun shading product.

If the `Pause after stop` is running, all stop/step commands are ignored; all other move commands are executed at the earliest after the `Pause after stop` expires.

8.6.4 Time for full slat tilt (seconds) + (milliseconds)

This parameter must be set to the time that an internal or external venetian blind requires for tilting between the 0 and 100% slat positions (see Fig. 9 on page 26). The value of this parameter may not exceed the `Run time` parameter.

The parameter value is calculated from the sum of the entries of the seconds and milliseconds fields.

Complete turn time (seconds)	<input type="text" value="1"/>
(milliseconds)	<input type="text" value="600"/>

Fig. 12 Time for a full slat tilt

8.7 "Output n" parameter window (page 2)

8.7.1 Tilt up after down movement

After a manual operation, it is often useful to automatically turn up the slats of a venetian blind when the lower limit position is reached. In this way, only one operation is needed to achieve a product position that provides glare control while also permitting visibility to the outside.

This parameter defines the time period for which the slats are tilted up after the lower limit position is reached. The value must be smaller than the `Time for full slat tilt`.

The automatic tilt is executed after every downward movement.

8.7.2 Adjust slats with step command

This parameter defines how long a sun shading product is moved up or down after a **Stop/step command telegram**.

The parameter value must be 100 ms or greater.

The smallest step duration results from the value of this parameter minus the `Follow-up downwards` or `Follow-up upwards`.

8.7.3 Disable object monitoring time

The **disable object** of the channel must receive at least one telegram within this time period. If this time is exceeded without a telegram having been received, the product control is disabled and running movements are stopped. The disable is cleared after a 0-telegram to the **disable object**.

8.7.4 Behaviour after a bus voltage drop

Stop: Running movements stops and the product remains stationary until power returns.

Raise: The product moves to the upper limit position and remains stationary until power returns.

Lower: The product moves to the lower limit position and remains stationary until power returns.

No reaction: The running movement is completed as intended.

8.7.5 Behaviour after the bus or mains voltage returns

Stop: Running movements stops and the product remains stationary until power returns.

Raise: The product moves to the upper limit position and remains stationary until power returns.

Lower: The product moves to the lower limit position and remains stationary until power returns.

No reaction: The running movement is completed as intended.

8.7.6 Return time for position enable

After the **Up/down move command or Stop/step command** telegram, the `Return time for position enable` begins running. The last position command is repeated after this time expires.

The position commands include:

- ▶ **Move to position 1**
- ▶ **Move to position 2**

► **Move to blind length/move to slat position**

A Return time of 0 switches off the automatic repeat of the last position command.

NOTE A running return time is not interrupted by alarms from the safety objects.

8.7.7 Behaviour after the position enable returns

Parameter value	Reaction after expiration of the Return time for position enable:
Raise or lower:	Automatic movement to upper/lower limit position
No reaction:	The product stays at the current product position
Repeat last position or value	<p>The move command received last from</p> <ul style="list-style-type: none"> ► Move to position 1 or ► Move to position 2 or ► Move to blind length/slat position <p>is automatically repeated</p>

An application example of this parameter is the time-controlled return to automatic light control after a local operation.

8.8 "Position output n" parameter window

"Position 1: blind length", "Position 1: slat position",
"Position 2: blind length", "Position 2: slat position"

These are memories for the target product positions that the product is to be moved to after a **Move to position 1** or **Move to position 2** telegram.

The stored position 1 is also used for position toggles.
See the planning example in *Chapter 9.3 on page 45*.

NOTE The parameter values for the blind length and slat position should not be greater than the actual product run time or the time for a full slat tilt (see *Chapter 8.6 on page 36*).

8.8.1 Position toggle delay

If a 1-telegram is received on the **Position toggle** communication object, the product moves to the position that was last received on **Blind length/slat position** after the **Position toggle delay** expires. If a telegram was not yet received for **Blind length/slat position**, the product moves to the stored Position 1.

If a 0-telegram is received on the **Position toggle** communication object, the product moves to Position 1 after the Position toggle delay expires.

The Position toggle delay is always started after the **Position toggle** telegram received last, even if the time is already running.

For how to apply this parameter, see also the planning example in *Chapter 9.3 on page 45*.

8.8.2 Move to positions

Direct – shortest path: After a 1-telegram to *Move to position n*, the product moves directly from the current to the stored position.

Indirect – via the upper limit position: After each 1-telegram to *Move to position n*, the product moves to the upper limit position and then to the stored position.

Indirect – via the lower limit position: After each 1-telegram to *Move to position n*, the product moves to the lower limit position and then to the stored position.

Indirect – via the nearest limit position: After each 1-telegram to *Move to position n*, the product moves to the limit position that is nearest to the current position and then to the stored position.

If the first telegram received after the program starts is a *Move to position 1* or *Move to position 2* telegram, the product first moves to the upper limit position and then to the corresponding target position. This always occurs for the first move command that is executed, regardless of the setting of the `Move to positions` parameter.

8.8.3 Store position 1+2 via telegram

On: The current product position is stored after a telegram to the *Store position 1/2* CO.

Off: A telegram to the *Store position 1/2* CO causes no change to the position memory.

8.8.4 Overwrite positions stored on-site when programming

On: Positions 1, 2 stored in the device are overwritten with the factory settings when the parameters are being programmed.

Off: Positions 1, 2 stored in the device are not overwritten when the parameters are being programmed.

8.9 "Output n" parameter window

8.9.1 Behaviour when the bus voltage fails/returns

Stop: Running movements stops and the product remains stationary until power returns.

Raise: The product moves to the upper limit position and remains stationary until power returns.

Lower: The product moves to the lower limit position and remains stationary until power returns.

No reaction: The running movement is completed as intended.

8.10 "Status output n" parameter window

This parameter window only applies to the `Switch actuator` operating mode.

8.10.1 The status (ON/OFF) is sent

After telegram reception: The current switching state is sent after the telegram is received, regardless of whether the switching state of the output changed.

After output change: The current switching state of the output is sent after a change, regardless of the cause of the change.

Deactivated: The current switching state is not sent; the "Status output n" communication object continues to be available.

8.11 "Input n" parameter window

In the "General data, inputs" parameter window, the operating mode of each input pair is preselected. Depending on the selected operating mode, the parameter window of the inputs appear as described in the following chapters: 8.11.1 to 8.11.5.

8.11.1 "No function" preselection

The display of the "Input n" parameter window is suppressed.

8.11.2 "Sunblind push button" preselection

8.11.2.1 Input signal is interpreted as long after

If the push button is pressed for at least the set time, the Telegram after a long press of the button is sent after the set time. If the button is pressed for a shorter time, the Telegram after a short press of the button is sent after the button is released.

8.11.2.2 Telegram after a short press of the button

No reaction: No telegram after a short press of the button.

Up/down move command:

- ▶ If the up contact was closed, the **Up/down move command** CO sends a 0-telegram
- ▶ If the down contact was closed, the **Up/down move command** CO sends a 1-telegram

Stop/step move command:

- ▶ If the up contact was closed, the **Stop/step move command** CO sends a 0-telegram
- ▶ If the down contact was closed, the **Stop/step move command** CO sends a 1-telegram

8.11.2.3 Telegram after a long press of the button

No reaction: No telegram after a long press of the button

Up/down move command:

- ▶ If the up contact was closed, the **Up/down move command** CO sends a 0-telegram
- ▶ If the down contact was closed, the **Up/down move command** CO sends a 1-telegram

Stop/step move command:

- ▶ If the up contact was closed, the **Stop/step move command** CO sends a 0-telegram
- ▶ If the down contact was closed, the **Stop/step move command** CO sends a 1-telegram

8.11.2.4 Factor for repeat sending

Telegrams after a long press of the button can be sent repeatedly as long as the connected contact is closed. The factor for Repeat sending determines the interval between two consecutive repeats. Setting the value to 0 causes a telegram to be sent only once after a long press of the button.

Example The following parameter settings are used:

Input signal is interpreted as long after:	1.2 seconds
Telegram after a short press of the button:	Stop/step move command
Telegram after a long press of the button:	Up/down move command
Factor for repeat sending:	1

The Time basis for repeat sending is set to 10 seconds, as a result of which a telegram is sent every 10 seconds while the contact is closed.

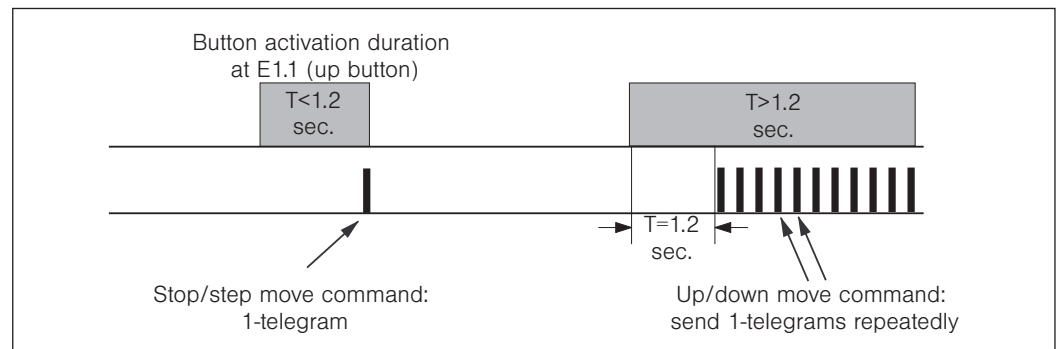


Fig. 13 Duration of button activation and sending behaviour

8.11.3 "Buttons/switching/flanks" preselection

8.11.3.1 Telegram after rising/falling flank

No function: No sending after the button is pressed or released or after the bus/mains voltage returns.

On: The buttons/switching/flanks CO sends 1-telegram(s) once or repeatedly.

Off: The buttons/switching/flanks CO sends 0-telegram(s) once or repeatedly.

Toggle: The buttons/switching/flanks CO sends toggle telegrams once or repeatedly.

8.11.3.2 Factor for repeat sending

See "Factor for repeat sending" in *Chapter 8.11.2.4 on page 40*.

8.11.3.3 Telegram after the bus or mains voltage returns

Do not send telegram: No telegram is sent after the button is pressed or released.

Send on-telegram: The buttons/switching/flanks CO sends a 1-telegram.

Send off-telegram: The buttons/switching/flanks CO sends a 0-telegram.

Send current input status: When the delay following the return of the bus voltage expires, the status of the connected push button is sent once, regardless of the other parameters of *Chapter 8.11.3*.

8.11.4 "Sensor" preselection

8.11.4.1 Telegram after rising/falling flank

An 8-bit telegram can be sent once for a rising or falling flank.

KNX MSE 6M230

8.11.4.2 Telegram after the bus or mains voltage returns

Do not send telegram: No telegram is sent after the button is pressed or released

Send value for rising flank: The sensor CO sends value according to the telegram after the rising flank.

Send value for falling flank: The sensor CO sends value according to the telegram after the falling flank.

Send the current input state: When the delay following the return of the bus voltage expires, the following is sent once:

- ▶ When the contact is closed, a value corresponding to the telegram after the rising flank
- ▶ When the contact is open, a value corresponding to the telegram after the falling flank

8.11.5 "WAREMA central control unit connection" preselection

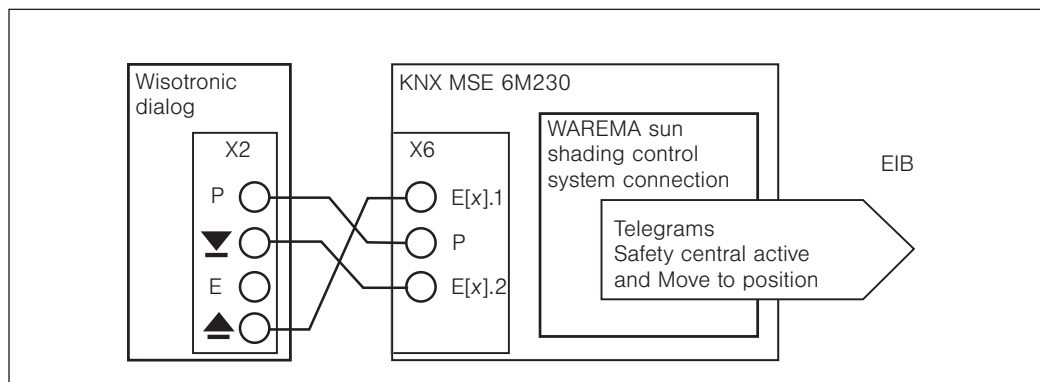


Fig. 14 Connection to the WAREMA central control unit.

Two parameters are provided:

- ▶ Safety is centrally active after: 1, 2, 3, ..., 100 seconds
- ▶ Factor for repeat sending: 0, 1, 2, ..., 255

Every time the ▲ contact at input x.1 closes, a 0-telegram is sent for the central position. If this contact is opened again within the time defined by the first parameter, another 0-telegram is sent for the central position.

If the ▲ contact remains closed longer than set in the first parameter, the repeat sending of 1-telegrams for Safety centrally active begins. If the ▲ contact then opens, repeat 0-telegrams are sent for Safety centrally active.

If the ▼ contact at input x.2 closes, a 1-telegram is sent for the central position. This occurs regardless of how long the ▼ contact is closed. If the ▼ contact opens, no additional telegram is sent.

NOTE The "Safety centrally active after x seconds" parameter value must be smaller than the time resulting from the factor for repeat sending and the time basis for repeat sending.

Example

- ▶ Safety centrally active after 15 seconds
- ▶ Factor for repeat sending: 2
- ▶ Time basis of repeated sending 10 seconds

9 Planning examples

9.1 Operating venetian blinds with conventional sunblind push buttons

One venetian blind is connected to each of two KNX MSE 6M230. A conventional sunblind push button is connected to the KNX MSE 6M230 (A). This button is used to move both venetian blinds to any blind length and any slat position.

A long press of the button (>1 s) should start movement of the product to the limit position, while a short press of the button should cause the slats to tilt.

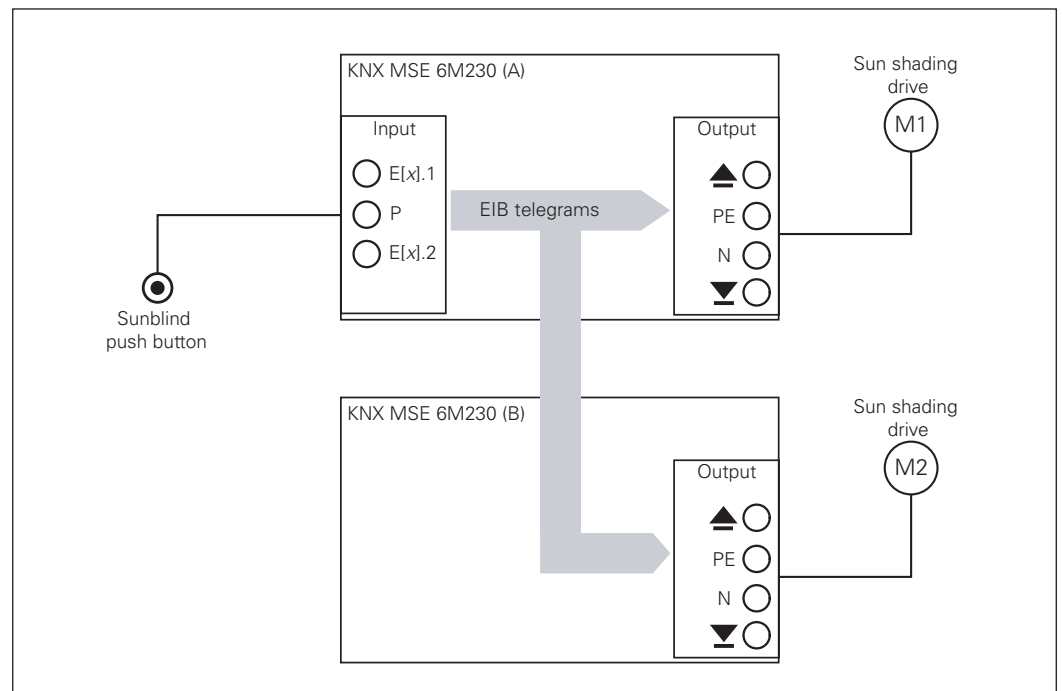


Fig. 15 Planning example: "Operating venetian blinds"

9.1.1 Settings

- Use the factory settings for both EKNX MSE 6M230.
- Deviating from the factory settings, set safety object A to Off.
- Set the product run time, slat tilt time, follow-up time, pause after stop, etc., as specified by the venetian blind manufacturer.
- For all outputs, set the `Adjust slats with step` command parameter to 300 milliseconds, for example.

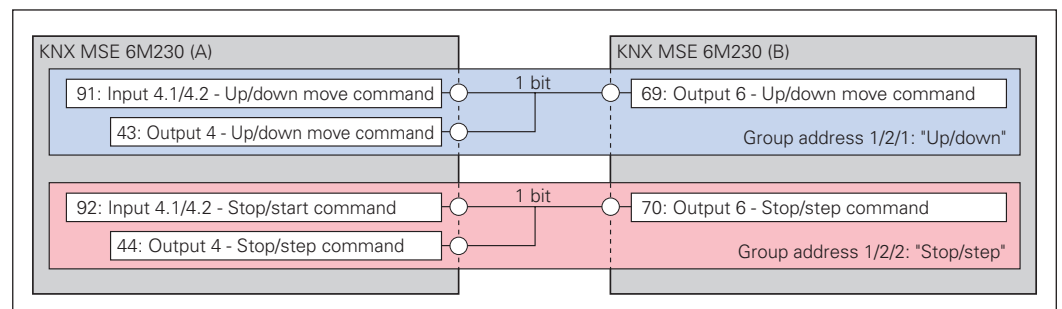


Fig. 16 Links in the "Operating venetian blinds" planning example

KNX MSE 6M230

9.2 Toggle switching with 3 push buttons

A light source is to be toggled on and off with three push buttons.

9.2.1 KNX MSE 6M230 settings

- Set the output operating mode to "Switch actuator"
- Set the operating modes of inputs 1.1/1.2 and 2.1/2.2 to "Buttons, switching, flanks"
- Set the parameters of inputs 1.1, 1.2 and 2.1:
 - ▶ Telegram after rising flank to Toggle
 - ▶ Telegram after falling flank to No function
 - ▶ Factor for repeat sending to 0.

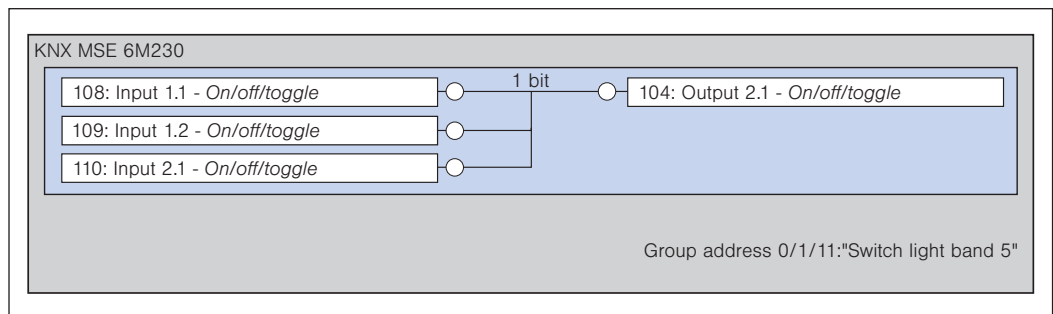


Fig. 17 Links in the "Toggle switching" planning example

The [Communication], [Write], [Transmit] communication flags of the **Input 1.1/Input 1.2/Input 2.1: On/off/toggle** CO must be switched on (see the following figure).

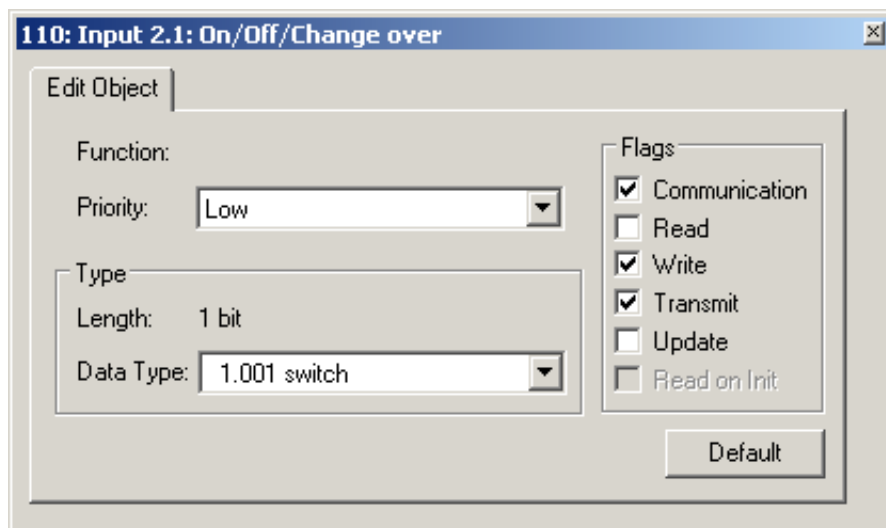


Fig. 18 "Group address" properties

When the [Write] communication flag is switched on, the inputs listen in when the output 2.1 is toggled by telegrams from other inputs. Consequently, the 108, 109 and 110 COs do not send a value opposite to the value last sent but a value opposite to the output.

9.3 Slat tracking based on the sun position

On the south facade, the slats of two WAREMA external venetian blinds of type E80 are to be automatically controlled as a function of the position of the sun. When brightness values are high, the slats in the lower limit position should be tilted down. When brightness is low, the slats in the lower limit position should be tilted up.

NOTE For commissioning, setting parameters and linking the JSB/S1.1, see "Product manual ABB i-bus KNX venetian blind control block, REG, JSB/S 1.1, ABB STOTZ-KONTAKT SE"

9.3.1 JSB/S1.1 settings

- Select the factory settings (click on the [Default] button in the ETS parameter dialogue)
- Make the following settings that deviate from the factory settings:

Parameter	Setting
Horizontal slats	
Horizontal slats	Enabled
Slat width in mm	80
Slat distance in mm	65
Angle at slat position 0%	10
Angle at slat position 100%	170
Send	
Send the slat angle if there is a change	5 degrees
Facade A	
Facade alignment	180 degrees (south)

- Further settings are made according to the use of the external venetian blind, the geographic location of the building, its geometric properties and its environment.

9.3.2 KNX MSE 6M230 settings

- Select the factory settings (click on the [Default] button in the ETS parameter dialogue)
- Make the following settings that deviate from the factory settings:

Parameter	Setting
Safety object A	Disabled
Output 5 (page 1) and output 6 (page 1)	
Time for a full slat tilt	1.6 seconds
Output 5 position and output 6 position	
Position 1: blind length	300
Position 1: slat position	0.85 seconds

KNX MSE 6M230

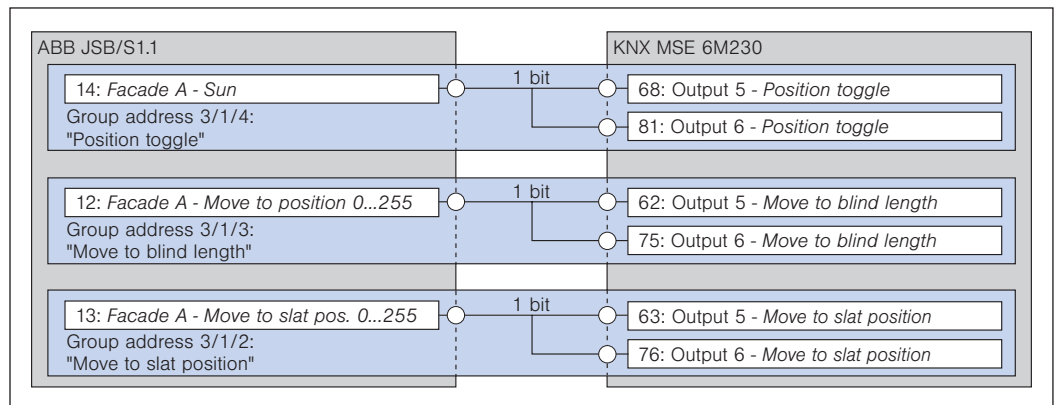


Fig. 19 Links in the "Slat tracking" planning example

Links of the JSB/S1.1 with additional devices, such as a clock, weather station, etc., are not shown here.

9.4 Light guidance

The tilting motor of a light guided venetian blind of type WAREMA E80 LD is to be controlled.

The parameters of the output channel used for this must be set as follows:

Parameter	Setting	Setting required
Run time	16 s	Yes
Time for a full slat tilt	16 s	Yes
Up/down follow-up	1.5 s	Yes
Pause after stop	1.5 s	Yes
Tilt up after down movement	0 ms	Yes
Adjust slats with step command by	2000 ms	No
Position 1 blind length	16 s	Yes
Position 1 slat angle	6 s	No
Position 2 blind length	16 s	Yes
Position 2 slat angle	12 s	No

As with standard external venetian blinds, all communication objects of the respective channel can be used.

NOTE When using KNX sunblind push buttons, the parameter for differentiating between a short and long press of the button must be significantly greater than the pause after stop, e.g. 2.5 seconds.

9.5 WAREMA sun shading control system connection

The "Wind monitoring" safety function of a Wisotronic 1-channel sun shading control system should be connected to the KNX bus. In the event of a wind alarm, manual move commands to the remote KNX MSE 6M230 should be suppressed.

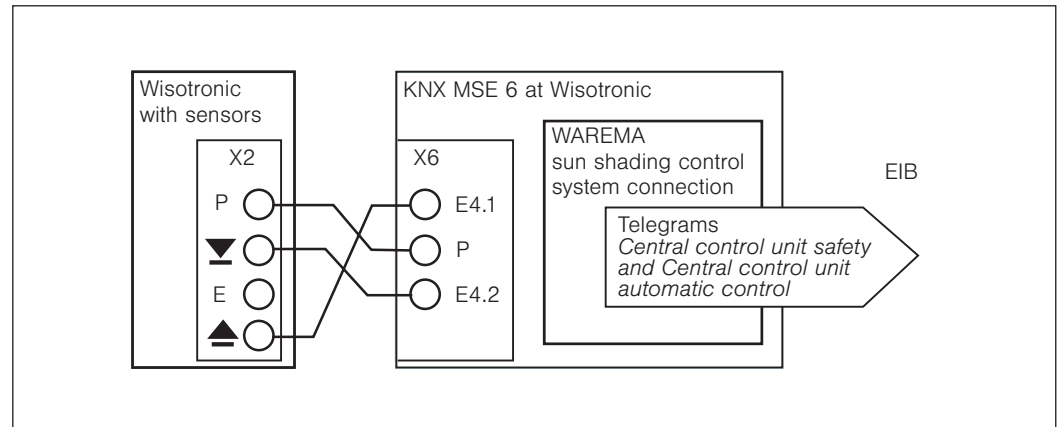


Fig. 20 Wiring of the Wisotronic – KNX MSE 6M230 for one channel

Connect a weather station multisense to the Wisotronic. Connect one external venetian blind to channel 3 and one to channel 4 at another remote KNX MSE. Wisotronic and KNX MSE must be wired together as shown in Fig. 20.

- ▶ Installation instructions KNX MSE 6M230
- ▶ Installation instructions, Wisotronic 1-channel central control unit
- ▶ Operating instructions, Wisotronic 1-channel central control unit
- ▶ Operating and installation instructions, Weather station multisense

9.5.1 Settings on the Wisotronic

- Set the factory settings for the "External venetian blind" product.
- Make the following settings that deviate from the factory settings:

Parameter	Setting
Product settings	
"Up" run time	5 s
"Down" run time	5 s
Tilting time	0 s
Max. slat angle	0°
Min. slat angle	0°
Wind monitor	
Wind monitor ON/OFF	ON
"Up" limit value	The limit value can be obtained from the manufacturer of the sun shading product.
"Up" delay	The limit value can be obtained from the manufacturer of the sun shading product.
Switch-off delay,	e.g. 1 minute

- Ice monitoring and precipitation monitoring must be set according to the sun shading products being controlled.

KNX MSE 6M230

9.5.2 KNX MSE 6M230 parameter settings when connected to Wisotronic

- Select the factory settings (click on the [Default] button in the ETS parameter dialogue)
- Make the following settings that deviate from the factory settings:

General data, inputs	
Operating mode, inputs 4.1/4.2	WAREMA central control unit connection
Operating mode, inputs 5.1/5.2	Buttons, switching, flanks
Delay after a bus voltage return	5 s
Input 4.1/4.2	
Safety centrally active after	At least as large as the up run time +10 s in the central control unit, e.g. 20 seconds.
Factor for repeat sending	4

9.5.3 Parameter settings of the remote KNX MSE 6M230

- Select the factory settings
- Make the following settings that deviate from the factory settings:

Safety object A	
Cyclical monitoring time	5 minutes
Output 3, safety, output 4, safety	
Behaviour after alarm from safety object A	Moving up
Behaviour after end of alarm from safety object A	For example, "No reaction"

- Additional parameters such as the product run time, slat tilt time, etc., are set according to the sun shading product being controlled and its use.

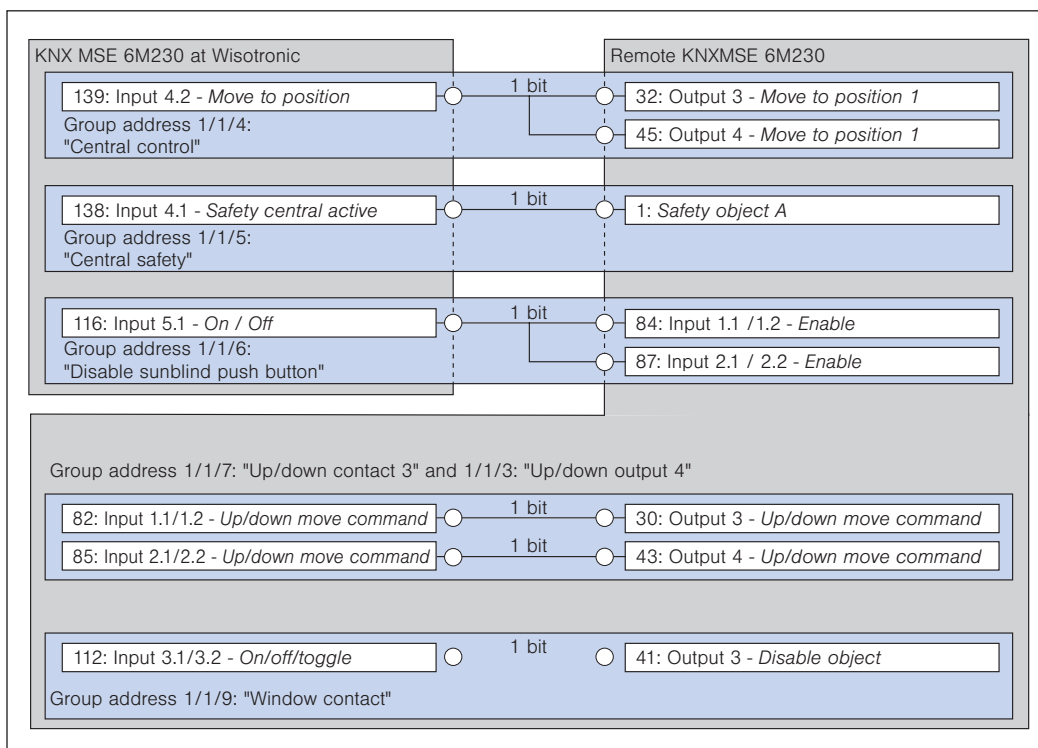


Fig. 21 Links in the "WAREMA central control unit connection" planning example

Functional principle: If the "Up" limit value is exceeded by at least one second, raising of the product is started at outputs 3 and 4 of the remote KNX MSE 6M230 via a Move to position 0-telegram. After 20 seconds, an alarm of the safety object A is initiated in the remote KNX MSE 6M230 by a Safety centrally active 1-telegram.

If the Wisotronic initiates an upward movement, the push buttons 1.1 to 2.2 at the remote KNX MSE 6M230 are disabled for operation by the Disable sunblind push button telegram.

If the "Up" limit value is not reached for at least one minute, the Move to position 1-telegram initiates different move commands for channels 3 and 4 of the KNX MSE 6M230 (see the following figure).

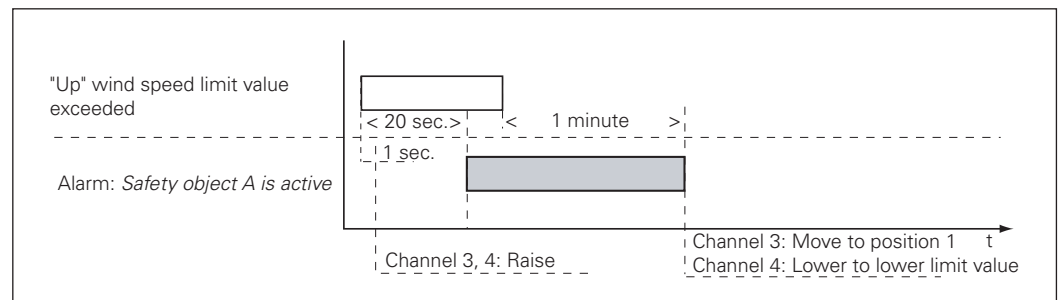


Fig. 22 Functional principle

9.6 Wind speed monitoring

This planning example is an extension of the planning example in *Chapter 9.5*.

Additionally, the communication between the KNX MSE 6M230 on the Wisotronic and the remote KNX MSE 6M230 is to be monitored.

With the following settings, the group telegrams 1/1/5 are sent every 50 seconds. In the remote KNX MSE 6M230, at least one group telegram 1/1/15 must be received during a period of 2 minutes. If this is not the case, an alarm of the safety object A is issued, i.e. outputs 3 and 4 move to the upper limit position.

9.6.1 Parameter settings of KNX MSE 6M230 on Wisotronic

General data, inputs	
Repeat time for repeat sending	10 s
Input 4.1/4.2	
Factor for repeat sending	5

9.6.2 Parameter settings of the remote KNX MSE 6M230

Safety object A	
Cyclical monitoring time	2 minutes



CAUTION

This planning example does not provide monitoring for wire breakage between Wisotronic and KNX MSE 6M230.

KNX MSE 6M230

9.7 Wind speed, window contact

This planning example is an extension of the planning example in *Chapter 9.5 on page 47*.

After it is opened, a window may extend into the path of the external venetian blind at output 3. This external venetian blind should be protected against damage that can occur when movements take place with the window open.

The window contact at input 3.1 must be configured as a break contact. This makes it possible to provide wire breakage monitoring.

9.7.1 Parameter settings of the remote KNX MSE 6M230

Parameter	Setting
General data, inputs	
Input 3.1/3.2	On/off/toggle
Input 3.1/3.2	
Telegram after rising flank	Off
Telegram after falling flank	On
Factor for repeat sending	1
Telegram after the bus or mains voltage returns	Send current input state
Output 3 (page 2)	
Disable object monitoring time	1 minute

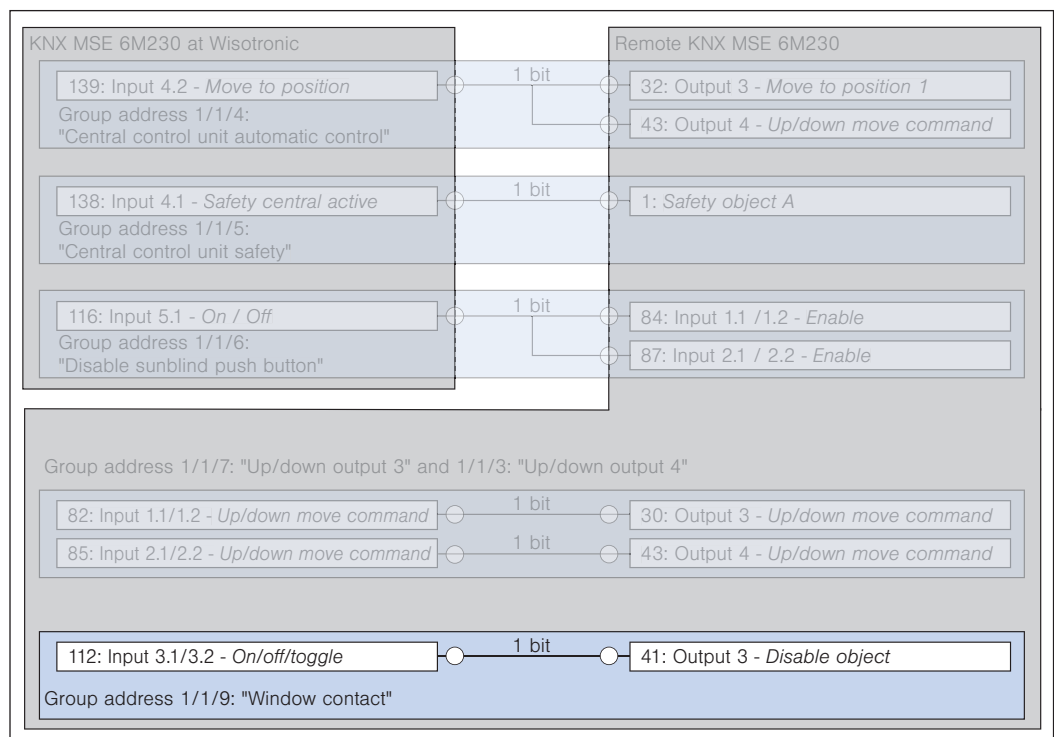


Fig. 23 Additional link for the window contact connection

If a wire breakage occurs between the window contact and input 3.1, 10 seconds later at the latest a 0-telegram is sent to the disable object (rem.: repeat time for repeat sending = 10 s, factor for repeat sending = 1).

9.8 Use of terminal X11

Terminal X11 is used for potential equalisation when contacts that are already supplied with a 24 V DC potential on-site are connected to the binary inputs of KNX MSE 6M230. For this, X11 must be connected with the 0 V potential of the on-site 24 VDC power supply.

This may be necessary, for example, if a sun shading control system has already been implemented conventionally and additional parts of these control systems are to be executed as a KNX system.

Unlike the previous planning examples, contact P of the central control unit is not connected with P of the KNX MSE 6M230 here.

KNX MSE 6M230

NOTES

