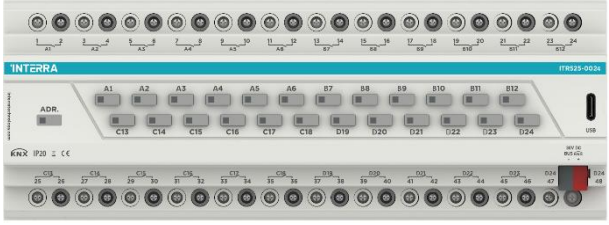
INTERRA

Developer of Uniqueness

KNX Combo+ Switch Actuator

Product Manual



PM2509050234AEN

Contents

Information in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets your specifications.
INTERRA MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR NONSTATUTORY, RELA-TED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE.

Interra disclaims all liability arising from this information and its use. Use of Interra devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Interra from any damages, claims, suits, or expenses resulting from such use. No licenses are implicitly or otherwise conveyed under any Interra intellectual rights.

Trademarks

The Interra name, logo and the Interra ITR525-XXXX KNX Combo+ device are registered trademarks of Interra Technology in Turkey and other countries.

All other trademarks mentioned herein are property of Interra Technology.

Printed on recycled paper.

TS EN ISO 9001:2008

TO OUR CUSTOMERS

One of our most important aims is to provide you with the best documentation possible to use successfully your Interra products. Focusing on this, we will keep on improving our documentation to better suit your needs. Our publications will be updated as new volumes as soon as changes are introduced.

If you have any questions or comments regarding this publication, do not hesitate to contact us:

E-Mail: info@interratechnology.com

Tel: +90 (216) 326 26 40 Fax: +90 (216) 324 25 03

Most Current Product Manual

To obtain the most up-to-date version of this product manual, please visit our Web site at:

http://www.interratechnology.com

You can determine the version of an Interra document by examining its literature number found on the bottom right corner of any page.

The first two letters of the literature are the type of document. The following numbers are the document's creation date and the last letter is the version (e.g., PM181017001A is version A of a product manual created on 17/10/18).

1. Content of The Document

This document contains Interra's ITR525–XXXX coded KNX Combo+ Switch Actuator device's electronic and all essential feature information for programming this product. In each subtitle is explained the characteristics of the device are. Modifications of the product and special change requests are only allowed in coordination with product management.

2. Product Description

The Combo+ Switch Actuator is a versatile device that allows a variety of configurations. The combo device is intended to cover every automation requirement in a smart building for safe and efficient operations. The communication of the devices via the KNX bus enables information exchanges with KNX sensors and integration with a building management system. The combo has been developed to provide the whole control in the residence and hotel sectors. The usage of these devices guarantees the efficient management and provision of rooms. The manual control of the outputs is possible through the push buttons on the device. It allows the control of the outputs when bus communication failures between devices occur. The combo+ actuator is supplied with power from the KNX and accordingly does not need any external power supply. The complete configuration of the device is performed via ETS. The type and number of the available objects depend on the settings with ETS.

2.1. Technical Information

The following table shows the technical information of the Interra KNX Combo+ Switch Actuator.

Product Code	ITR525–XXXX
Power Supply	KNX Power Supply
Current Consumption	Max. 20 mA
Number of Outputs	4, 8, 12, 16, 20 or 24
Output Current	16 A @250 V AC, 120 or 165 A inrush current
Mode of Commissioning	S-Mode
Type of Protection	IP 20
Temperature Range	Operation (– 5°C …45 °C) Storage (– 20°C …60 °C)
Maximum Air Humidity	< 90 RH
Mounting	DIN Rail
Colour	White
Dimensions	
4/8 outs	105 x 90 x 64 mm (W x H x D)-> 6 DIN units
12/16	171 x 90 x 64 mm (W x H x D)->10 DIN units
20/24	246 x 90 x 64 mm (W x H x D)->15 DIN units
Certification	KNX Certified
Configuration	Configuration with ETS

2.2. Models And Variations

ITR525–X_1 X_2 X_3 X_3

- X_1 → Channel Count
- X_2 → Reserved
- X_3 → Reserved

2.3. Dimensions

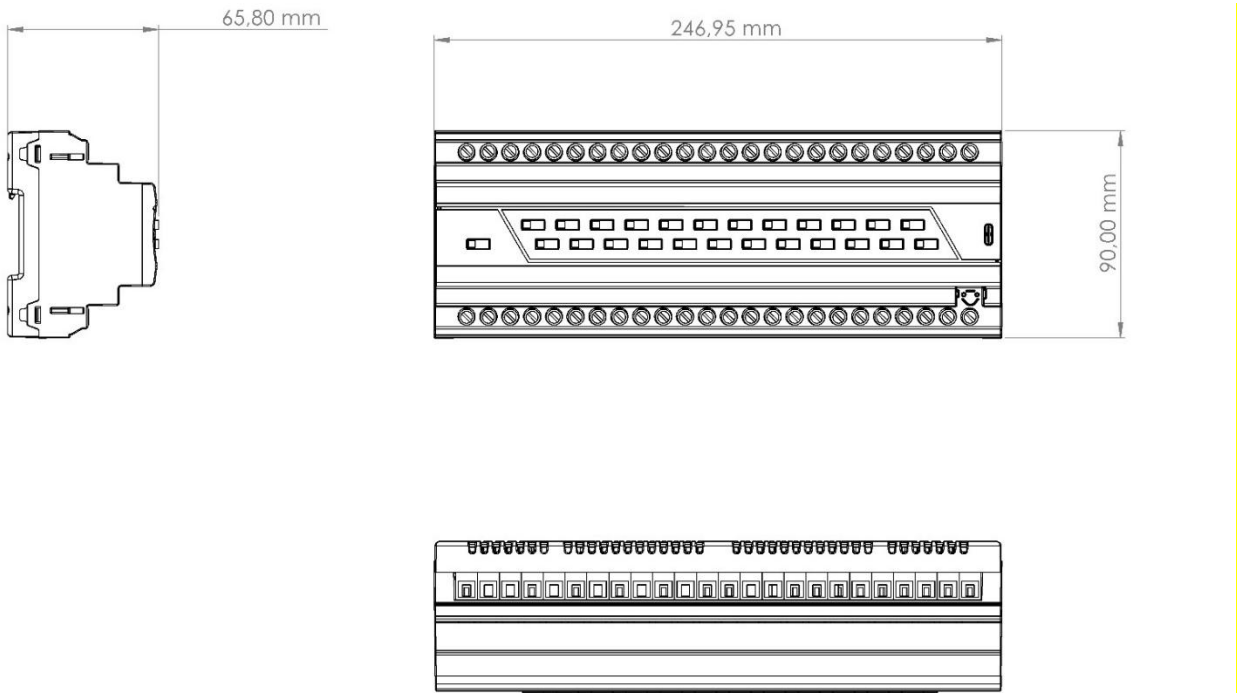


Fig. 1: Dimensions of the Combo+ Actuator – 20/24 Channels

• All values given in the device dimensions are millimetres.

2.4. Functional Descriptions

The combo is a versatile device that allows a variety of configurations. The application program can be loaded with ETS5 or higher and supports the applications that will be described in this manual:

- Lighting control can be made with every output of the combo switch actuator.
- Heating control can be made with every output of the combo switch actuator.
- Every output of the combo module can be configured as shutter/blind provided that 2 consecutive outputs are available.
- Shutter/blind 24 V configuration can be with 4 outputs of the combo module. However, it is only available in the first four outputs of the (*) blocks.
- Fan Coil 2 pipes configuration can be with 5 outputs of the combo module. However, it is only available in the first four outputs of the (*) blocks.
- Fan Coil 4 pipes configuration can be with 6 outputs of the combo module. However, it is only available in the first five outputs of the (*) blocks.
- The functionalities for each output include timing functions, logic gates, scenes, a disabling function, a forced working hours counter, periodical monitoring, and different configurations for feedback telegrams.
- Last situation memory against power failure.
- The Combo+ Switch Actuator contains a maximum of 600 group addresses and 600 assignments.

(*): Each block consists of every 6 outputs of the combo module that starts from X1 output.
Possible blocks: A1-A6, B7-B12, C13-C18, D19-D24.

The functionalities for each output include among other things timing functions, logic gates, scenes, disabling function, forced, working hours counter, periodical monitoring and different configurations for feedback telegrams.
The combo device is intended to cover every automation requirement in a smart building for safe and efficient operations. The communication of the devices via the KNX bus enables information exchanges with KNX sensors and the integration with a building management system.
The combo has been developed for providing the whole controls in the residential and hotel sectors. The use of this device guarantees the efficient management and provision of rooms.
The manual control of the outputs is possible through the push buttons on the device. It allows the control of the outputs when bus communication failures between devices occur.
The combo actuator is supplied with power from the KNX and accordingly does not need any external power supply.

Combo Output Module Functionality Differences

Device	Number of Shutter/Blind	Number of 24 V Shutter/Blind	Number of Fancoil Ch
ITR525-0004	2	1	0
ITR525-0008	4	1	1
ITR525-0012	6	2	2
ITR525-0016	8	3	2
ITR525-0020	10	3	3
ITR525-0024	12	4	4

Type	Tungsten	Tungsten (reference)	Electronic ballast	LED (reference)	Fourescent (reference)	Capacitive load (reference)
Load	3500 W 277 V AC	4000W+140µF 277 V AC	16A 277VAC	600W 220VAC	1000W + 120µF 230 V AC	1000 W + 600 µF 250 V AC
Inrush (reference value)	220 A	370 A	440 A	300 A	159 A	289 A

Coil Power 50 ms
*The relays used may vary. Therefore, the values may differ.

2.5. Connection to The KNX Bus and Programming

The connection of the KNX bus line is made with the terminal block (black/red socket group) included in delivery and inserted into the slot of housing.

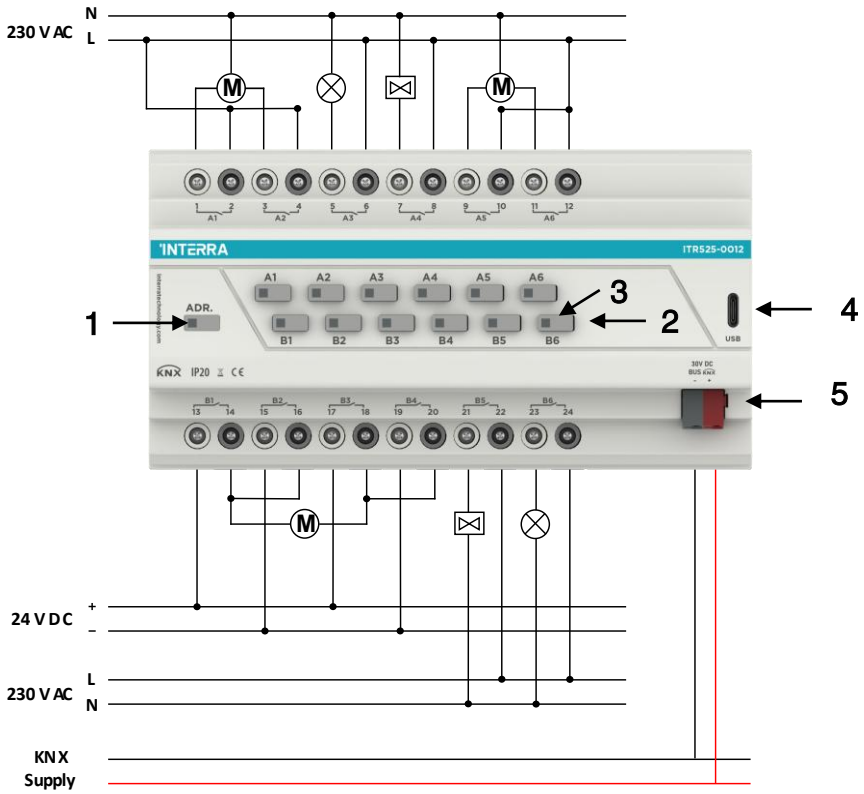


Fig. 2: Connection to KNX and Programming Button

1	Physical Address Button
2	Manual Control Button
3	Status LED
4	USB Type-C Port
5	KNX Connector

Table 3: Connection Diagram

1 Physical Address Button

This button is used to give a physical address to devices and to verify the bus presence. The red led switched on means the presence of KNX bus and the device status as physical addressing.

2 Manual Control Button

Via the push buttons present on the device, the loads connected to outputs can be controlled. This manual control has priority over the commands from the KNX bus.

3 Status LED

The button LED indicates the status of the outputs. When the green LED is on, the output relays are closed.

4 USB Type-C Port

The port can be used to update device's software.

5 KNX Connector

The connection of the KNX bus line is made with the terminal block (black/red) included in delivery and inserted into the slot of housing

3. ETS Parameters

3.1. General Page

When the KNX Combo+ Switch Actuator is attached to the project from the ETS program, a configuration setting must be made primarily before loading, depending on the model to be programmed. When entering the “GENERAL” in the parameter page, the configuration screen will appear shown above. As previously mentioned, all models can be configured via an ETS file thus the programmers can work flexibly.

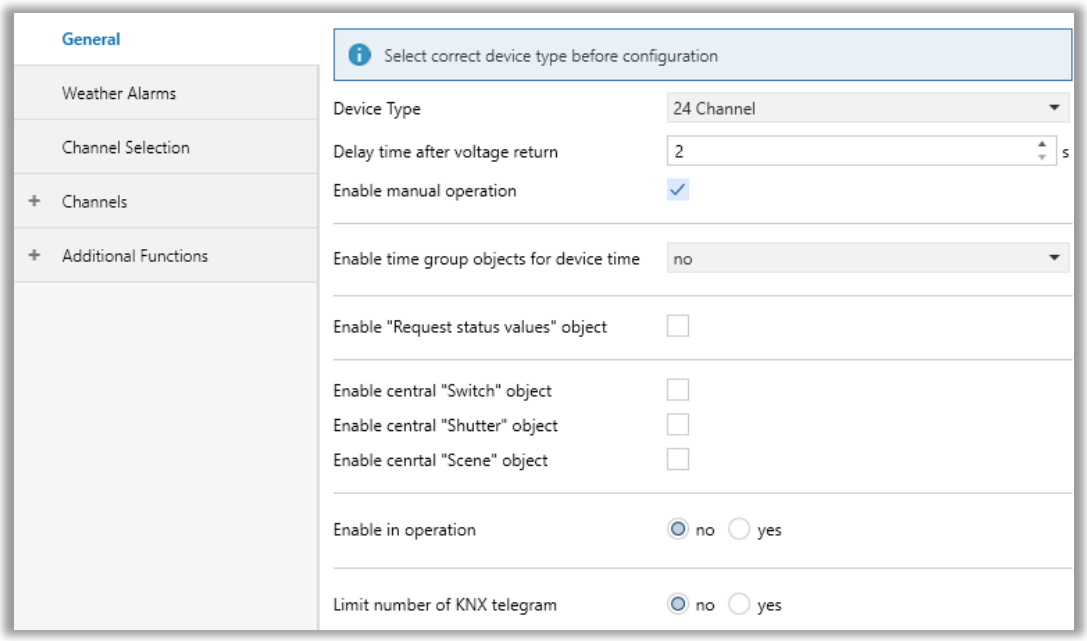


Fig. 3: General Parameter Configuration Page

3.1.A. Enable in Operation

This function has an important role in detecting whether the device is working or not. By enabling the “Enable in operation” parameter, it is possible to know if the device is working properly. The value set in “in operation send” parameter is sent with a preset time via the “In Operation” object. If this telegram is received periodically, it shows that the device is working properly. Since the period time is in seconds, it is better to keep the period time higher in order not to increase the bus line traffic.

3.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Device Type	This parameter is used to determine the device type of the Combo+ Switch Actuator. The device type can be identified by the last two digits of the product code on the device or by the number of channels. **Note:** The correct device type must be selected when uploading the program to the device via ETS.	4 Channel 8 Channel 12 Channel 16 Channel 20 Channel **24 Channel**
Delay time after voltage recovery (sec)	This parameter is used to determine the delay time after voltage recovery in seconds. When in a delayed state, the Combo+ does not send any KNX telegrams. Incoming telegrams are received and updated in the background. The updated values are only executed when the wait state ends and then sent according to the parameterisation.	**2**…60
Enable manual operation	This parameter, determines if the use of the device buttons manually is allowed.	**No** Yes
Enable time group objects for device time	This parameter is used to specify the data point type for receiving the date and time. The corresponding Group Objects are activated accordingly. **Date (DPT 11.001)/ time (DPT 10.001):** The date and time are transmitted as two separate Group Objects on the bus. **Date/time(DPT 19.001):** The date and time are sent through a single Group Object on the bus.	**No** Date (DPT 11.001)/ time (DPT 10.001) Date/time(DPT 19.001)
-> Request Date/Time via group object[1]	This parameter specifies whether a date and time request is sent through the Group Object Request Date/Time.	**Uncheck** Check
Enable "Request status values" object	This parameter is used to enable the Request status values object.	**Uncheck** Check
Enable central "Switch" object	This parameter is used to enable the central "Switch" object. This parameter allows the centralized and collective control of the channels where the "Include in central" option is enabled.	**Uncheck** Check

Enable central "Shutter" object	This parameter is used to enable the central "Shutter" object. This parameter allows the centralized and collective control of the channels where the "Include in central" option is enabled.	**Uncheck** Check
Enable central "Scene" object	This parameter is used to enable the central "Scene" object. This parameter allows the centralized and collective control of the channels where the "Include in central" option is enabled.	**Uncheck** Check
Enable in operation	This parameter is used to determine the existence of the Combo+ on the KNX bus line. The cyclic telegram can be monitored by an external KNX device. If a telegram is not received, the device may be defective or the KNX cable to the transmitting device may be interrupted. **No:** The group object is not enabled. **Yes:** The group object is enabled.	**No** Yes
-> In operation send[2]	This parameter is used to determine the send value of the "General - In operation" group object on the KNX bus line.	Value 0 **Value 1**
-> In operation send interval (min)[2]	This parameter is used to set the cyclically sending time interval value of the "General - In operation" group object.	1…**5**…255
Limit number of KNX telegram	This parameter is used to limit the device-generated bus load. The limit applies to all telegrams sent by the device.	**No** Yes
-> Maximum number of sent telegrams[3]	This parameter is used to set the maximum number of sent telegrams by the device in the given time period.	1…**20**…255
-> In period[3]	This parameter is used to determine the total period time of maximum number of sent telegrams. For example; "Maximum number of sent telegrams" is set 5 and "Telegram period" is set to 5s. This means that maximum 5 telegrams can be sent along 5s.	**1**…60 s

[1] This parameter is visible when the function "Enable time group objects for device time" is set to "Date (DPT 11.001)/ time (DPT 10.001) or ""Date/time(DPT 19.001)".

[2] This parameter is visible when the function "Enable in operation" is set to "Yes".

[3] This parameter is visible when the function "Limit number of KNX telegram" is set to "Yes"

3.2. Weather Alarms

On the Weather Alarms configuration page, alarm objects can be enabled, alarm priority levels can be defined, and it is possible to activate the option for reading safety group objects after any bus voltage recovery or download. Each parameter on the page has been explained in the relevant sections.

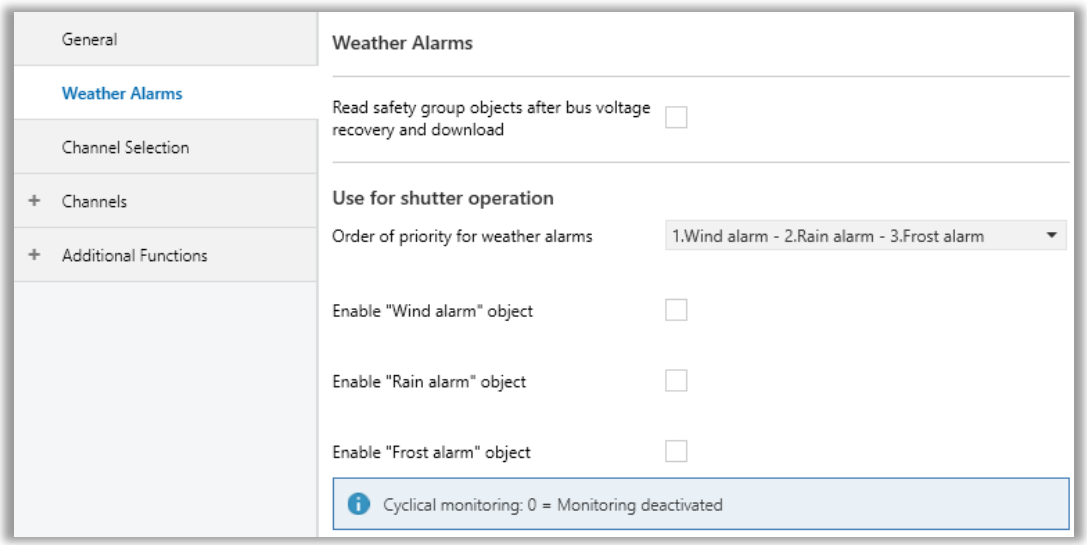


Fig. 4: Weather Alarms Configuration Page

3.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Read safety group objects after bus voltage recovery and download	This parameter determines whether the safety Group Objects are read after a bus voltage recovery or download. **Note:** To update the Group Objects after bus voltage recovery and download, the read flags for the corresponding Group Objects on the sending device must be configured. **Note:** This parameter is valid for the active objects of Wind alarm 1, Wind alarm 2, Wind alarm 3, Rain alarm, and Frost alarm.	**Uncheck** Check
Order of priority for weather alarms	This parameter is used to set the priority order of weather alarms. When multiple weather alarms are active simultaneously, only the alarm with the highest priority will be executed.	**1.Wind alarm - 2.Rain alarm - 3.Frost alarm** 1.Wind alarm - 2.Frost alarm - 3. Rain alarm 1. Rain alarm - 2.Wind alarm - 3. Frost alarm 1. Rain alarm - 2. Frost alarm - 3. Wind alarm 1. Frost alarm - 2. Wind alarm - 3. Rain alarm 1. Frost alarm - 2. Rain alarm - 3. Wind alarm
Enable "Wind alarm" object	This parameter is used to enable the "Wind alarm" object.	**Unchecked** Checked
-> Cyclical monitoring[1]	This parameter is used to enable cyclical monitoring and define the monitoring interval for the safety Group Objects. If the monitoring cycle is set to 00:00:00, cyclical monitoring is deactivated.	00:00:00…12:00:00
Enable "Rain alarm" object	This parameter is used to enable the "Rain alarm" object.	**Unchecked** Checked
-> Cyclical monitoring[1]	This parameter is used to enable cyclical monitoring and define the monitoring interval for the safety Group Objects. If the monitoring cycle is set to 00:00:00, cyclical monitoring is deactivated.	00:00:00…12:00:00
Enable "Frost alarm" object	This parameter is used to enable the "Frost alarm" object.	**Unchecked** Checked
-> Cyclical monitoring[1]	This parameter is used to enable cyclical monitoring and define the monitoring interval for the safety Group Objects. If the monitoring cycle is set to 00:00:00, cyclical monitoring is deactivated.	00:00:00…12:00:00

[1] This parameter is visible when the function "Enable " Wind/Rain/Frost Alarm" object is set to "Check".

3.3. Channel Selection

On the "Channel Selection" page, each channel can be individually configured as one of the following functions: Switch (Switch, Heating, Staircase, Impulse), Shutter & Blind, 24 VDC Shutter & Blind, or Fancoil. Examples of channel configurations can be found in Appendix E. Detailed explanations for each function are provided in the following sections.

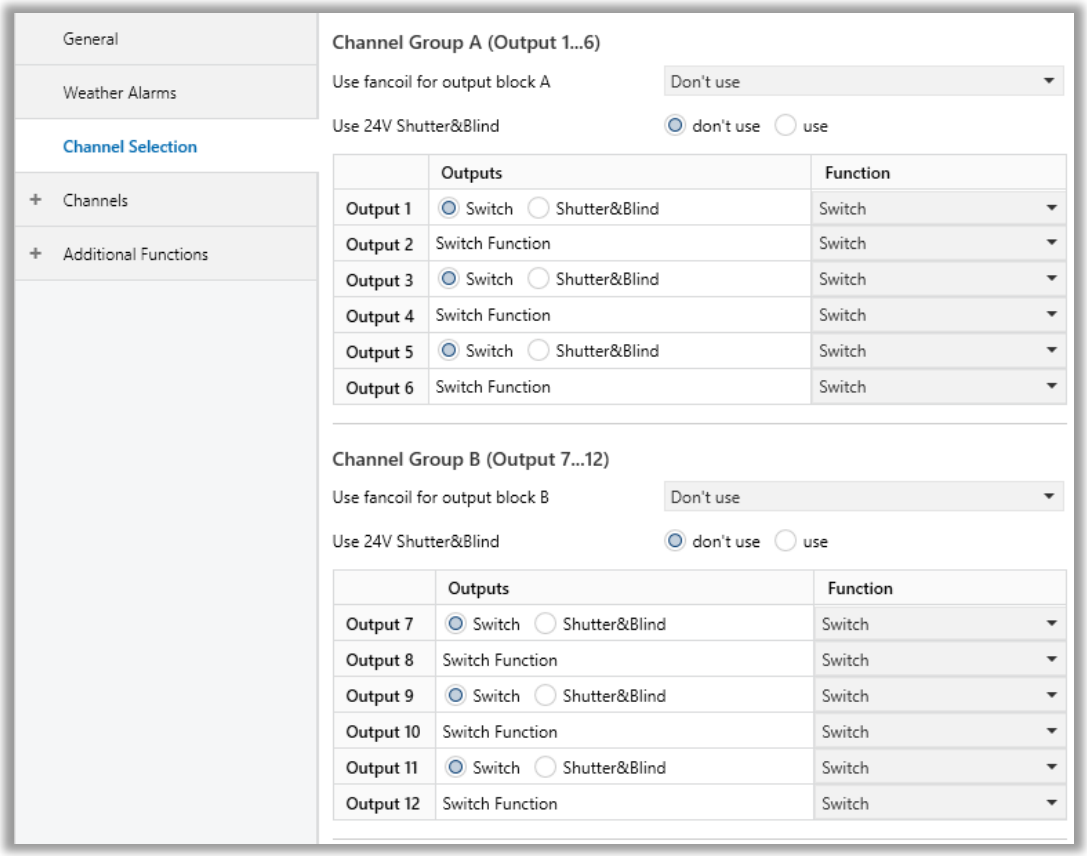


Fig. 5: Channel Selection Configuration Page

3.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Use fancoil for output block A/B/C/D	A Fan Coil unit can be configured as either 2-pipe or 4-pipe, and it can also be set up with 3-speed or 4-speed fan levels. Note: The Fan Coil function is not available in 4-channel Combo+ products.	**Don't use** 2 Pipe 3 Speed 2 Pipe 4 Speed 4 Pipe 3 Speed 4 Pipe 4 Speed
Use 24V Shutter&Blind	This parameter is used to enable the use of a 24 V DC Shutter/Blind.	**Don't Use** Use
Output X - Outputs	This parameter is used to select the channel output type. In the relevant channel group, when selecting the Fan Coil or 24 V DC Shutter/Blind functions, the outputs used by these functions must be specified. The remaining outputs can be configured as Switch or Shutter/Blind.	**Switch** Shutter
Output X - Function	This parameter is used to define the function of the output when Output X – Switch is selected.	**Switch** Heating Staircase Impulse

3.4. Channels - Switch

3.4.1. General

The "General" page allows for the basic configuration of the Switch channel. On this page, the user can define the channel by entering the channel name, include the channel in central control, configure the channel contact mode, and adjust other related settings. Detailed explanations of these parameters are provided in the following sections.

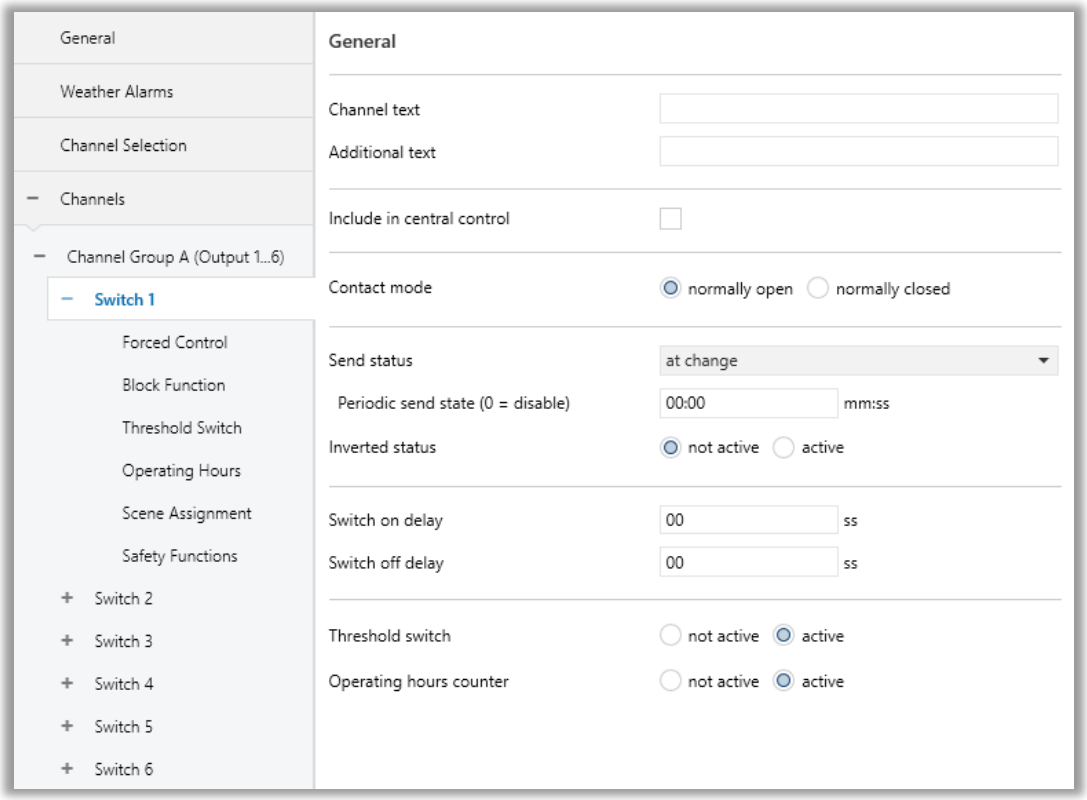


Fig. 6: Switch General Configuration Page

3.4.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Channel Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the related group object name.	**42 Bytes allowed**
Additional Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the page title.	**42 Bytes allowed**
Include in central control	The central function can be enabled or disabled for each channel individually. To activate this function, select the “checked” option. When the central communication object is triggered, all channels with this function enabled will operate according to their configured parameters.	**Uncheck** Check
Contact mode	This parameter determines the type of contact output. **Normally Open:** The relay works as a normally open contact. **Normally Close:** The relay works as normally close contact.	**Normally Open** Normally Closed
Send status	This parameter is used to define when the values of the Group Objects are sent on the bus.	**Don’t send** At change At change and lock Always any input
Periodic send state (0 = disable)	This parameter sets the sending period of the status value in seconds.	**00:00**…59:59
Inverted status	This parameter is used to invert the send status.	**Not active** Active
Control with central function	The central function can be enabled or disabled for each channel. To activate this function, select the “active” option. When the central communication object is triggered, all channels with the activated central function will turn on according to their current settings. Any configured switch-on delays or staircase functions will remain intact.	**Not active** Active

	This central function simplifies programming and helps streamline your project, making it more organized and efficient.	
Switch on delay	This parameter is used to define the duration of the Switch On delay.	**00**…59
Switch off delay	This parameter is used to define the duration of the Switch Off delay.	**00**…59
Threshold Switch	This parameter is used to activate the Threshold Switch.	**Not active** Active
Operating hours counter	This parameter is used to activate or not activate the operating hours counter function.	**Not active** Active

3.4.2. Forced Control

The Channel can be forced to a position at a given time. During the forced, any value received takes effect. It is possible to define the value during the forced and the value that the Channel takes after the forced. When the parameter “After Forced Position” is set to “No Reaction/Last State”, it must take into account that the Channel after the forced will take the last value received through the bus even though this value has been received during the forced time. Via the “Forced position” object the forced can be enabled or disabled.

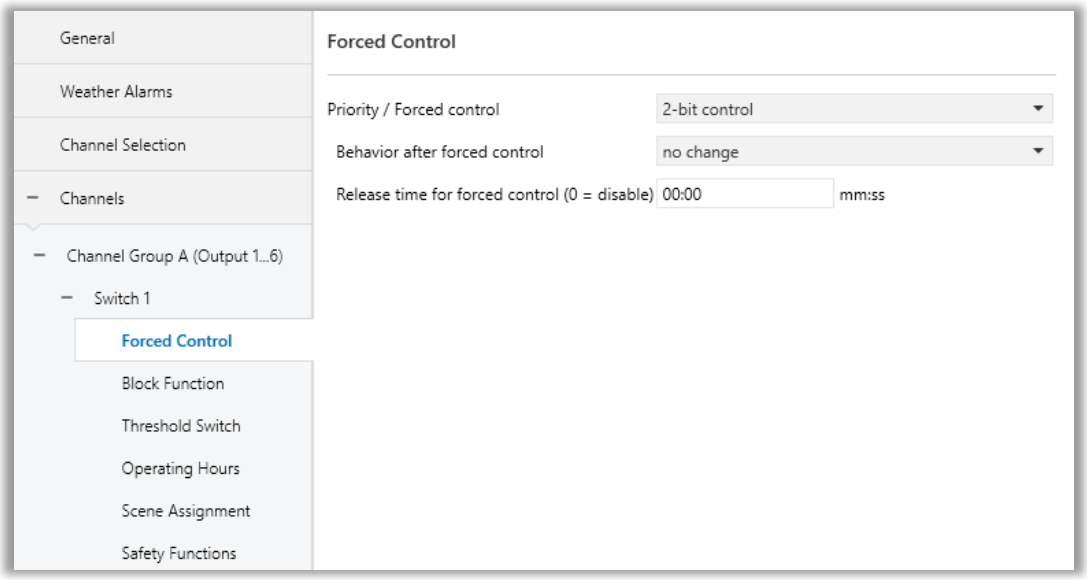


Fig. 7: Switch – Forced Control Configuration Page

3.4.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Priority/Forced control	This parameter is used to determine the forced operation object type.	**Not active** 2 Bit control 1 Bit priority On 1 Bit priority Off
-> Behaviour after forced control[1]	This parameter is used to define the operation state after forced control. **Off:** The channel is switched off. **On:** The channel is switched on. **No change:** The channel stays in the current state. **Previous status:** The channel restores the state before locking.	**Off** On No change Previous status
-> Release time for forced control (0= disable)[1]	This parameter is used to activate a release time, transitioning the system from priority/forced control back to the normal state.	**00:00**…59:59

[1] This parameter is visible when the function “Priority/Forced control” object is set to “2 Bit control” or “1 Bit priority On” or “1 Bit priority Off”

3.4.3. Block Function

This function allows the switch to be locked into a position. During a locking, the outputs are blocked, and they can no longer be controlled via any telegram. It is possible to define the value during the locking and the value that the shutter takes after the locking. When the parameter “Behavior at unlocking” is set to “No Change”, the switch will not change at the end of locking and therefore will remain in its last status. The locking function remains active even after a bus voltage failure. Manual control via the push buttons of the device is possible during the locking.

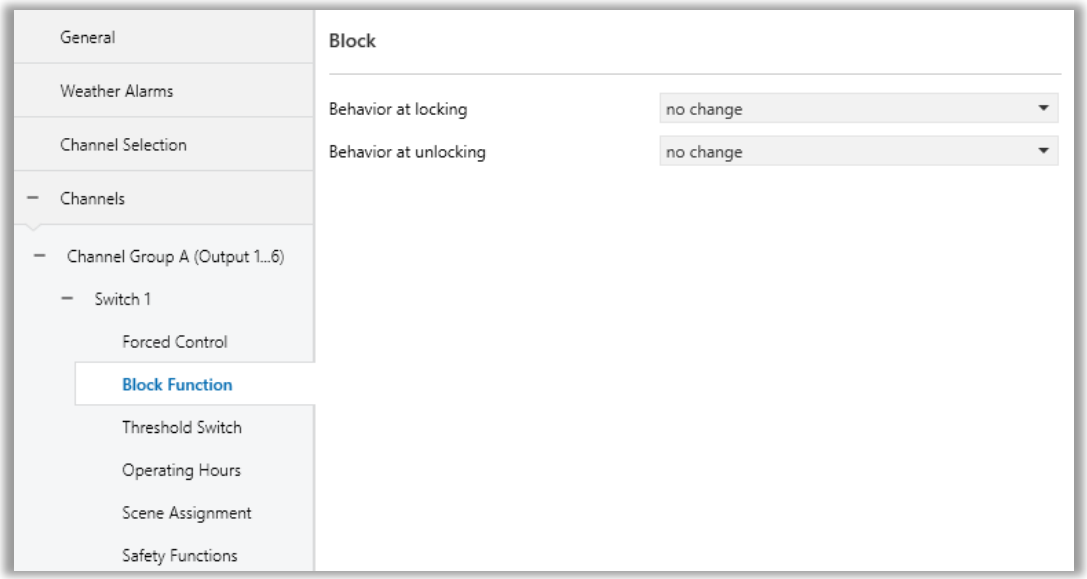


Fig. 8: Switch – Block Function Configuration Page

3.4.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior at locking	This parameter is used to define how the respective channel will behave in the locked state. **Off:** The channel is switched off **On:** The channel is switched on **No change:** The channel stays in the current state.	Off On **No change**
Behavior at unlocking	This parameter is used to define how the respective channel will behave in the unlocked state. **Off:** The channel is switched off **On:** The channel is switched on **No change:** The channel stays in the current state. **Previous status:** The channel restores the state before locking.	Off On **No change** Previous status

3.4.4. Threshold Switch

This page is the section where the configuration settings of the Threshold Switch parameters are made. The threshold value type can be selected from this page. In addition, the Threshold and Hysteresis values are also defined in this section. Based on the upper and lower limits of the defined values, the switching states of the relevant channels can be configured through this page.

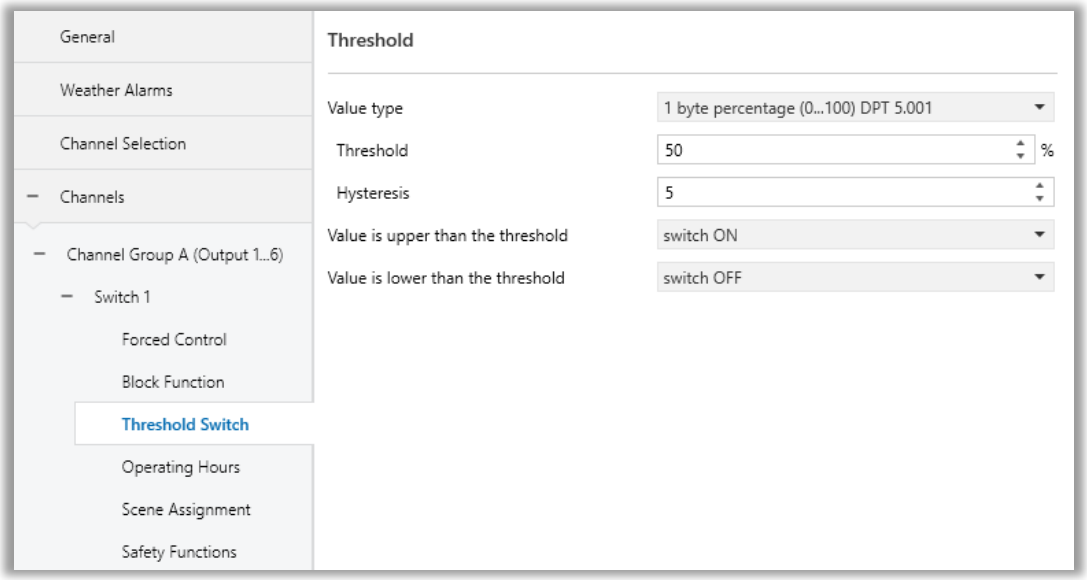


Fig. 9: Switch – Threshold Switch Configuration Page

3.4.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Value Type	This parameter is used to define the type of the value.	**1 byte percentage (0…100) DPT 5,001** 1 byte unsigned value (0...255) DPT 5.005 2 byte unsigned value (0...65535) DPT 7001 2 byte float Temp. (-273...670760) DPT 9.001 2 byte unsigned Lux (0…670760) DPT 9.004
Threshold	This parameter is used to define the threshold value based on the selected value type limits.	Depend on Selected Parameter
Hysteresis	This parameter is used to determine the hysteresis value. The hysteresis is a percentage value (+/-) that is related to the threshold value. Hysteresis is a tolerance for maintaining the setpoint. The pre-setpoint is sufficient for most applications. Switching threshold = threshold ± hysteresis The hysteresis prevents excessive switching when the current value is close to the threshold switch.	Depend on Selected Parameter
Value is upper than the threshold	This parameter is used to define the switch status of the channel when the Threshold value received from the object is equal to or greater than the upper limit of the switching threshold. **Switch Off:** The channel is switched off **Switch On:** The channel is switched on **Not active:** The channel stays in the current state.	Switch OFF Switch ON Not active
Value is lower than the threshold	This parameter is used to define the switch status of the channel when the Threshold value received from the object is equal to or lower than the switching threshold's lower limit. **Switch Off:** The channel is switched off **Switch On:** The channel is switched on **Not active:** The channel stays in the current state.	Switch OFF Switch ON Not active

3.4.5. Operation Hours

On this parameter page, the operating hours counter functionality is described. The operating hours counter counts the ON-time of channel X. For the operating hours counter, an output must be actively switched on. The operating hours counter sums up the determined ON time for a channel. The accumulated operating hours are tracked in a 2-byte counter. The count value can also be transmitted cyclically to the KNX bus.

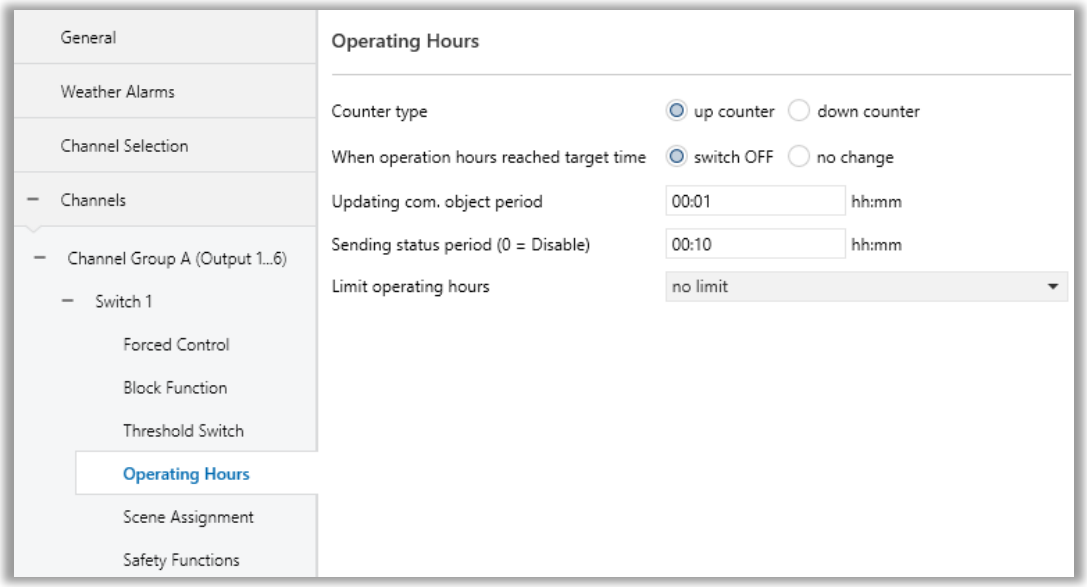


Fig. 10: Switch – Operating Hours Configuration Page

3.4.5.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Counter type	This parameter is used to determine the type of operating hours counter.	**Up Counter** Down Counter
When operation hours reached target time	This parameter is used to define the action of the switch when the operation hours counter reaches the limit value. **Switch Off:** The channel is switched off. **No Change:** The channel stays in the current state.	**Switch Off** No Change
Updating com. object period (hh:mm)	This parameter is used to configure the time intervals at which the communication object will be updated.	**00:01**…04:15
Sending period status (0=disable) (hh:mm)	This parameter is used to specify the cyclical sending time for the related switch X hours counter value that will be sent cyclically.	00:00…**00:10**…04:15
Limit operation hours	This parameter is used to determine the limit value present of the operating hours counter. **With object:** The limit value can be specified by the KNX communication object. **With parameter:** Limit value can be specified in the parameter. **No limit:** There will be no limit for the operating hours counter.	With Object With Parameter **No Limit**
-> Limit/Start Value (hh:mm)[1]	This parameter is used to determine the operating hours counter-limit value. It is visible if the limit value present parameter is selected as 'With parameter'.	00:00…**23:59**

[1] This parameter is visible when the function "Limit operation hours" object is set to "With Parameter".

3.4.6. Scene Assignment

Up to 16 scenes can be configured for each shutter/blind output. The configuration of each scene permits:

- Assign a number of scenes (1-16).
- Set a value for the output.
- Define an ON/OFF Delay for the scene.

Via the object “scene”, telegrams which contents the call or store functions of a scene are sent.
Up to 16 different scenes are managed via a single group address and the scene number telegram must match with the scene number previously configured in the combo parameters. The scene number (1-16), is used to recall the scene via the corresponding object.

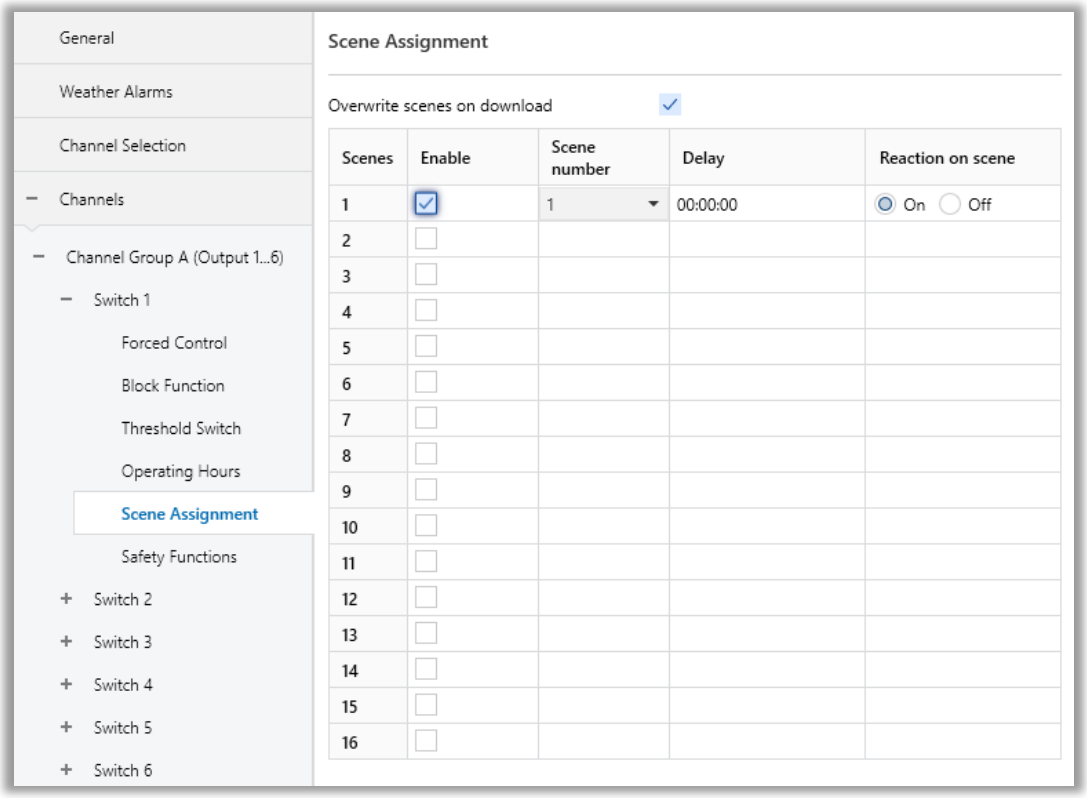


Fig. 12: Switch – Scene Assignment Configuration Page

3.4.6.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable	This parameter allows the use of 16 different scenes.	**Unchecked** Checked
-> Scene Number[1]	This parameter is used to assign the number of the scene.	**1**…16
-> Delay[1]	This parameter sets a delay between the call of the scene and the real action of the output. Value “0” means the immediate emission of the scene.	**00:00:00**…12:00:00
-> Reaction on scene[1]	This parameter is used to define the status of the Switch X channel when the scene is activated. **On:** The channel is switched on. **Off:** The channel is switched off.	**On** Off

[1] This parameter is visible when the function “Enable” object is set to “Checked”.

3.4.7. Safety Functions

Parameters for the reaction of the channels to Combo+ voltage or supply voltage failure and return are made in this parameter window.

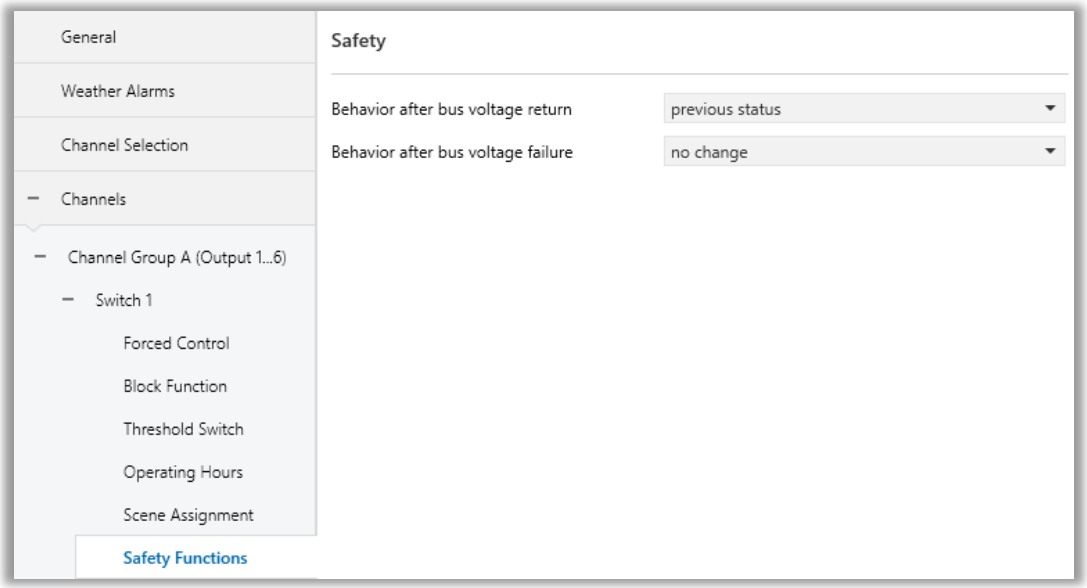


Fig. 13: Switch – Safety Functions Configuration Page

3.4.7.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior after bus voltage return	This parameter determines the value of the output during a bus voltage failure. **Previous Status:** The channel is restored to its before-failure status. **No Change:** The output remains the last value received. **Off:** The output is forced to 0. **On:** The output is forced to 1.	Off On No change **Previous Status**
Behavior after bus voltage failure	This parameter determines the value of the output during a bus voltage failure. **No Change:** The output remains the last value received. **Off:** The output is forced to 0. **On:** The output is forced to 1.	**Off** On No change

3.5. Channels – Switch: Heating

3.5.1. General

The outputs of the combo actuator can be configured to control a heating system. Generally, this system basically consists of one valve which controls the flow of the warm water. The configuration options for heating will be described at the following.

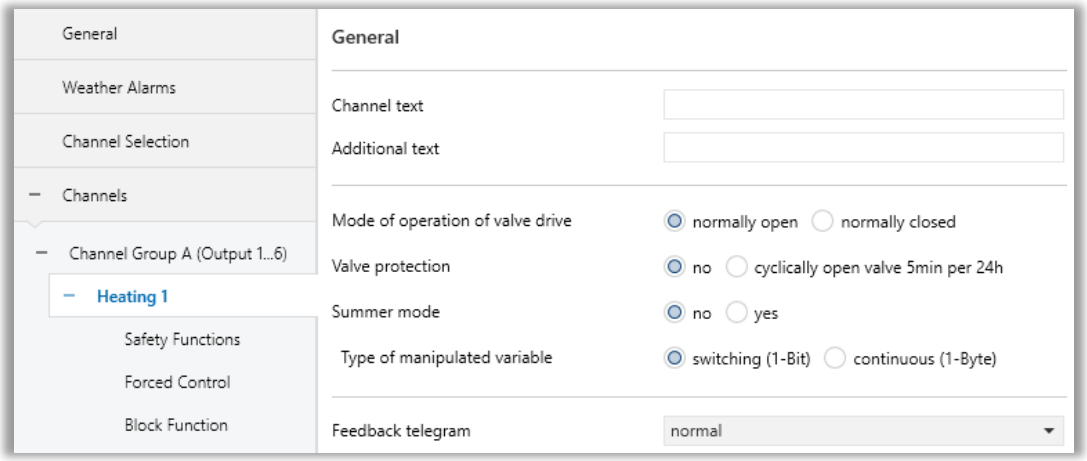


Fig. 14: Switch: Heating – General Configuration Page

Valve Protection

This function allows the valve to open automatically for 5 minutes every 24 hours. This is a protection measure which allows the recirculation of water when the valve is close.

Type Of Manipulated Variable

There are 2 possibilities to control the heating valve:

- Switching (1 Bit)

The valve control is performed via On/Off telegrams. When the value On is received via the “Manipulated Value” object, the valve is opened. Otherwise, the value Off closes the valve.

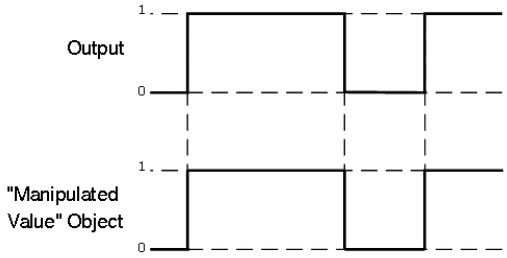


Fig. 15: Switch: Heating – Manipulated Value (1 Bit)

- Continuous (1 Byte)

The valve control is performed by percentages. When this option is enabled, it is necessary to configure 2 parameters that define the hysteresis value.

Valve delay: This parameter defines the delay time. When the valve value exceeds the minimum threshold, the system waits for the specified delay time before the initial activation of the valve. After this period, the relay is switched to the active state.
Valve PWM cycle time: This parameter defines the relay's switching cycle period. For example, with a 30-second period and an input value of 50%, the relay will be on for 15 seconds and off for 15 seconds.
Upper Limit (%): This value set the opening of the valve. It must be a value greater than 0.
Lower Limit (%): This parameter set the value for the output to go back to off. It must be a value smaller than the upper limit.

The hysteresis value is the result of the subtraction between Upper Limit and Lower Limit.
In the next example the Upper Limit=25% and the Lower Limit=15%. It means that the hysteresis is 10%.

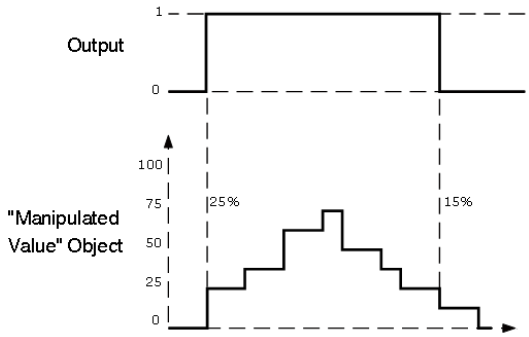


Fig. 16: Switch: Heating – Manipulated Value (1 Byte)

3.5.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Channel Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the related group object name.	**42 Bytes allowed**
Additional Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the page title.	**42 Bytes allowed**
Mode of operation of valve drive	This parameter determines the type of contact output. **Normally Open:** The relay works as a normally open contact. **Normally Close:** The relay works as normally close contact.	**Normally Open** Normally Closed
Valve protection	This parameter, allows the valve to open automatically for 5 min every 24h when the valve is closed.	**No** Cyclically open valve 5min per 24h
Summer mode	This parameter, provides an object which can be used as summer mode.	**No** Yes
-> Summer/Winter Pol (Normal:Sum=0, Win=1)[1]	This parameter, determines the set value for each mode. **Normal:** Summer=0 / Winter=1. **Inverted:** Summer=1 / Winter=0.	**Normal** Inverted
-> Operation mode at startup[1]	This parameter defines the operating mode at startup. **No Reaction/Last Mode:** The system remains the last operating mode received. **Summer Mode:** The operation mode is summer at startup. **Winter Mode:** The operation mode is winter at startup.	**No Reaction/Last Mode** Summer Mode Winter Mode
Type of manipulated variable	This parameter determines the type of data used for the control of the valve. Switching (1-Bit): The valve is controlled via On and Off telegrams. Continuous (1-Byte): The valve is controlled by percentages values.	**Switching (1-Bit)** Continuous (1-Byte)
-> Valve delay[2]	When the valve value exceeds the minimum threshold, a predefined delay time is applied before	5 s, 10 s, 30 s, 1 min, 5 min, 10 min

	the initial activation of the valve. After this period, the relay is switched to the active state. This parameter is used to define the delay time.	**Disable**
-> Valve PWM cycle time[2]	This parameter defines the relay's switching cycle period. For example, with a 30-second period and an input value of 50%, the relay will be on for 15 seconds and off for 15 seconds.	5 s, 10 s, 30 s, 1 min, 5 min, 10 min, 20 min, 30 min, 40 min, 50 min, 1 h, 2 h, 3 h, 4 h, 5 h, 6 h, 12 h, 24 h **Disable**
-> Lower limit (%)[2]	This parameter sets the value for the output to go back to off. It must be a value smaller than the upper limit.	0…**20**…100
-> Upper limit (%)[2]	This value sets the value of the valve opening. It must be a value greater than 0.	0…**80**…100
Feedback telegram	This parameter is used to set weather the status output is shown. **Disabled:** There is no information about the status output. **Normal:** The real status of the output is shown via the “status” communication object. **Inverted:** The inverted status of the output is shown via the “status” communication object.	Disabled **Normal** Inverted

[1] This parameter is visible when the function “Summer mode” object is set to “Yes”.
[2] This parameter is visible when the function “Type of manipulated variable” object is set to “continous (1-Byte)”.

3.5.2. Safety Function

Parameters for the reaction of the channels to Combo+ voltage or supply voltage failure and return are made in this parameter window.

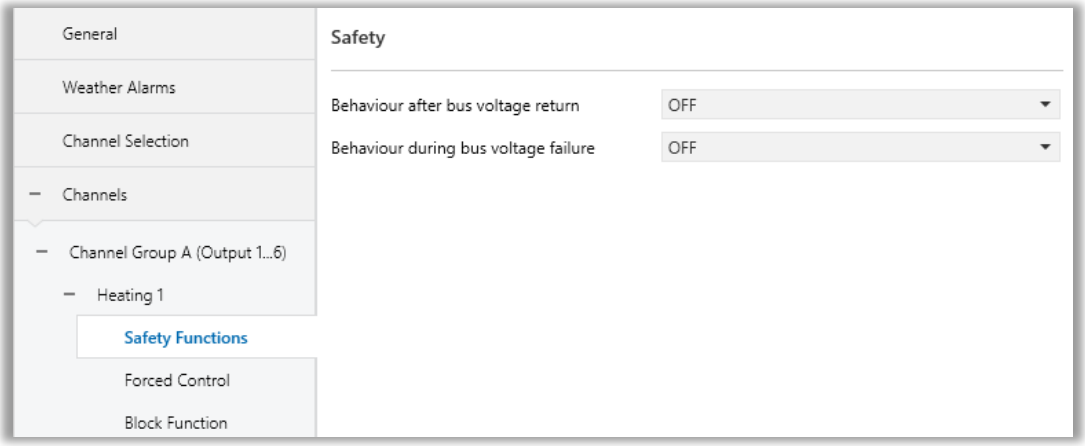


Fig. 17: Switch: Heating – Safety Functions Configuration Page

3.5.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior after bus voltage return	This parameter determines the value of the output during a bus voltage failure. **Previous Status:** The channel is restored to its before-failure status. **No Change:** The output remains the last value received. **Off:** The output is forced to 0. **On:** The output is forced to 1.	**Off** On No change Previous Status
Behavior after bus voltage failure	This parameter determines the value of the output during a bus voltage failure. **No Reaction / Last State:** The output remains the last value received. **Off:** The output is forced to 0. **On:** The output is forced to 1.	No Reaction / Last State **Off** On

3.5.3. Forced Control

The Channel can be forced to a position at a given time. During the forced, any value received takes effect. It is possible to define the value during the forced and the value that the Channel takes after the forced. When the parameter “After Forced Position” is set to “No Reaction/Last State”, it is essential to consider that the Channel after the forced position will retain the last value received through the bus, even if this value was received during the forced time. Via the “Forced position” object, the forced can be enabled or disabled.

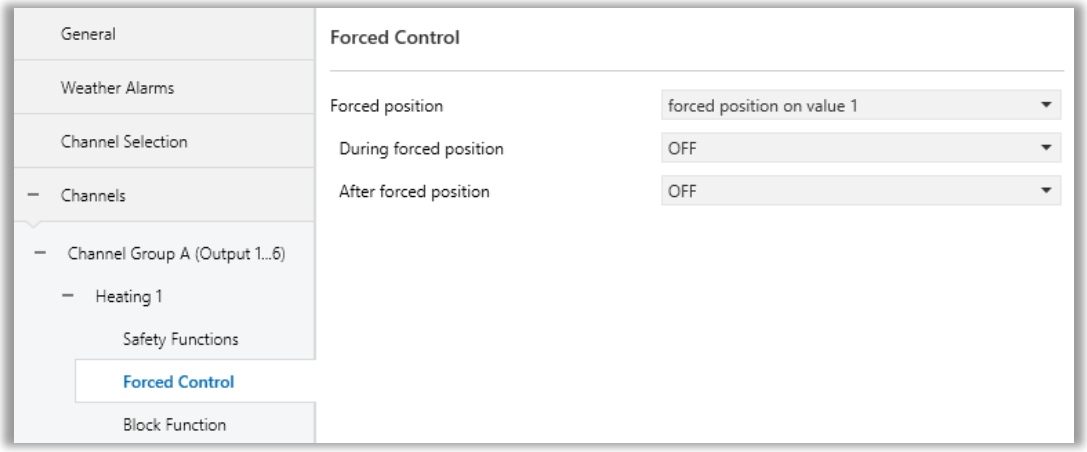


Fig. 18: Switch: Heating – Forced Control Configuration Page

3.5.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Priority/Forced control	This parameter determines if the output can be forced via an additional “forced position” object or not. **Disabled:** This option is disabled. **Forced Position On Value 0:** When the “forced position” communication object takes the value 0, status changes at the output are not transmitted. **Forced Position On Value 1:** When the “forced position” communication object takes the value 1, status changes at the output are not transmitted.	**Disabled** Forced Position On Value 0 Forced Position On Value 1
-> During forced position[1]	This parameter is used to define the operation state after forced control. **No Reaction / Last State:** The channel stays in the current state. **Off:** The channel is switched off. **On:** The channel is switched on.	No Reaction / Last State **Off** On
-> During forced position[1]	This parameter is used to define the operation state after forced control. **No Reaction / Last State:** The channel stays in the current state. **Off:** The channel is switched off. **On:** The channel is switched on.	No Reaction / Last State **Off** On

[1] This parameter is visible when the function “Priority/Forced control” object is set to “Forced Position On Value 0” or “Forced Position On Value 1”.

3.5.4. Block Function

This function allows the switch to be locked into a position. During a locking, the outputs are blocked, and they can no longer be controlled via any telegram. It is possible to define the value during the locking and the value that the shutter takes after the locking. When the parameter “Behavior at unlocking” is set to “No Reaction / Last State”, the switch will not change at the end of locking. Therefore, it will remain the last status. The locking function remains active even after a bus voltage failure. Manual control via the push buttons of the device is possible during the locking.

Fig. 19: Switch: Heating – Block Function Configuration Page

3.5.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior at locking	This parameter is used to define how the respective channel will behave in the locked state. **No Reaction / Last State:** The channel stays in the current state. **Off:** The channel is switched off **On:** The channel is switched off	**No Reaction / Last State** Off On
Behavior at unlocking	This parameter is used to define how the respective channel will behave in the unlocked state. **No Reaction / Last State:** The channel stays in the current state. / The channel restores the state before locking. **Off:** The channel is switched off **On:** The channel is switched off	**No Reaction / Last State** Off On

3.6. Channels – Switch: Staircase

3.6.1. General

The "General" page allows for the basic configuration of the Switch: Staircase channel. On this page, the user can define the channel by entering the channel name, central function, configure the channel switch mode, and adjust other related settings. Detailed explanations of these parameters are provided in the following sections.

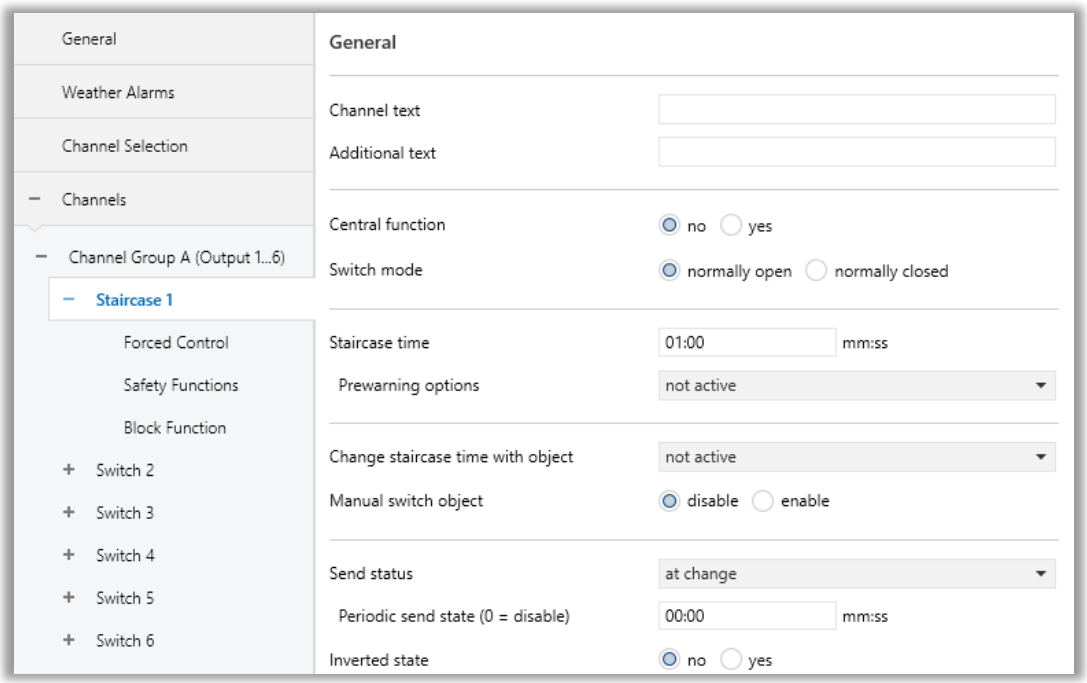


Fig. 20: Switch: Staircase – General Configuration Page

3.6.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Channel Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the related group object name.	**42 Bytes allowed**
Additional Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the page title.	**42 Bytes allowed**
Central function	The central function can be enabled or disabled for each channel individually. To activate this function, select the “yes” option. When the central communication object is triggered, all channels with this function enabled will operate according to their configured parameters.	**No** Yes
Switch mode	This parameter determines the type of contact output. **Normally Open:** The relay works as a normally open contact. **Normally Close:** The relay works as normally close contact.	**Normally Open** Normally Closed
Staircase time	This parameter is used to set the staircase lighting time.	00.10…**01:00**…59:59
Prewarning options	This parameter determines the prewarning options. **Light Blink:** When the staircase timer expires, the light turns off for the set prewarning duration. After this period, it switches back on for the configured prewarning time. **Prewarning Object:** An extra communication object is available for the prewarning function. When the staircase timer expires, this object sends a "1" while keeping the light on. Once the prewarning duration ends, the channel turns off, and the object sends a "0". This function effectively extends the total staircase time by the configured prewarning duration. **Prewarning + Blink:** A configuration that integrates both settings for combined functionality.	**Not Active** Light Blink Prewarning Object Prewarning + Blink
-> Prewarning time mm:ss[1]	This parameter is used to set the value of the pre warning time that will be started after the stair lighting ends.	00.01…**00:05**…59:59

-> Prewarning duration mm:ss[1]	The parameter "the time for which the light is switched off" refers to the duration during which the light remains turned off before being switched back on, based on the staircase time configuration.	00.01…**00:02**…59:59
-> Extended staircase time[1]	This parameter is used to extend the staircase lighting duration time. If the Switch group object receives a further ON telegram during the staircase lighting sequence (including dimming down/ warning), the remaining staircase lighting time can be extended. **No extend time:** The staircase time cannot be prolonged; it can only be restarted once it has expired. **Restart time:** The staircase time resets when an "on-signal" is sent to the "staircase light" communication object. **Add time:** Upon receiving a new "on-signal" at the "staircase light" communication object, the predefined staircase time is cumulatively added to the remaining active duration.	**No extend time** Restart time Add time
Change staircase time with object	This parameter is used to determine whether the staircase lighting time, set in ETS, can be modified through the Group Object for Staircase Time. **Second:** The duration of the staircase is set in "seconds." **Minute:** The duration of the staircase is set in "minutes."	**Not Active** Second Minute
Manual switch object	The "manual switch object" parameter is used to enable manual operation. By activating this parameter, an additional switching object is displayed, which functions independently from the staircase light. The manual switch object allows the channel to be permanently turned on or off and does not interact with the staircase timer.	**Disable** Enable
Send status	This parameter is used to define when the values of the Group Objects are sent on the bus.	**Don't send** At change At change and lock Always any input
Periodic send state (0 = disable)	This parameter sets the sending period of the status value in seconds.	**00:00**…59:59
Inverted status	This parameter is used to invert the send status.	**Not active** Active

[1] This parameter is visible when the function "Prewarning options" object is set to "Light Blink" or "Prewarning Object" or "Prewarning + Blink".

3.6.2. Forced Control

The Channel can be forced to a position at a given time. During the forced, any value received takes effect. It is possible to define the value during the forced and the value that the Channel takes after the forced. When the parameter “After Forced Position” is set to “No Reaction/Last State”, it is essential to consider that the Channel after the forced position will retain the last value received through the bus, even if this value was received during the forced time. Via the “Forced position” object, the forced can be enabled or disabled.

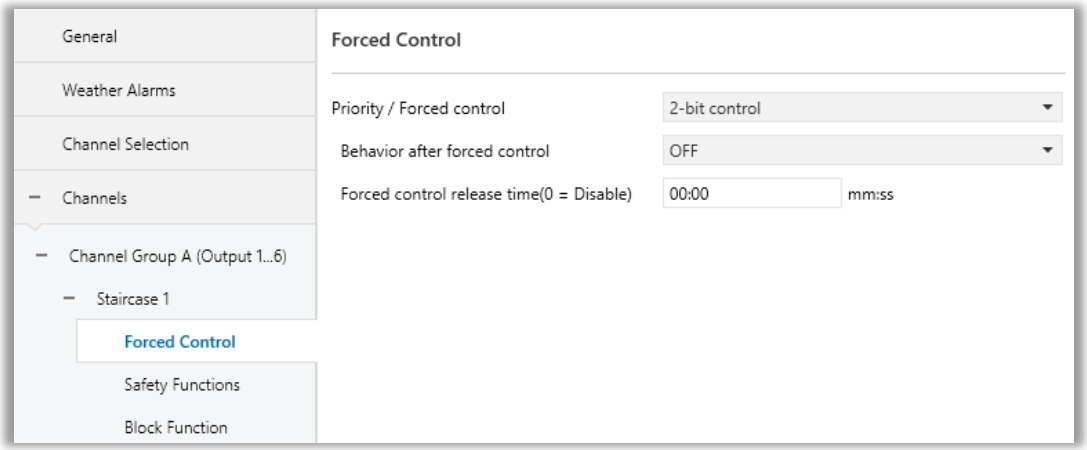


Fig. 21: Switch: Staircase – Forced Control Configuration Page

3.6.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Priority/Forced control	This parameter is used to determine the forced operation object type.	**Not active** 2 Bit control 1 Bit priority On 1 Bit priority Off
-> Behavior after forced control[1]	This parameter is used to define the operation state after forced control. **Off:** The channel is switched off. **On:** The channel is switched on. **Start staircase:** After the forced operation is completed, the staircase function is started. **Previous status:** The channel restores the state before locking.	**Off** On Start staircase Previous status
-> Release time for forced control (0= disable)[1]	This parameter is used to activate a release time, transitioning the system from priority/forced control back to the normal state.	**00:00**…59:59

[1] This parameter is visible when the function “Priority/Forced control” object is set to “2 Bit control” or “1 Bit priority On” or “1 Bit priority Off”.

3.6.3. Safety Functions

Parameters for the reaction of the channels to Combo+ voltage or supply voltage failure and return are made in this parameter window.

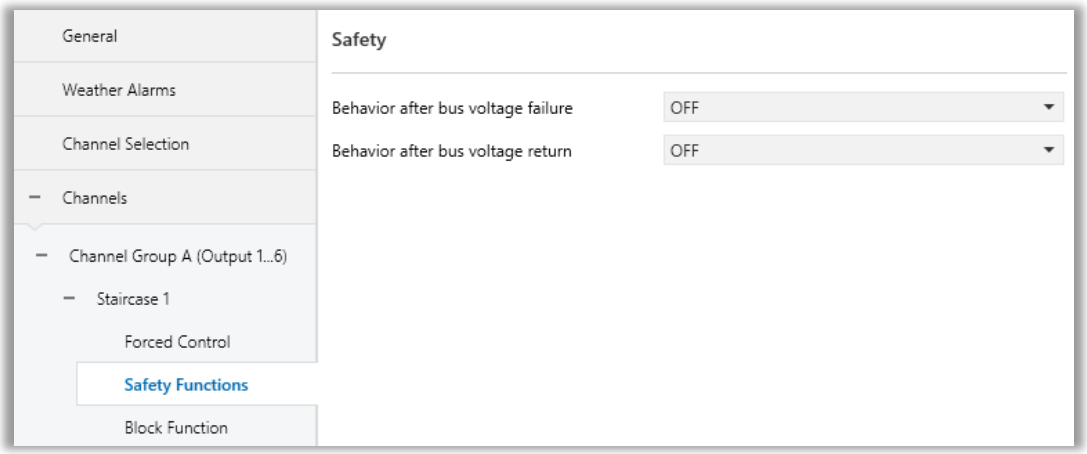


Fig. 22: Switch: Staircase – Safety Function Configuration Page

3.6.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior after bus voltage failure	This parameter determines the value of the output during a bus voltage failure. **Off:** The output is forced to 0. **On:** The output is forced to 1. **Start Staircase:** The staircase function is started after bus voltage failure return. **No Change:** The output remains the last value received.	**Off** On Start Staircase No change
Behavior after bus voltage return	This parameter determines the value of the output during a bus voltage failure. **Previous Status:** The channel is restored to its before-failure status. **No Change:** The output remains the last value received. **Off:** The output is forced to 0. **On:** The output is forced to 1.	Off On No change **Previous Status**

3.6.4. Block Function

This function allows the switch to be locked to a position. During a locking, the outputs are blocked and they can no longer be controlled via any telegram. It is possible to define the value during the locking and the value that the shutter takes after the locking.

Fig. 23: Switch: Staircase – Block Function Configuration Page

3.6.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior at locking	This parameter is used to define how the respective channel will behave in the locked state. **Off:** The channel is switched off **On:** The channel is switched off **No change:** The channel stays in the current state.	Off On **No change**
Behavior at unlocking	This parameter is used to define how the respective channel will behave in the unlocked state. **Off:** The channel is switched off **On:** The channel is switched off **Start Staircase:** The staircase function is activated after unlocked state. **Previous status:** The channel restores the state before locking.	Off On Start Staircase **Previous status**

3.7. Channels – Switch: Impulse

3.7.1. General

The "General" page allows for the basic configuration of the Switch: Impulse channel. On this page, the user can define the channel by entering the channel name, include the channel in central control, configure the channel contact mode, and adjust other related settings. Detailed explanations of these parameters are provided in the following sections.

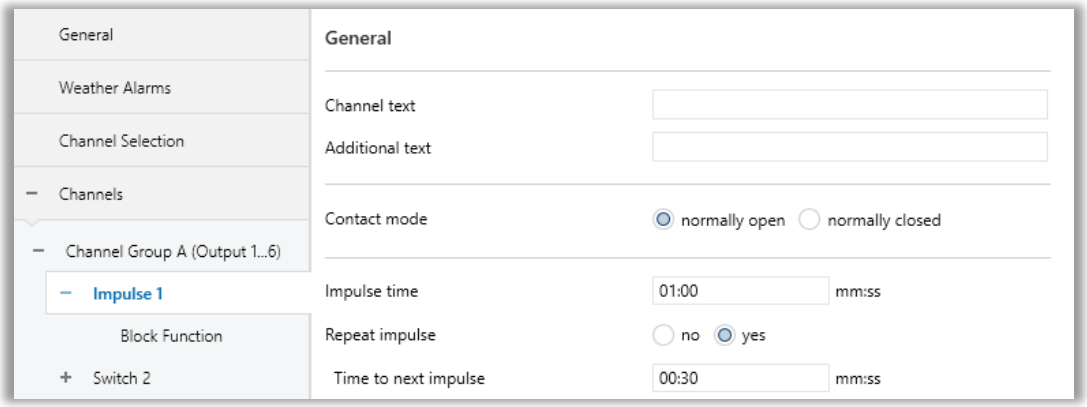


Fig. 24: Switch: Impulse – General Configuration Page

3.7.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Channel Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the related group object name.	**42 Bytes allowed**
Additional Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the page title.	**42 Bytes allowed**
Contact mode	This parameter determines the type of contact output. **Normally Open:** The relay works as a normally open contact. **Normally Close:** The relay works as normally close contact.	**Normally Open** Normally Closed
Impulse time	This parameter is used to define the impulse time.	00.00…**01:00**…59:59
Repeat Impulse	After the current impulse operation is completed, a new single-feedback impulse is called in the new parameter duration.	No **Yes**
-> Time to next impulse mm:ss[1]	This parameter is used to set the time between the first and second pulse; it is only displayed when the pulse signal is repeated.	00.00…**00:30**…59:59

[1] This parameter is visible when the function “Repeat Impulse” object is set to “Yes”.

3.7.2. Block Function

This function allows the switch to be locked into a position. During a locking, the outputs are blocked and they can no longer be controlled via any telegram. It is possible to define the value during the locking and the value that the shutter takes after the locking.

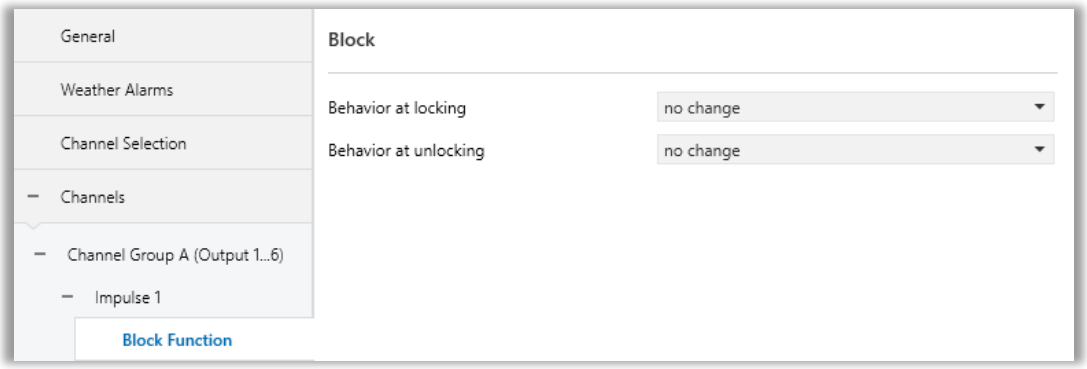


Fig. 25: Switch: Impulse – Block Function Configuration Page

3.7.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Behavior at locking	This parameter is used to define how the respective channel will behave in the locked state. **Off:** The channel is switched off **On:** The channel is switched off **No change:** The channel stays in the current state.	Off On **No change**
Behavior at unlocking	This parameter is used to define how the respective channel will behave in the unlocked state. **Off:** The channel is switched off **On:** The channel is switched off **No change:** The channel stays in the current state. **Previous status:** The channel restores the state before locking. **Switch Impulse:** When the relevant channel is unlocked, the Switch Impulse function is activated with the ON status.	Off On **No change** Previous status Switch Impulse

3.8. Shutter/Blind

3.8.1. General

Every channel of the combo is available to connect 230 V AC drive motors of shutters, blinds or awnings. AC blinds can be controlled using two relays, whereas DC blinds require four relays for proper operation. The control of DC blinds is enabled by selecting the "Use 24V Shutter & Blind" parameter under the "Channel Selection" section and setting it to "use". This activates the logic necessary for 24V DC shutter/blind operation, including appropriate relay assignment and control sequencing.The operating mode is parameterized for the control of shutters or blinds with slats. Depending on this configuration the features are different. The characteristics of this function will be described here.

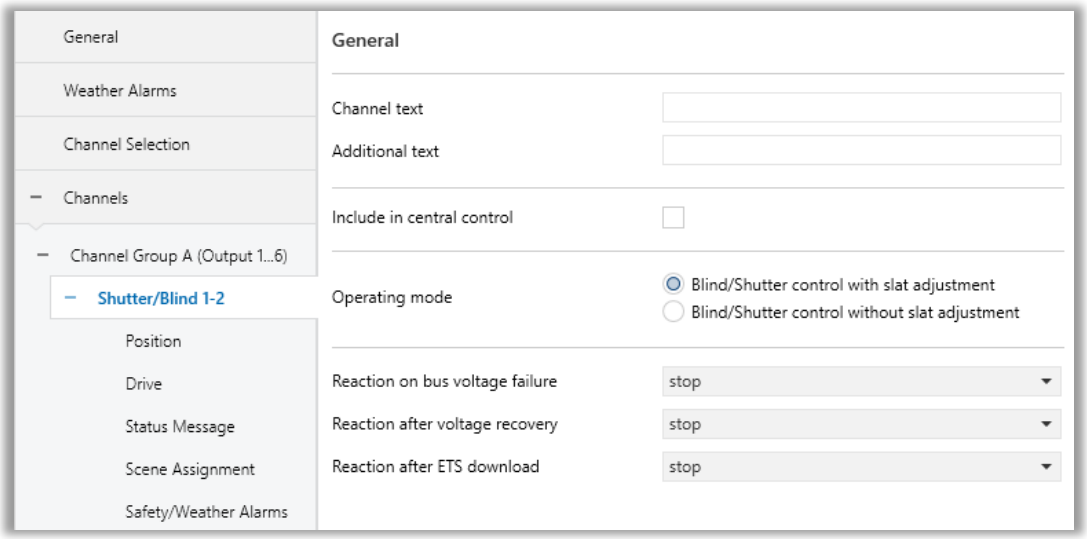


Fig. 26: Shutter/Blind General Configuration Page

Blind/Shutter control without slat adjustment

The drive moves UP/DOWN. There is no possibility of moving slats with this option. Via the object “Up/Down”, the motion telegrams are sent. If a telegram with the value 0 is received, the shutter moves UP, while the value 1 moves the shutter DOWN. Otherwise, through the object “Slat Angle/Stop”, it is possible to stop the movement of the shutter when it is moving or execute short movements when it is stopped.

“Slat Angle/Stop”. If the shutter is moving, the movement stops regardless if a 1 or a 0 is received via this object.

Blind/Shutter control with slat adjustment

The behaviour is the same as for “Blind/Shutter control without slat adjustment”, but with this option, the movement of slats is available. In contrast to the shutter function, when the blind is at rest, the telegrams received via the object “Slat Angle/Stop” allow the positioning of the slats.

“Slat Angle/Stop”. When the positioning of the slats reaches its maximum or minimum (0° or 360°), the following telegrams received via this object will execute short movements of the shutter. For example, if the value 0° is reached and a new telegram with the value 0 is received, it will be interpreted as a short UP movement. Similarly, when the value 360° is reached, a new telegram with the value 1 will be interpreted as a short DOWN movement.

3.8.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Channel Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the related group object name.	**42 Bytes allowed**
Additional Text	This parameter is used to determine a channel name. Each group can be assigned a name consisting of up to 42 characters. The name given with this parameter is added to the page title.	**42 Bytes allowed**
Include in central control	The central function can be enabled or disabled for each channel individually. To activate this function, select the “checked” option. When the central communication object is triggered, all channels with this function enabled will operate according to their configured parameters.	**Unchecked** Checked
Operating mode	This parameter can be used to configure the operating mode of the Shutter Actuator output pair. The parameter settings in the Blind/Shutter window vary depending on the selected operating mode.	**Blind/Shutter control with slat adjustment** Blind/Shutter control without slat adjustment
Reaction on bus voltage failure	This parameter is used to define the reaction of the Shutter on bus voltage failure.	No reaction Up Down **Stop**
Reaction after voltage recovery	This parameter defines how the Shutter reacts after the bus voltage is restored	No reaction Up Down **Stop** Individual position
Reaction after ETS download	This parameter is used to define the Shutter reaction after an ETS download	No reaction Up Down **Stop** Individual position
-> Position height[1]	This parameter is used to define the position to which the Shutter is moved.	**0**…100
-> Position slat[1,2]	This parameter is used to define the position to which the slats of the Shutter are moved.	**0**…100

[1] This parameter is visible when the function “Reaction after voltage recovery” or “Reaction after ETS download” object is set to “Individual position”.
[2] This parameter is visible when the function “Operating mode” object is set to “Blind/Shutter control with slat adjustment”.

3.8.2. Position

The combo actuator allows controlling shutters and blinds. Depending on the function chosen, different parameters and objects are shown.

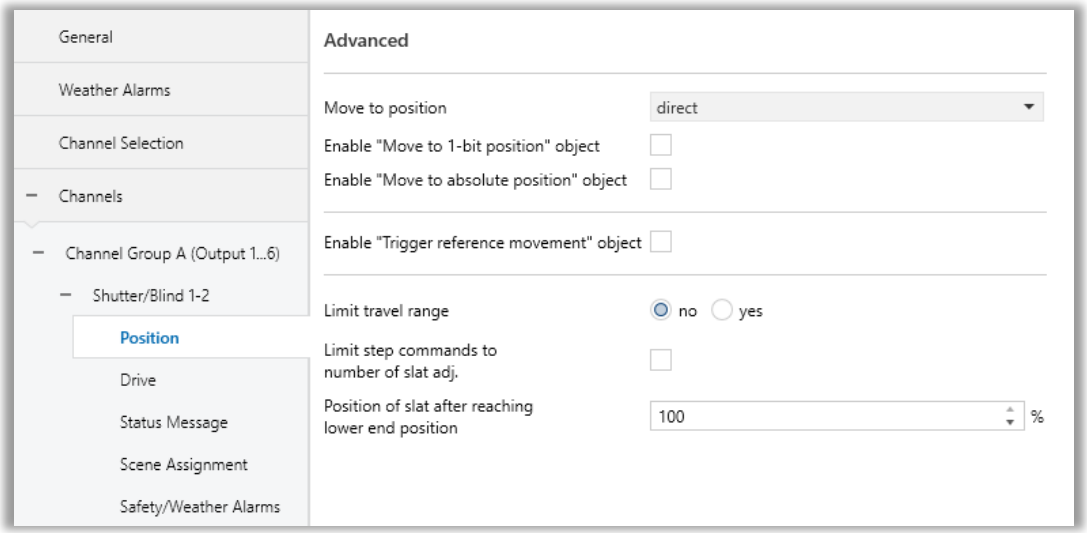


Fig. 27: Shutter/Blind Position Configuration Page

3.8.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Move to position	This parameter specifies how the Blind/Shutter is moved to the target position. **Direct:** The Blind/Shutter is adjusted in a single, continuous movement to reach the target position immediately, without any intermediate adjustments or stops. **Indirectly via upper end position:** The Blind/Shutter is first adjusted to reach the upper end position, and once this position is achieved, it is then moved to the target position. **Indirectly via lower end position:** The Blind/Shutter is initially adjusted to reach the lower end position. Once it has reached this position, it is then moved to the specified target position. **Indirectly via shortest way:** The Blind/Shutter is first adjusted to the nearest end position (either upper or lower, depending on its current location), and once it has reached this closer end position, it is then moved to the final target position.	**Direct** Indirectly Via Upper End Position Indirectly Via Lower End Position Indirectly Via Shortest Way
Enable "Move to 1-bit position" object	This parameter is used to enable the Move to 1-bit position for the Group Object.	**Unchecked** Checked
-> Action on value = 1[1]	This parameter is used to define the position of the shutter/blind when the "Move to 1-bit position" object is activated. **Move to Position:** The shutter/blind moves to the position defined by the specified blind and slat values. **Move to Position When Up:** If the last movement of the shutter/blind was in the "Up" direction, the shutter/blind moves to the "Position of blinds" and "Position of slat" positions. **Move to Position When Down:** If the last movement of the shutter/blind was in the "Down" direction, the shutter/blind moves to the "Position of blinds" and "Position of slat" positions. **Note:** If "Blind/Shutter control without Slat adjustment" is selected, the "Position of slat" parameter will not be visible.	**Move To Position** Move To Position When Up Move To Position When Down
-> Position of blinds %[1]	This parameter is used to define the position of the blind.	0…**50**…100
-> Position of slat %[1]	This parameter is used to define the position of the slat.	0…**50**…100

-> Action on value = 0[1]	This parameter is used to define the position of the shutter/blind when the "Move to 1-bit position" object is deactivated. **No Reaction:** The shutter/blind remains in its last position. **Move Up:** The shutter/blind moves in the "Up" direction, reaching the specified upper limit value. **Move Down:** The shutter/blind moves in the "Down" direction, reaching the specified lower limit value.	**No Reaction** Move Up Move Down
Enable "Move to absolute position' object	This parameter is used to enable the Move to absolute position for the Group Object.	**Unchecked** Checked
Enable "Trigger reference movement' object	This parameter enables the reference movement for the Group Object Trigger.	**Unchecked** Checked
-> Position after reference movement[2]	This parameter specifies the Blind/Shutter's position following a reference movement. **No reaction, remains in ref position:** The Blind/Shutter is set to use either the "Upper end position" or "Lower end position" as the reference position following a reference movement. **Move to position before ref movement:** The Blind/Shutter returns to its position prior to the reference movement.	**No Reaction, Remains In Ref Position** Move To Position Before Ref Movement
Limit travel range	This parameter is used to limit the travel range of the Blind/Shutter.	**No** Yes
-> Upper limit[3] **(0 % = top, 100 % = 100% button)**	This parameter is used to define the upper limit for the travel range limit.	**0**…100
-> Lower limit[3] **(0 % = top, 100 % = 100% button)**	This parameter is used to define the lower limit for the travel range limit.	0…**100**
Limit step commands to number of slat adj.	This parameter defines whether the execution of Step commands is restricted to the number of slat adjustments specified in the "Number of slat adjustments/steps" parameter, which ranges from 0% (fully open) to 100% (fully closed).	**Unchecked** Checked
Position of slat after reaching lower end position	After the Blind/Shutter reaches the lower end position, this parameter defines whether the slats will be adjusted to a different position. • **100%:** The function is deactivated, and the slats will remain fully closed. • **1% to 99%:** The slats will move to the specified intermediate position between fully closed and fully open. **0%:** The slats will remain fully open.	0…**100**

[1] This parameter is visible when the function “Enable "Move to 1-bit position" object” object is set to “Checked”.
[2] This parameter is visible when the function “Enable "Trigger reference movement' object” object is set to “Checked”.
[3] This parameter is visible when the function “Enable "Trigger reference movement' object” object is set to “Checked”.

3.8.3. Drive

This section is used to configure the movement duration of the blind as well as the operating parameters of the blind motor. It allows for fine-tuning of the blind's operation, including precise adjustments related to its positioning and response behavior. Additionally, the adjustment of the slat (louver) movement time is carried out within this section, ensuring accurate control over intermediate slat positions for optimal shading and lighting conditions.

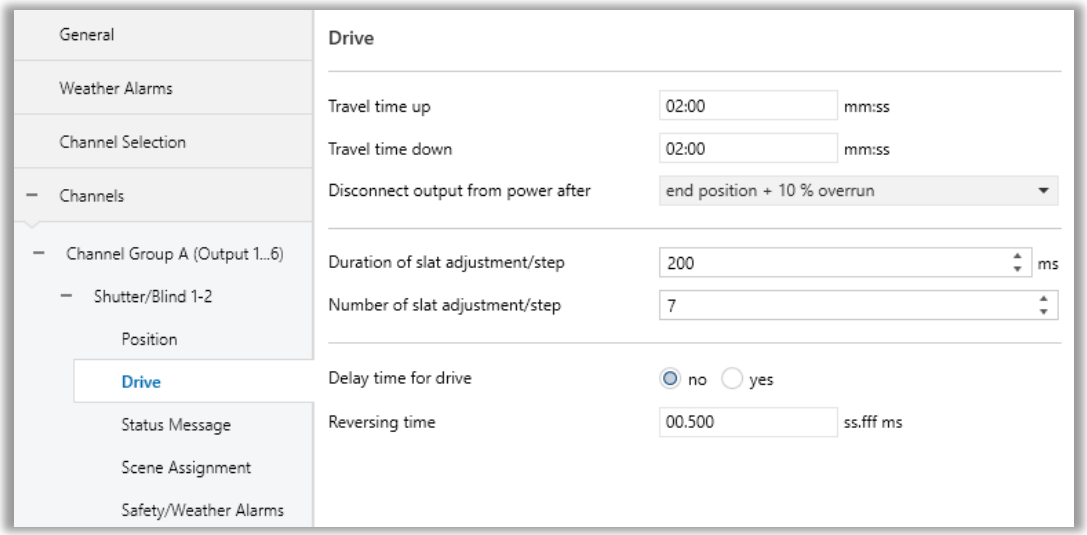


Fig. 28: Shutter/Blind Drive Configuration Page

Position Height

The combo actuator can calculate the current position of the shutter or blind. This is calculated according to the Up and Down movements' duration parameters. For the correct operation of this option, it is imperative that the measure time of up and down movements is done correctly in order to achieve the best possible positioning results (See Appendix D: Measurings).

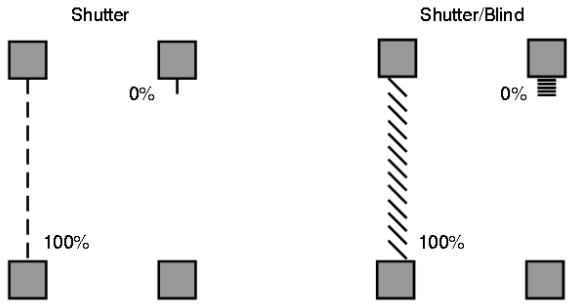


Fig. 14: Position Indication %

Example:

The measurement time results in the following values:

Travel time up (sec): 110 (01:50 mm:ss)

Travel time down (sec): 105 (01:45 mm:ss)

The shutter is at 0% and a new telegram command is received to be positioned at 40%. The combo calculates the time necessary to achieve the desired position, taking the duration configuration into account: 105 sec x 0.40 = 42 sec. Then the output responsible for lowering the shutter will be activated for 42 seconds and the

current position will be 40%. If, at that moment, a new telegram of positioning is received with the value 20%, the combo will make the following calculations: 40-20= 20%. This is the difference between the two positions and therefore the motion time will be: 110 sec x 0.20 = 22 sec. This time, the output responsible for raising the shutter will be activated for 22 seconds and the current position will be 20%.

Delay Time For Drive Reversing

The correct configuration of this parameter is important for protecting the shutter motor from any damage. This parameter defines a pause time in the inversion of the motion direction. During this time, the shutter is stopped and represents the transition from one direction to another.
This time value can normally be found in the technical documents of the shutter motor used.

3.8.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Travel time up mm:ss	This parameter specifies the time it takes for the Shutter to move from the lower to the upper end positions. The travel time must be measured manually beforehand.	00:01…**02:00**…10:00
Travel time down mm:ss	This parameter specifies the duration it takes for the Shutter to move from the upper end position to the lower end position. To configure this setting accurately, the travel time must be measured manually before entering the value into the parameter.	00:01…**02:00**…10:00
Disconnect output from power after	This parameter determines the time delay before the output is deactivated after reaching the upper or lower end position. **Note:** The drive is deactivated using the integrated limit switches once the upper or lower end position is reached. To ensure the end position is reliably achieved, an overrun time can be set using the parameter "Delay time for drive." When the drive is turned off, voltage is maintained briefly to move the drive to the end position in a controlled manner. The device calculates the position to determine the end position accurately.	End position, no overrun End position + 2% overrun End position + 5% overrun **End position + 10% overrun** End position + 20% overrun Total travel time + 10% overrun
Duration of slat adjustment/step	This parameter sets the duration for a single slat adjustment (step).	50…**200**…10000 ms
Number of slat adjustment/step	This parameter defines the number of slat adjustments needed to move the slats from a fully open position to a fully closed position.	1…**7**…60
Delay time for drive	This parameter specifies whether the default delay times or user-defined delay times should be used.	**No** Yes
-> Switch on delay[1]	This parameter is used to define the duration of the Switch On delay.	**0**…999 ms
-> Switch off delay[1]	This parameter is used to define the duration of the switch-off delay.	**0**…999 ms
-> Minimum run time for drive[1]	This parameter sets the minimum runtime for the drive.	40…**50**…600 ms
Reversing time	This parameter defines the duration of the reversing time.	00.050…05.000

[1] This parameter is visible when the function “Delay time for drive" object” object is set to “Yes”.

3.8.4. Status Message

The current status of the shutter can be shown via different objects. For the shutter position, the object used is “Status Height”, while for the slat position, it is “Position Slat”. Additionally, there is another object, “Status of movement”, which indicates whether the shutter is moving or not. When the shutter is moving, this object takes the value 1, whereas when it is stopped, the value is 0.
When the feedback telegram is enabled, the status information is transmitted every time a change occurs on the outputs. However, it is also possible to define a periodical sending of the status through the parameter “Cyclical transmission during movement”. Thereby, the current value of the above objects is transmitted within the period configured.
Additionally, to reduce the bus traffic after any failure, a delay for the status feedback transmission at startup can be parameterized. When this option is used, the status of the shutter after a bus voltage failure is sent once the time delay configured has elapsed.

The delay configured only affects the sending of the feedback. The behaviour of the shutter has no effect and it can even be modified during the delay.

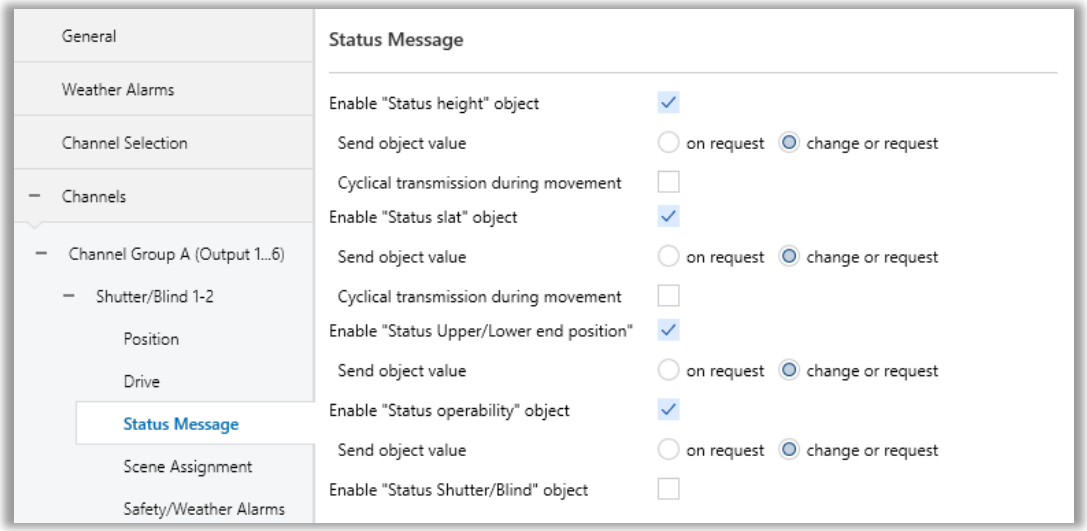


Fig. 29: Shutter/Blind Status Message Configuration Page

3.8.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable "Status height" object	This parameter enables the Group Objects Status Height.	**Unchecked** Checked
Enable "Status slat" object[1]	This parameter enables the Group Objects Status Slat.	**Unchecked** Checked
Enable "Status operability" object	This parameter enables the Group Objects Status operability.	**Unchecked** Checked
Enable "Status Shutter/Blind" object	This parameter enables the Group Objects Status Shutter/Blind.	**Unchecked** Checked
-> Send object value[2]	This parameter is used to define when the values of the Group Objects are sent on the bus.	On request Change or request
-> Cyclical transmission during movement[3]	This parameter is used to periodically send the corresponding status feedback object during the movement.	**Unchecked** Checked
-> Time for cyclical transmission[4]	This parameter is used to define the periodic sending interval.	2…**5**…59 s

[1] This parameter is visible when the parameter "Blind/Shutter control without slat adjustment" is selected.
[2] This parameter is visible when the parameter "Status height" or "Status slat" or "Status Upper/Lower end position" or "Status operability" or "Status Shutter/Blind" is set to "Checked".
[3] This parameter is visible when the parameter "Status height" or "Status slat" is set to "Checked".
[4] This parameter is visible when the parameter "Cyclical transmission during movement" or "Status slat" is set to "Checked".

3.8.5. Scene Assignment

Up to 16 scenes can be configured for each shutter/blind output. The configuration of each scene permits:

- Assign a number of scenes (1-16).
- Set a position height for the shutter.
- Set a slat value for the blind.
- Define an ON Delay for the scene.

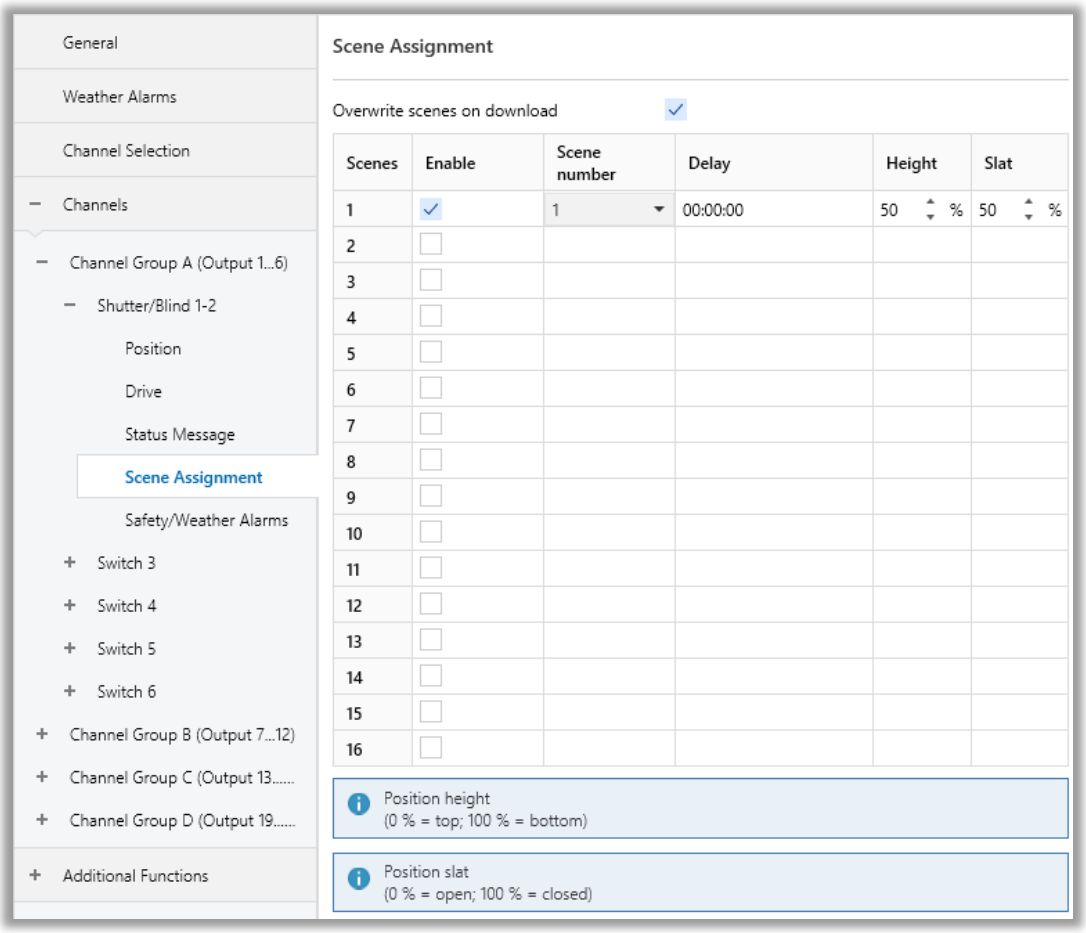


Fig. 30: Shutter/Blind Scene Assignment Configuration Page

Via the object “scene”, telegrams which contain the call or store functions of a scene are sent.

Up to 16 different scenes are managed via a single group address and the scene number telegram must match with the scene number previously configured in the combo parameters. The scene number (1-16), is used to recall the scene via the corresponding object. For storage of the scene, the value sent via the object “scene” must be 128+scene number.

When a scene is configured with a number, the value to send for calling that scene must be that number -1. For example, if a scene is configured with the number 24, the number to be sent via the object “scene” must be 23. On the other hand, the value 152 (128+23) must be sent for storage the scene number 24.

The recall of each scene can be delayed if a time delay has been defined previously in the parameter window. This option allows the creating dynamical scene sequences when several outputs are combined with different delays.

After ETS programming, the scene values parameterized for the output concerned will be overwritten into the actuator. It means that any change made by the user will be deleted. Therefore, it is important, before any maintenance, to know the previous scene configuration and whether the user wants to keep operating with that configuration.

3.8.5.1. Parameters List

PARAMETERS	DESCRIPTIONS	VALUES
Overwrite scenes on download	This parameter specifies whether the Scenes saved in the device are overwritten during a download.	**Unchecked** Checked
Scenes Enable	This parameter allows the use of 16 different scenes.	**Unchecked** Checked
-> Scene Number[1]	This parameter is used to assign the number of the scene.	**1**…16
-> Delay[1]	This parameter sets a delay between the call of the scene and the real action of the output. Value “0” means the immediate emission of the scene.	**00:00:00**…12:00:00
-> Height[1]	This parameter is used to define the position to which the Shutter/Blind is moved.	0…**50**…100
-> Slat[1]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	0…**50**…100

[1] This parameter is visible when the parameter “Scenes Enable” is set to “Checked”.

3.8.6. Safety/Weather Alarms

The combo actuator has three different types of alarms available; wind, rain and frost, forced operation and block function.

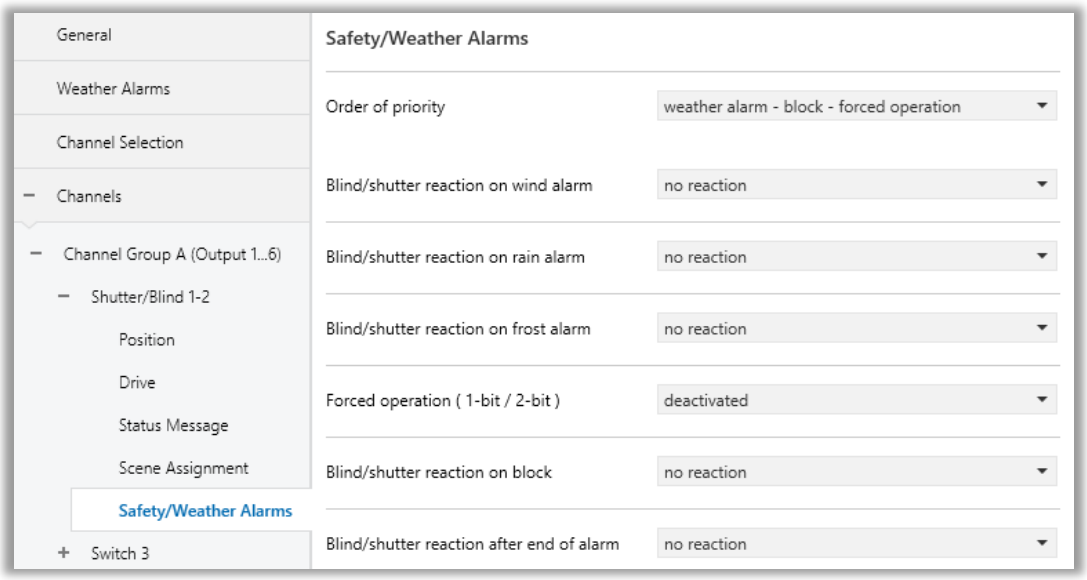


Fig. 31: Shutter/Blind Safety/Weather Alarms Configuration Page

The wind alarm can be used to protect shutters and buildings from strong wind, while the rain alarm to protect the windows. On the other hand, the frost alarm can be used as a protection against mechanical damage in low temperatures.

There are three different communication objects, one for each type of alarm, which shows the status of the alarms. The value 0 indicates no alarm, while the value 1 means that an alarm has occurred.

The reaction of the shutter when one alarm occurs and at the end of it can be configured via the window parameters. The shutter can remain in the last state, can be lowered, raised or positioned at a predetermined value.

Normally, these functions are used together with a weather station, which allows knowing the wind speed, the temperature and the existence of rain.

3.8.6.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Order of priority	This parameter defines the priority order of the safety functions. When multiple safety functions are active simultaneously, only the safety function with the highest priority will be executed.	**Weather Alarm - Block - Forced Operation** Weather Alarm - Forced Operation - Block Block - Weather Alarm - Forced Operation Block - Forced Operation - Weather Alarm Forced Operation - Weather Alarm - Block Forced Operation - Block - Weather Alarm
Blind/shutter reaction on wind alarm	This parameter specifies how the Blind/Shutter reacts to a wind alarm. Upon receiving a wind alarm, the Blind/Shutter will be moved to the predefined position and then blocked. However, a wind alarm does not necessarily trigger movement of the Blind/Shutter.	**No reaction** Up down stop complete movement Scene assignment Individual position
-> Scene assignment[1]	This parameter specifies which Scene assignment should be recalled.	**1**…16
-> Position height[2]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %
-> Position slat[3]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %
Blind/shutter reaction on rain alarm	This parameter specifies how the Blind/Shutter reacts to a rain alarm. Upon receiving a rain alarm, the Blind/Shutter will be moved to the predefined position and then blocked. However, a rain alarm does not necessarily trigger movement of the Blind/Shutter.	**No reaction** Up down stop complete movement Scene assignment Individual position
-> Scene assignment[1]	This parameter specifies which Scene assignment should be recalled.	**1**…16
-> Position height[2]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %

-> Position slat[3]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %
Blind/shutter reaction on frost alarm	This parameter specifies how the Blind/Shutter reacts to a frost alarm. Upon receiving a frost alarm, the Blind/Shutter will be moved to the predefined position and then blocked. However, a frost alarm does not necessarily trigger movement of the Blind/Shutter.	**No reaction** Up down stop complete movement Scene assignment Individual position
-> Scene assignment[1]	This parameter specifies which Scene assignment should be recalled.	**1**…16
-> Position height[2]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %
-> Position slat[3]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %
Forced operation (1-bit/2-bit)	This parameter is used to Activate/Deactivate 1-bit or 2-bit forced operation.	deactivated activated 1-bit, 0 active activated 1-bit, 1 active activated 2-bit
-> Position height[4]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %
-> Position slat[5]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %
Blind/shutter reaction on block	This parameter defines how the Blind/Shutter reacts if it becomes blocked. When blocked, the Blind/Shutter will move to the predefined position and then be blocked. However, the blocking of the output does not necessarily cause the Blind/Shutter to move.	**No reaction** Up down stop complete movement Scene assignment Individual position
-> Scene assignment[1]	This parameter specifies which Scene assignment should be recalled.	**1**…16
-> Position height[2]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %
-> Position slat[3]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %
Blind/shutter reaction after end of alarm	This parameter is used to define the response of the shutter/blind after the termination of weather alarms, forced operation, or block functions.	**No reaction** Up down

	Complete movement: If a blind movement is still in progress due to a previous alarm condition, this parameter ensures that the current movement is completed before any new operation is initiated. It prevents interruption of ongoing processes and ensures the sequential execution of blind commands for safe and reliable operation.	stop complete movement Scene assignment Individual position
-> Scene assignment[1]	This parameter specifies which Scene assignment should be recalled.	**1**…16
-> Position height[2]	This parameter is used to define the position to which the Shutter/Blind is moved.	**0**…100 %
-> Position slat[3]	This parameter is used to define the position to which the slats of the Shutter/Blind are moved.	**0**…100 %

[1] This parameter is visible when the function “Blind/shutter reaction on wind/rain/frost alarm” or “Blind/shutter reaction on block” or “Blind/shutter reaction after end of alarm” is set to “Scene assignment”.

[2] This parameter is visible when the function “Blind/shutter reaction on wind/rain/frost alarm” or “Blind/shutter reaction on block” or “Blind/shutter reaction after end of alarm” is set to “Individual position”.

[3] This parameter is visible when the function “Blind/shutter reaction on wind/rain/frost alarm” or “Forced operation (1-bit/2-bit)” or “Blind/shutter reaction on block” or “Blind/shutter reaction after end of alarm” is set to “Individual position” and “Operation mode” object is set to “Blind/Shutter control with slat adjustment.

[4] This parameter is visible when the function “Forced operation (1-bit/2-bit)” is set to “Activated 1-bit, 0 active” or “Activated 1-bit, 1 active” or “Activated 2-bit”.

[5] This parameter is visible when the function “Forced operation (1-bit/2-bit)” is set to “Activated 1-bit, 0 active” or “Activated 1-bit, 1 active” or “Activated 2-bit” and “Operation mode” object is set to “Blind/Shutter control with slat adjustment.

3.9. Fancoil

3.9.1. General

A fan coil is a device basically consisting of one or two heat exchangers, one or two control valves and a fan. It is part of an HVAC system connected to a central heating and cooling water supply. The main aim is to heat, cool or ventilate a room in residential, commercial, and industrial buildings.

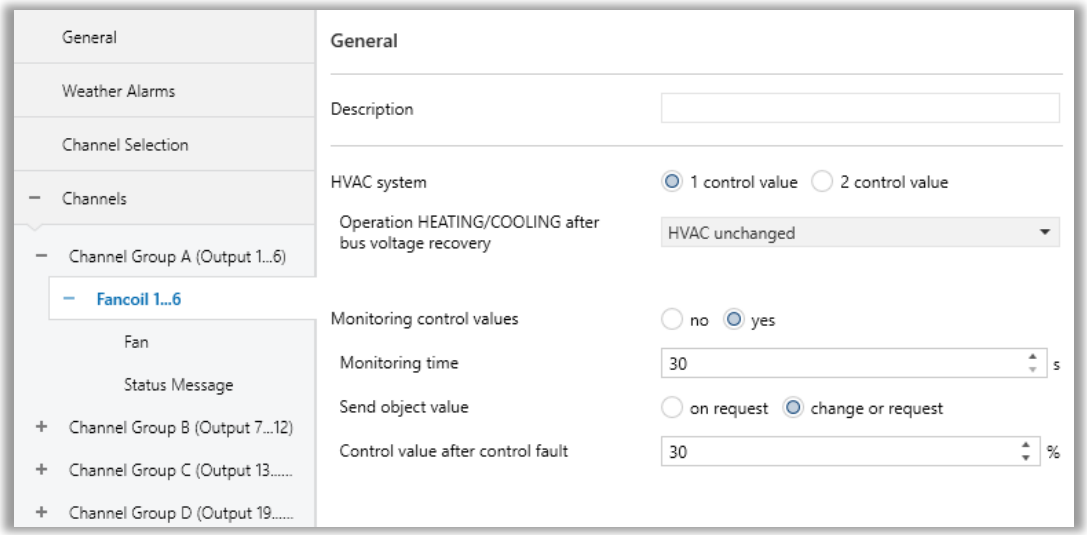


Fig. 32: Fancoil General Configuration Page

There are two different types of fan coils:

- **Fan Coil 2 pipes:** Only one heat exchanger and one control valve are available. This system consists of a single water circuit, which is heated or cooled depending on the season.

- **Fan Coil 4 pipes:** Two separate heat exchangers with their respective control valves (for heating and cooling) are available. Warm and cold water are provided to two separate water circuits.

3.9.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Description	This parameter is used to type an input name. The name can consist of 40 characters.	**65 Bytes allowed**
HVAC system	The objects “Control Value HEATING” / “Control Value COOLING” or “Control Value HEATING/COOLING” can be created. It is also possible to perform only heating or only cooling control. To enable proper communication object connections with control devices, a two-object interface is provided through this parameter.	**1 control value** 2 control value
Operation HEATING/COOLING after bus voltage recovery	This parameter configures the system's response after bus voltage recovery: **HVAC Unchanged:** The system restores the state that existed before the bus voltage failure. **HVAC Heating:** The system sets the Heating state after bus voltage recovery. **HVAC Cooling:** The system sets the Cooling state after bus voltage recovery.	**HVAC unchanged** HVAC heating HVAC cooling
Monitoring time	This parameter is used to monitor the operational status of devices and system components and to detect fault conditions when necessary.	**No** Yes
-> Monitoring time[1]	This parameter sets the time used to monitor all telegrams related to the input/setting values of the Room Master (RM/S). This includes the communication objects Control Value HEATING, Control Value COOLING, and Control Value HEATING/COOLING. If a setting variable is not received within the specified time, a communication malfunction is detected, triggering the activation of emergency operation.	**30**…65535
-> Send object value[1]	This parameter determines whether and when the value will be sent via an object. **On request:** The status is sent after a request. **Change or request:** The status is sent when a change occurs.	On request **Change or request**
-> Control value after control fault[1]	This parameter allows the control value, expressed as a percentage, to be set during a control failure (emergency operation). This value is applied when normal control fails, ensuring continued operation under predefined emergency conditions.	0…**30**… 100 %

[1] This parameter is visible when the function “Monitoring time” is set to “Yes”.

3.9.2. Fan

In this section, various parameters related to fan operation mode can be configured. The Fan operation mode allows selection between “changeover switch” or “step switch” modes for fan speed control. The Delay between fan speed switching defines the delay time in milliseconds between speed transitions. The Fan speed on bus voltage failure and Fan speed on bus voltage recovery parameters determine the behavior of the fan (e.g., fan unchanged or fan off) in case of KNX bus voltage loss or recovery. The Forced operation setting enables or disables the forced operation mode. The initial behavior of the fan can be configured using Starting characteristic of fan and Switch on over fan speed, while the Minimum dwell period in switch on sets the minimum duration in seconds the fan should remain in the switched-on state. Lastly, the Enable automatic operation and Enable manual operation options define whether automatic and manual modes are permitted for the device.

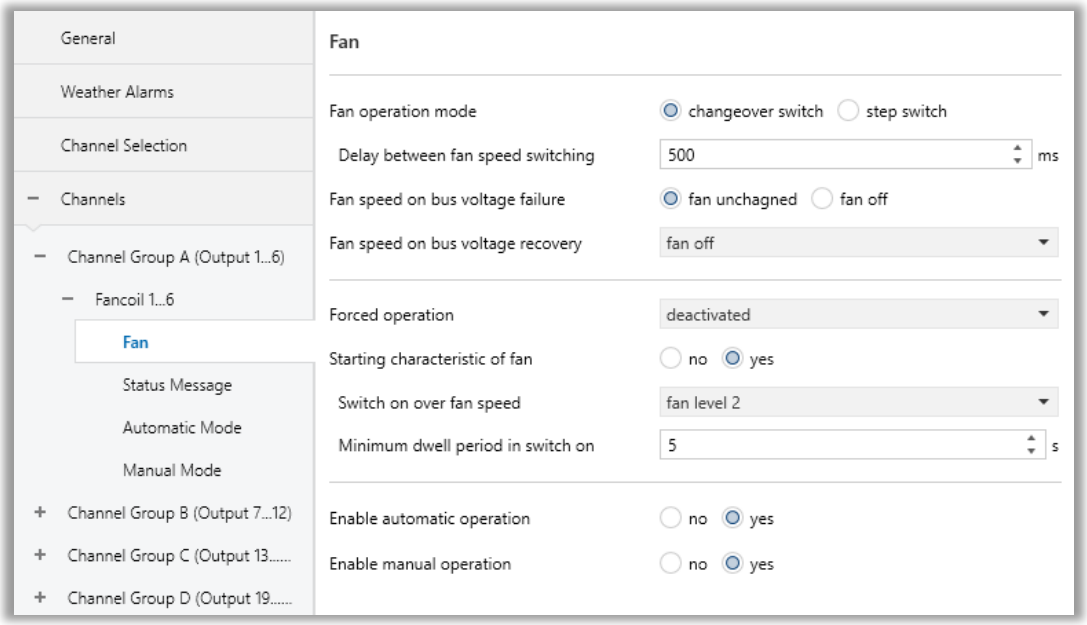


Fig. 33: Fan Configuration Page

Bus Voltage Failure

The behaviour of the output during and after bus voltage failure can be parameterized. The combo is equipped with bistable relays. That is why the reaction of the output during bus voltage failure can be configured too.

The combo actuator allows two different behaviours for bus voltage failure:

Fan Unchanged: There is no reaction; the outputs remain in the last state.

Fan Off: Both the fan and the valve are switched off.

3.9.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Fan operation mode	Fan control is configured using this parameter. The control mode must be derived from the fan's technical specifications.	**Changeover switch** Step switch
-> Delay between fan speed switching[1]	This parameter allows for the configuration of a switchover delay. The delay time is a fan-specific variable, which is consistently accounted for during operations.	50…**500**…5000 ms
Fan speed on bus voltage failure	This parameter is used to specify whether the fan speed should be maintained or adjusted after a failure of the bus voltage.	**Fan unchanged** Fan off
Fan speed on bus voltage recovery	This parameter is used to specify whether the fan speed should be maintained or adjusted after a recovery of the bus voltage. **Fan unchanged:** The fan speeds remain constant. **Fan off:** The fan is turned off. **1, 2, 3, or 4:** The fan operates at speed levels 1, 2, 3, or 4, respectively.	**Fan unchanged** Fan off Fan level 1…4
Forced operation	This parameter enables the use of forced operation. Additionally, it determines the type of forced operation employed. Forced operation allows the device outputs to be set to a predefined state by controlling a 1- or 2-bit group object. This mode overrides the standard device control (such as controller inputs or value specifications via group objects). To return the device to normal functionality, forced operation must be actively disabled. **Activated 1-bit, 0 active:** Forced operation is enabled when the group object "Activated 1-Bit" is set to 0. If a "1" is received, forced operation is deactivated. This mode activates the dependent parameters: Control Value, Fan Output, and Relay Output. **Activated 1-bit, 1 active:** Forced operation is enabled when the group object " Activated 1-Bit " is set to 1. If a "0" is received, forced operation is deactivated. This mode activates the dependent parameters: Control Value, Fan Output, and Relay Output.	**deactivated** activated 1-bit, 0 active activated 1-bit, 1 active activated 2-bit

	Activated 2-bit: Forced operation is enabled when the group object " Activated 2-bit " is activated. This mode activates the following dependent parameters: • Control Value for Forced Operation ON • Fan Output for Forced Operation ON • Relay Output for Forced Operation ON • Control Value for Forced Operation OFF • Fan Output for Forced Operation OFF • Relay Output for Forced Operation OFF	
-> Limitation on forced operation[2]	This parameter determines the fan speed to be set during active forced operation, specifying the maximum or minimum speed that can be applied. **3, 2, 1, OFF:** All fan speeds are possible. **Unchanged:** The fan speed remains as it was. **OFF:** The fan is turned off. **1:** Limited to speed 1.* **1, OFF:** Limited to speed 1 and OFF. **2:** Limited to speed 2.* **2, 1:** Limited to speeds 2 and 1. **2, 1, OFF:** Limited to speeds 2, 1, and OFF. **3:** Limited to speed 3.* **3, 2:** Limited to speeds 3 and 2. **3, 2, 1:** Limited to speeds 3, 2, and 1. ***In these cases, the control value is disregarded.	3, 2, 1, OFF **unchanged** OFF 1, OFF 2 2, 1 2, 1, OFF 3 3, 2 3, 2, 1
Starting characteristic of fan	This parameter allows the fan to start from the OFF state at a specified fan speed, which is immediately applied. To ensure a safe startup of the fan motor, it may be beneficial to initiate the fan at a higher speed.	**No** Yes
-> Switch on over fan speed[3]	This setting specifies the fan stage that the fan will use to start from the OFF state.	Fan Level 1…4
Minimum dwell period in switch on[3]	This parameter defines the minimum dwell time required at each of the switch-on speeds.	1…**5**…65535 s
Enable automatic operation	This parameter allows enabling the automatic control of the fan speed.	**No** Yes
Enable manual operation	This parameter allows enabling the manual control of the fan speed.	**No** Yes

[1] This parameter is visible when the parameter “Distinction between long and short press” is set to “Yes”.
[2] This parameter is visible when the parameter “Forced operation” is set to “Activated 1-bit, 0 active” or “Activated 1-bit, 1 active” or “Activated 2-bit”.
[3] This parameter is visible when the parameter “Starting characteristic of fan” is set to “Yes”.

3.9.3. Status Message

The current status of the fan and the valve of a fan coil can be shown via different objects.

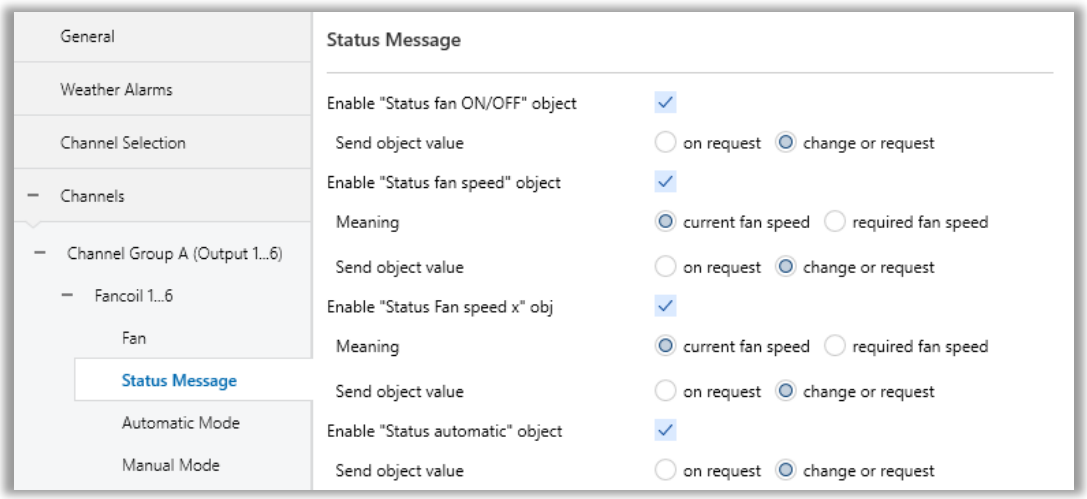


Fig. 34: Fan Status Message Configuration Page

3.9.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable "Status fan ON/OFF" object	This parameter enables the communication object "Status Fan." Some fans require an initial ON signal before they can be set to a specific fan speed from the OFF state. This ON signal controls a main switch that must be activated. This requirement can be fulfilled using any switch output controlled via the "Status Fan" communication object. The corresponding switch communication object of the switch actuator should be connected to the "Status Fan" communication object.	**Unchecked** Checked
-> Send object value[1]	This parameter determines whether and when the value will be sent via an object.	**On request** Change or request
Enable "Status fan speed" object	This status byte defines the numerical value of the fan speed. You can choose to display either the current fan speed or the required fan speed. Note that the required fan speed will only be reached after the switchover times, dwell times, and startup phase have been completed.	**Unchecked** Checked
-> Meaning[1,2]	This parameter determines whether the display shows the status of the current fan speed or the required fan speed.	**Current fan speed** Required fan speed
-> Send object value[1]	This parameter determines whether and when the value will be sent via an object.	**On request** Change or request
Enable "Status Fan speed x" obj	The setting of a fan speed is displayed through these communication objects. You can configure whether the status of the current fan speed or the required fan speed is shown.	**Unchecked** Checked
-> Meaning[1,2]	This parameter defines whether the display shows the status of the current fan speed or the required fan speed.	**Current fan speed** Required fan speed
-> Send object value[1]	This parameter determines whether and when the The value will be sent via an object.	**On request** Change or request
Enable "Status automatic" object	This parameter enables the communication object "Status Fan Automatic". This object indicates whether the device is operating in automatic mode or manual mode. In automatic mode, the device operates according to the parameters defined on the "Automatic Mode" page. It adjusts its operation automatically based on	**Unchecked** Checked

	the received “Control Value HEATING” / “Control Value COOLING” or “Control Value HEATING/COOLING” objects, and runs according to the fan level determined by these parameter values.	
Send object value[1]	This parameter determines whether and when the value will be sent via an object.	**On request** Change or request

[1] This parameter is visible when the parameter “Enable “Status fan ON/OFF” object” or “Enable “Status fan speed” object” or “Enable “Status Fan speed x” obj” or “Enable “Status automatic” object” object is set to “Checked”.

[2] This parameter is visible when the parameter “Enable “Status fan speed” object” or “Enable “Status Fan speed x” obj” object is set to “Checked”.

3.9.4. Automatic Mode

This section allows configuration of threshold values and behaviour parameters for automatic fan speed control. By enabling the "Automatic control On/Off" object, the automatic control function is activated. The Hysteresis threshold value sets the hysteresis margin (in %) used to improve system stability during speed transitions. The Minimum dwell period in fan speed defines the minimum time (in seconds) that the fan must remain at a given speed level. To allow automatic adjustment of fan speeds based on load percentage, threshold values such as Threshold value OFF <-> speed 1, speed 1 <-> speed 2, speed 2 <-> speed 3, and speed 3 <-> speed 4 are configured individually. These percentage values determine which speed level will be activated depending on the system load, thereby optimising both energy efficiency and user comfort.

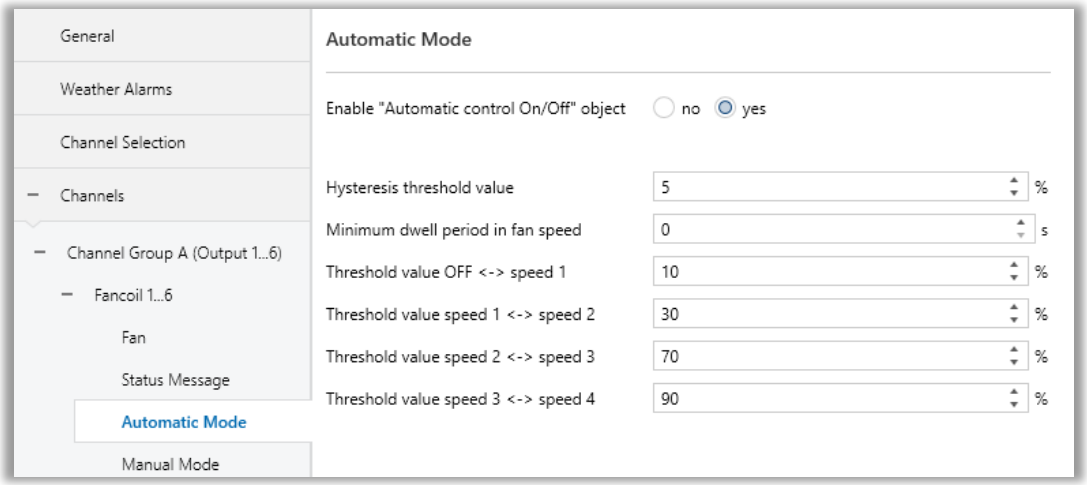


Fig. 35: Automatic Mode Configuration Page

3.9.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable "Automatic control On/Off" object	This parameter enables the Automatic control On/Off Group Object.	No **Yes**
Hysteresis threshold value	This parameter sets the hysteresis for switching to the next fan speed. The hysteresis applies to all three threshold values. A setting of 0 results in immediate switching without any hysteresis. The specified percentage value is added to or subtracted from the threshold value of the respective fan speed to determine new upper or lower threshold values: Switch Threshold Top (Switch On) = Threshold Value + Hysteresis Switch Threshold Bottom (Switch Off) = Threshold Value - Hysteresis	0…**5**…20
Threshold value OFF <-> speed 1	This parameter sets the threshold value at which fan speed 1 is activated. If the value in the control value communication object exceeds the specified threshold, fan speed 1 is turned on. If the value falls below the threshold, fan speed 1 is turned off.	1…**10**…100
Threshold value speed 1 <-> speed 2	This parameter sets the threshold value for switching over to fan speed 2. When the value in the control value communication object exceeds the specified threshold, the fan will switch to speed 2.	1…100
Threshold value speed 2 <-> speed 3	This parameter sets the threshold value for switching over to fan speed 3. When the value in the control value communication object exceeds the specified threshold, the fan will switch to speed 3.	1…100
Threshold value speed 3 <-> speed 4	This parameter sets the threshold value for switching over to fan speed 4. If the value in the communication objects "Control Value HEATING" or "Control Value COOLING" exceeds the specified threshold, the fan will switch to speed 4.	1…100
Minimum dwell period in fan speed	This parameter defines the dwell time for a fan speed before it switches to the next higher or lower speed. The dwell time is specified in seconds.	0…65535

3.9.5. Manual Mode

This section allows the activation of objects for manual fan speed control. The *Enable "Fan speed switch" object* option enables a single control object that allows the user to directly select a specific fan speed. The *Enable "Fan speed UP/DOWN" object* allows sequential control to increase or decrease the fan speed. When *Enable "Switch speed x" objects* is activated, individual control objects are created for each fan speed level (e.g., speed 1, speed 2, etc.), enabling more precise and targeted manual control. These features provide the user with the ability to override automatic control and enhance system flexibility.

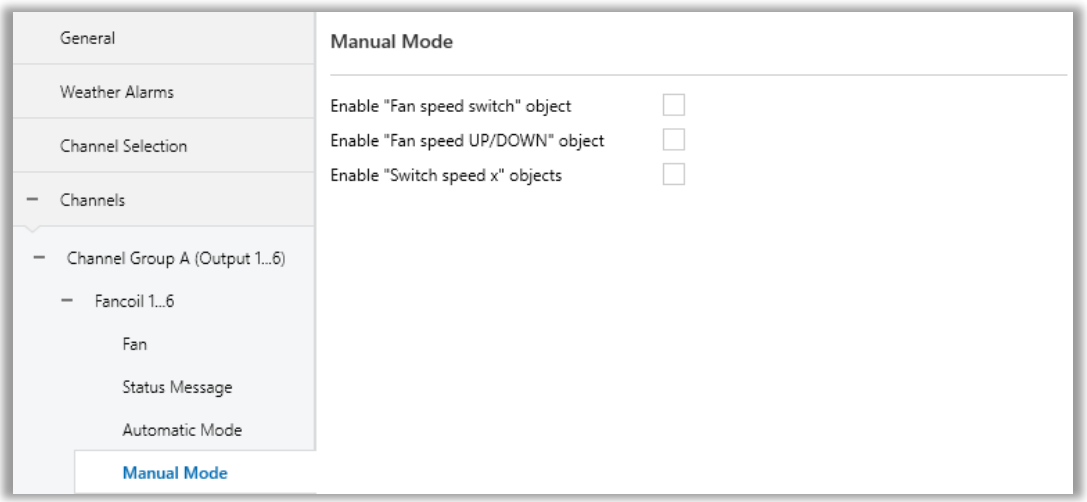


Fig. 36: Fan Manual Mode Configuration Page

3.9.5.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable "Fan speed switch" object	This parameter enables the Fan speed switch Group Object.	**Unchecked** Checked
Enable "Fan speed UP/DOWN" object	This parameter enables the Fan speed UP/DOWN Group Object.	**Unchecked** Checked
Enable "Switch speed x" object	This parameter enables the Switch speed x Group Object.	**Unchecked** Checked

4. ETS Objects List & Descriptions

The Combo+ Switch Actuator can communicate via the KNX bus line. In this section, the group objects of the KNX Combo+ Switch Actuator are described, and which of these group objects are visible and capable of being linked with group addresses are explained in sub-sections.

No	Name	Function	DTP Type	Length	Flags				
					C	R	W	T	U
1	General	In operation	1.002	1 bit	X			X	
2	General	Manual Control	1.003	1 bit	X		X		
3	General	Status of manual control	1.011	1 bit	X	X		X	
4	General: Central	Request status values	1.017	1 bit	X		X		
5	General: Central	Switch	1.001	1 bit	X		X		
6	General: Central	Blind/Shutter move Up/Down	1.008	1 bit	X		X		
7	General: Central	Slat adjustment / Stop Up/Down	1.007	1 bit	X		X		
8	General: Central	Move to position height	5.001	1 byte	X		X		
9	General: Central	Move to position slat	5.001	1 byte	X		X		
10	General: Central	Scene 1...64	18.001	1 byte	X		X		
11	General: Date/Time	Set date/time	19.001	8 bytes	X	X	X	X	X
		Set time	10.001	3 bytes	X	X	X	X	X
12	General: Date/Time	Set date	11.001	3 bytes	X	X	X	X	X
13	General: Date/Time	Request date/time	1.017	1 bit	X			X	
14, 15, 16	Weather - Shutter	Wind alarm 1,2,3	1.005	1 bit	X		X	X	X
17	Weather - Shutter	Rain alarm	1.005	1 bit	X		X	X	X
18	Weather - Shutter	Frost alarm	1.005	1 bit	X		X	X	X
19, 29,..., 249	Channel X Switch	Block	1.003	1 bit	X		X		
19, 29,..., 249	Channel X Heating	Block	1.003	1 bit	X		X		
19, 29,..., 249	Channel X Staircase	Block	1.003	1 bit	X		X		
19, 29,..., 249	Channel X Impulse	Block	1.003	1 bit	X		X		

19, 39,…, 239	Channel 1-2 Shutter	Blind/Shutter move Up/Down	1.008	1 bit	X		X		
19, 79, 139, 199	Channel 1…4 Shutter	Blind/Shutter move Up/Down	1.008	1 bit	X		X		
19, 79, 139, 199	Channel Y: Fancoil	Control value heating	5.001	1 byte	X		X		
20, 30,…, 250	Channel X Switch	Switch	1.001	1 bit	X		X		
20, 30,…, 250	Channel X Heating	Manipulated Value (1-Bit)	1.001	1 bit	X		X		
20, 30,…, 250	Channel X Heating	Manipulated Value (1-Byte)	5.001	1 byte	X		X		
20, 30,…, 250	Channel X Staircase	Staircase	1.001	1 bit	X		X		
20, 30,…, 250	Channel X Impulse	Switch Pulse	1.001	1 bit	X		X		
20, 40,…, 240	Channel 1-2 Shutter	Slat adjustment / Stop Up/Down	1.007	1 bit	X		X		
20, 40,…, 240	Channel 1-2 Shutter	Stop Up/Down	1.007	1 bit	X		X		
20, 80, 140, 200	Channel 1…4 Shutter	Slat adjustment / Stop Up/Down	1.007	1 bit	X		X		
20, 80,140, 200	Channel 1…4 Shutter	Stop Up/Down	1.007	1 bit	X		X		
20, 80, 140, 200	Channel Y: Fancoil	Control value cooling	5.001	1 byte	X		X		
21, 31,…, 251	Channel X Switch	Status	1.001	1 bit	X	X		X	
21, 31,…, 251	Channel X Heating	Status	1.001	1 bit	X	X		X	
21, 31,…, 251	Channel X Staircase	Status	1.001	1 bit	X	X		X	
21, 31,…, 251	Channel X Impulse	Status	1.001	1 bit	X	X		X	
21, 41,…, 241	Channel 1-2 Shutter	Move to 1-bit position	1.001	1 bit	X		X		
21, 81, 141, 201	Channel 1…4 Shutter	Move to 1-bit position	1.001	1 bit	X		X		
21, 81, 141, 201	Channel Y: Fancoil	Heating/cooling change over	1.100	1 bit	X	X	X	X	X
22, 32,…, 252	Channel X Switch	Operating Hours	13.100	4 bytes	X	X		X	
22, 32,…, 252	Channel X Heating	Summer/Winter Mode Switch Ov.	1.001	1 bit	X		X		
22, 32,…, 252	Channel X Staircase	Staircase Time	7.005	2 bytes	X		X		
			7.006	2 bytes	X		X		

22, 32,…, 252	Channel X Impulse	Manual Switch	1.001	1 bit	X		X		
22, 42,…, 242	Channel 1-2 Shutter	Move to position height	5.001	1 byte	X		X		
22, 82, 142, 202	Channel 1…4 Shutter	Move to position height	5.001	1 byte	X		X		
22, 82, 142, 202	Channel Y: Fancoil	Control value failure	1.001	1 bit	X		X		
23, 33,…, 253	Channel X Switch	Reset Operating Hours	1.015	1 bit	X		X		
23, 33,…, 253	Channel X Heating	Forced Position	1.001	1 bit	X		X		
23, 33,…, 253	Channel X Staircase	Prewarning	1.001	1 bit	X			X	
23, 43,…, 243	Channel 1-2 Shutter	Move to position slat	5.001	1 byte	X		X		
23, 83, 143, 203	Channel 1…4 Shutter	Move to position slat	5.001	1 byte	X		X		
23, 83, 143, 203	Channel Y - Fancoil	Manual fan level	5.100	1 byte	X		X		
24, 34,…, 254	Channel X Switch	Operating Hours Overflow	1.001	1 bit	X	X		X	
24, 34,…, 254	Channel X Staircase	Manual Switch	1.001	1 bit	X		X		
24, 44,…, 244	Channel 1-2 Shutter	Trigger reference movement	1.008	1 bit	X		X		
24, 84, 144, 204	Channel 1…4 Shutter	Trigger reference movement	1.008	1 bit	X		X		
24, 84, 144, 204	Channel Y - Fancoil	Set fan speed 1	1.001	1 bit	X		X		
25, 35,…, 255	Channel X Switch	Operating Hours start/limiting value	12.100	4 bytes	X		X		
25, 35,…, 255	Channel X Staircase	Forced control	2.001	2 bit	X		X		
25, 35,…, 255	Channel X Staircase	Priority Switch	1.001	1 bit	X		X		
25, 35,…, 245	Channel 1-2 Shutter	Forced operation, 1-bit	1.003	1 bit	X		X		
25, 35,…, 245	Channel 1-2 Shutter	Forced operation, 2-bit	2.001	2 bit	X		X		
25, 65,…, 205	Channel 1…4 Shutter	Forced operation, 1-bit	1.003	1 bit	X		X		
		Forced operation, 2-bit	2.001	2 bit	X		X		
25, 85, 145, 205	Channel Y - Fancoil	Set fan speed 2	1.001	1 bit	X		X		
26, 36,…, 256		Forced Control	1.001	1 bit	X		X		

	Channel X Switch		2.001	2 bit	X		X		
26, 46,…, 246	Channel 1-2 Shutter	Block	1.003	1 bit	X		X		
26, 86, 146, 206	Channel 1…4 Shutter	Block	1.003	1 bit	X		X		
26, 86, 146, 206	Channel Y - Fancoil	Set fan speed 3	1.001	1 bit	X		X		
27, 37,…, 257	Channel X Switch	Threshold switch	5.001	1 byte	X		X		
			5.005	1 byte	X		X		
			7.001	2 byte	X		X		
			9.001	2 byte	X		X		
			9.004	2 byte	X		X		
27, 47,…, 247	Channel 1-2 Shutter	Status Height	5.001	1 byte	X	X		X	
27, 87,147, 207	Channel 1…4 Shutter	Status Height	5.001	1 byte	X	X		X	
27, 87, 147, 207	Channel Y - Fancoil	Set fan speed 4	1.001	1 bit	X		X		
28, 38,…, 258	Channel X Switch	Scene 1...64	18.001	1 byte	X		X		
28, 38,…, 248	Channel 1-2 Shutter	Status Slat	5.001	1 byte	X	X		X	
28, 88, 148, 208	Channel 1…4 Shutter	Status Slat	5.001	1 byte	X	X		X	
28, 88, 148, 208	Channel Y - Fancoil	Increase/decrease fan speed	1.007	1 byte	X		X		
29, 49,…, 249	Channel 1-2 Shutter	Status Upper end position	1.001	1 bit	X	X		X	
29, 89, 149, 209	Channel 1…4 Shutter	Status Upper end position	1.001	1 bit	X	X		X	
29, 89, 149, 209	Channel Y - Fancoil	Status fan On/Off	1.001	1 bit	X	X		X	
30, 50,…, 250	Channel 1-2 Shutter	Status Lower end position	1.001	1 bit	X	X		X	
30, 90, 150, 210	Channel 1…4 Shutter	Status Lower end position	1.001	1 bit	X	X		X	
30, 90, 150, 210	Channel Y - Fancoil	Status fan speed	5.100	1 byte	X	X		X	
31, 51,…, 251	Channel 1-2 Shutter	Status operability	1.011	1 bit	X	X		X	
31, 91, 151, 211	Channel 1…4 Shutter	Status operability	1.011	1 bit	X	X		X	
31, 91, 151, 211	Channel Y - Fancoil	Status fan speed 1	1.001	1 bit	X	X		X	

32, 52,…, 252	Channel 1-2 Shutter	Status current direction	1.008	1 bit	X	X		X	
32, 92, 152, 212	Channel 1…4 Shutter	Status current direction	1.008	1 bit	X	X		X	
32, 92, 152, 212	Channel Y - Fancoil	Status fan speed 2	1.001	1 bit	X	X		X	
33, 53,…, 253	Channel 1-2 Shutter	Status Shutter/Blind	241.800	4 bytes	X	X		X	
33, 93, 153, 213	Channel 1…4 Shutter	Status Shutter/Blind	241.800	4 bytes	X	X		X	
33, 93, 153, 213	Channel Y - Fancoil	Status fan speed 3	1.001	1 bit	X	X		X	
34, 54,…, 254	Channel 1-2 Shutter	Status of movement	1.002	1 bit	X	X		X	
34, 94, 154, 214	Channel 1…4 Shutter	Status of movement	1.002	1 bit	X	X		X	
34, 94, 154, 214	Channel Y - Fancoil	Status fan speed 4	1.001	1 bit	X	X		X	
35, 55,…, 255	Channel 1-2 Shutter	Scene 1…64	18.001	1 byte	X		X		
35, 95, 155, 215	Channel 1…4 Shutter	Scene 1…64	18.001	1 byte	X		X		
35, 95, 155, 215	Channel Y - Fancoil	Automatic control On/Off	1.001	1 bit	X		X		
36, 96, 156, 216	Channel Y - Fancoil	Status fan automatic	1.011	1 bit	X	X		X	
37, 97, 157, 217	Channel Y - Fancoil	Forced operation	1.001	1 bit	X		X		
			2.001	1 bit	X		X		
259, 270, 281, 292, 303, 314, 325, 336	Additional: Converter X	Disabling	1.003	1 bit	X		X		
260, 271, 282, 293, 304, 315, 326, 337	Additional: Converter X	Status	1.003	1 bit	X	X		X	
261, 272, 283, 294, 305, 316, 327, 338	Converter X	Input Bit	1.001	1 bit	X		X		
		Input 2Bit	2.001	2 bits	X		X		
		Input Byte	5.010	1 byte	X		X		
		Input 2Bytes	7.001	2 bytes	X		X		
		Input RGB	232.600	3 bytes	X		X		
		Input RGBW	251.600	6 bytes	X		X		
261, 272,…, 338	Additional: Converter X	Input Bit:0	1.002	1 bit	X		X		
262, 273,…, 339	Additional: Converter X	Output Bit: 0	1.002	1 bit	X	X		X	

262, 273,..., 339	Additional: Converter X	Output Red	5.001	1 byte	X	X		X	
262, 273,..., 339	Additional: Converter X	Input Bit:1	1.002	1 bit	X		X		
262, 273,..., 339	Additional: Converter X	Input Red	5.001	1 byte	X		X		
263, 274,..., 340	Additional: Converter X	Output Bit: 1	1.002	1 bit	X	X		X	
263, 274,..., 340	Additional: Converter X	Output Green	5.001	1 byte	X	X		X	
263, 274,..., 340	Additional: Converter X	Input Bit:2	1.002	1 bit	X		X		
263, 274,..., 340	Additional: Converter X	Input Green	5.001	1 byte	X		X		
264, 275,..., 341	Additional: Converter X	Output Bit: 2	1.002	1 bit	X	X		X	
264, 275,..., 341	Additional: Converter X	Output Blue	5.001	1 byte	X	X		X	
264, 275,..., 341	Additional: Converter X	Input Bit:3	1.002	1 bit	X		X		
264, 275,..., 341	Additional: Converter X	Input Blue	5.001	1 byte	X		X		
265, 276,..., 342	Additional: Converter X	Output Bit: 3	1.002	1 bit	X	X		X	
265, 276,..., 342	Additional: Converter X	Output White	5.001	1 byte	X	X		X	
265, 276,..., 342	Additional: Converter X	Input Bit:4	1.002	1 bit	X		X		
265, 276,..., 342	Additional: Converter X	Input White	5.001	1 byte	X		X		
266, 277,..., 343	Additional: Converter X	Output Bit: 4	1.002	1 bit	X	X		X	
266, 277,..., 343	Additional: Converter X	Input Bit:5	1.002	1 bit	X		X		
267, 278,..., 344	Additional: Converter X	Output Bit: 5	1.002	1 bit	X	X		X	
267, 278,..., 344	Additional: Converter X	Input Bit:6	1.002	1 bit	X		X		
268, 279,..., 345	Additional: Converter X	Output Bit: 6	1.002	1 bit	X	X		X	
268, 279,..., 345	Additional: Converter X	Input Bit:7	1.002	1 bit	X		X		
269, 280,..., 346	Additional: Converter X	Output Bit: 7	1.002	1 bit	X	X		X	
	Additional: Converter X	Output Bit	1.001	1 bit	X	X		X	
		Output 2Bit	2.001	2 bits	X	X		X	

269, 280, 291, 302, 313, 324, 335, 346		Output Byte	5.010	1 byte	X	X		X	
		Output 2Bytes	7.001	2 bytes	X	X		X	
		Output RGB	232.600	3 bytes	X	X		X	
		Output RGBW	251.600	6 bytes	X	X		X	
347, 375, 403, 431	Additional: Logic X	Lock	1.001	1 bit	X		X		
348, 376, 404, 432	Additional: Logic X	Status	1.003	1 bit	X	X		X	
349, 377, 405, 433	Additional: Logic X	External Movement	1.001	1 bit	X		X		X
350, 378, 406, 434	Additional: Logic X	External Brightness	9.004	2 bytes	X		X		X
351, 379, 407, 435	Additional: Logic X	Brightness Threshold Lower	9.004	2 bytes	X		X		
352, 380, 408, 436	Additional: Logic X	Brightness Threshold Upper	9.004	2 bytes	X		X		
353, 381, 409, 437	Additional: Logic X	External Temperature	9.001	2 bytes	X		X		X
354, 382, 410, 438	Additional: Logic X	Temperature Threshold Lower	9.001	2 bytes	X		X		
355, 383, 411, 439	Additional: Logic X	Temperature Threshold Upper	9.001	2 bytes	X		X		
356, 357, 358 / 384, 385, 386 / 412, 413, 414 / 440, 441, 442	Additional: Logic X – Input Z	External Input 1…3	1.001	1 bit	X		X		X
			5.010	1 byte	X		X		X
			7.001	2 bytes	X		X		X
			9.001	2 bytes	X		X		X
			12.001	4 bytes	X		X		X
359, 387, 415, 443	Additional: Logic X	Result Status	1.002	1 bit	X	X		X	
360, 363, 366, 369, 372 / 388, 391, 394, 397, 400 / 416, 419, 422, 425, 428 / 444, 447, 450, 453, 456	Additional: Logic 1…4 – Output 1…5	Switching	1.001	1 bit	X	X		X	
		Absolute Dimming	5.001	1 byte	X	X		X	
		Shutter	1.008	1 bit	X	X		X	
		Alarm	1.005	1 bit	X	X		X	
		Sequence	1.010	1 bit	X	X		X	
		Scene	17.001	1 byte	X	X		X	
		String (14 byte)	16.000	14 bytes	X	X		X	
		Threshold	7.001	pulses	X	X		X	
361, 364, 367, 370, 373 / 389, 392, 395, 398, 401/ 417, 420, 423, 426, 429 / 445, 448, 451, 454, 457	Logic X	Delay Time on TRUE State	7.005	2 bytes	X		X		

362, 365, 368, 371, 374 / 390, 393, 396, 399, 402/ 418, 421, 424, 427, 430 / 446, 449, 452, 455, 458	Logic X	Delay Time on FALSE State	7.005	2 bytes	X		X		

4.1. General Objects

This section describes the "general" group objects and their properties. General group objects, as the name suggests, indicate the general characteristics of the KNX Combo+.

Object Number	Object Name	Function	Type	Flags
1	General	In operation	1 bit	CT

This object is used to monitor the presence of the device on the KNX bus line regularly. However, monitoring telegrams can be sent cyclically on the KNX bus line.
DPT: 1.002 (Boolean)

2	General	Manual Control	1 bit	CW

This object is used to enable or disable manual control.
DPT: 1.003 (enable)

3	General	Status of manual control	1 bit	CRT

This object is used to read manual control status.
DPT: 1.011 (state)

4	General: Central	Request status values	1 bit	CW

This object is used to send the status of all group objects on the bus when it receives a telegram with the value 0 or 1, provided they are parameterized with "On request."

Note: This object returns results only from function-based operations performed with 'Switch'.

DPT: 1.017 (trigger)

5	General: Central	Switch	1 bit	CW

This object is used to enable or disable Switch X channels with the "Include in central control" parameter activated.
DPT: 1.001 (switch)

6	General: Central	Blind/Shutter move Up/Down	1 bit	CW

This object is used to move Shutter/Blind channels with the "Include in central control" parameter activated in the Up or Down direction.
DPT: 1.008 (up/down)

7	General: Central	Slat adjustment / Stop Up/Down	1 bit	CW

This object is used to increase, decrease, or stop the slat angles of Shutter/Blind channels with the "Include in central control" parameter activated.
DPT: 1.007 (stop)

8	General: Central	Move to position height	1 byte	CW

This object is used to adjust the blind position of Shutter/Blind channels with the "Include in central control" parameter activated.
DPT: 5.001(percentage (0...100%))

9	General: Central	Move to position slat	1 byte	CW

This object is used to adjust the slat position of Shutter/Blind channels with the "Include in central control" parameter activated.
DPT: 5.001(percentage (0...100%))

10	General: Central	Scene 1...64	1 byte	CW

This object is used to recall or store the configured scene values of channels with the "Include in central control" parameter activated.
DPT: 18.001(scene control)

11	General: Date/Time	Set date/time Set time	8 bytes 3 bytes	CRWTU

This object is used to set the time or date/time.
DPT: 19.001(date time) / 10.001 (time of delay)

12	General: Date/Time	Set date	3 bytes	CRWTU

This object is used to set the date.
DPT: 11.001(date)

13	General: Date/Time	Request date/time	1 bit	CT

This object sends a date and time request on the bus.
The request is automatically transmitted 30 seconds after the device is powered up, regardless of any active transmission conditions or switch-on delay settings.
DPT: 1.017 (trigger)

4.2. Weather - Shutter Objects

This section describes the "Weather-Shutter" group objects and their properties.

Object Number	Object Name	Function	Type	Flags
14, 15, 16	Weather - Shutter	Wind alarm 1,2,3	1 bit	CWTU
This object indicates the current status of the wind alarm. DPT: 1.005 (alarm)				
17	Weather - Shutter	Rain alarm	1 bit	CWTU
This object indicates the current status of the rain alarm. DPT: 1.005 (alarm)				
18	Weather - Shutter	Frost alarm	1 bit	CWTU
This object indicates the current status of the frost alarm. DPT: 1.005 (alarm)				

4.3. Switch Objects

In this section, switch objects are described in the table below. Switch group objects are used to enable, disable, or directly control, etc, the channel outputs.
X: 1…24

Object Number	Object Name	Function	Type	Flags
19, 29,…, 249	Channel X Switch	Block	1 bit	CW

This object is used to set the Combo+ channel X status. “Enabled” or “Disabled” telegram is received via this object.
For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the channel X will continue working.
DPT: 1.003 (enable)

20, 30,…, 250	Channel X Switch	Switch	1 bit	CW

This communication object changes in functionality depending on the selected input function. In accordance with the parameter setting, this communication object can be switched by actuation of the input to ON, OFF or TOGGLE.
DPT: 1.001 (switch)

21, 31,…, 251	Channel X Switch	Status	1 bit	CRT

This object is used to read Switch X status. “Enabled” or “Disabled” telegram is transmitted to KNX bus via this object when Switch X status is changed over device.
DPT: 1.001 (switch)

22, 32,…, 252	Channel X Switch	Operating Hours	4 bytes	CRT

This object is only visible when the “Operating Hours Counter” function is enabled. The number of hours that the lighting channel remains On or Off is shown via this object. In addition, when the “Counter type” the parameter is configured as “Down counter”, the starting value for the countdown is sent via this object too.
DPT: 13.100 (time lag (s))

23, 33,..., 253	Channel X Switch	Reset Operating Hours	1 bit	CW

This object is used to reinitialise the operating hours counter for the relevant channel so far. The operating hour counter is reset when the value 1 is sent from the KNX bus line.
DPT: 1.015 (reset)

24, 34,..., 254	Channel X Switch	Operating Hours Overflow	1 bit	CRT

This object is used to send to the bus line that the threshold value for the operating hours that have passed so far for the relevant channel has been exceeded.
DPT: 1.001 (switch)

25, 35,..., 255	Channel X Switch	Operating Hours start/limiting value	4 bytes	CW

This object is used to set the limit value of the runtime counter for the relevant channel. Counting is counted backwards or forwards from the specified value.
DPT: 12.100 (counter time sec (s))

26, 36,..., 256	Channel X Switch	Forced Control	1 bit / 2 bit	CW

This group object is enabled if enabled forced operation is set to the required option.
In the forced operation, a 1-bit group object forcibly operates switch x, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

1 Bit Telegram Value	Description
0	The channel is not forcibly operated; existing forced operations are removed.
1	The channel is forcibly operated, switched on, or switched off.

In the forced operation, a 2-bit group object forcibly operates a switch channel, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

2 Bit Telegram Value	Description
0 or 1	The channel x is not forcibly operated; existing forced operations are removed.
2	The channel x is forcibly switched off. Forced operation is active
3	The channel x is forcibly operated and switched on. Forced operation is active.

DPT: 1.001 (switch) / 2.001 (switch control)

27, 37,..., 257	**Channel X Switch**	**Threshold switch**	**1 byte**	**CW**

This communication object changes in functionality depending on the selected input function. Depending on the configuration, the data type of this object changes.

DPT	Name	Range	Unit
5.001	DPT_Scaling	[0…100]	%
5.005	DPT_DecimalFactor	[0…255]	ratio
7.001	DPT_Value_2_Ucount	[0…65 535]	pulses
9.001	DPT_Value_Temp	-273 °C … 670 433,28°C	°C
9.004	DPT_Value_Lux	0 Lux … 670 433,28 Lux	Lux

28, 38,..., 258	**Channel X Switch**	**Scene 1...64**	**1 byte**	**CW**

This communication object stores the value of the active scene number (1 - 16).
DPT: 18.001(scene control)

4.4. Heating Objects

In this section, heating objects are described in the table below. Heating group objects are used to enable or disable heating channels, control manipulated values (binary or continuous), monitor channel status, switch between summer and winter modes, and define forced positions.
X: 1…24

Object Number	Object Name	Function	Type	Flags
19, 29,..., 249	Channel X Heating	Block	1 bit	CW
This object is used to set the Combo+ channel X status. “Enabled” or “Disabled” telegram is received via this object. For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the channel X will continue working. DPT: 1.003 (enable)				
20, 30,..., 250	Channel X Heating	Manipulated Value (1-Bit)	1 bit	CW
This object is only visible when the “Type of Manipulated Variable” is set to “Switching (1-Bit)”. Via this object, the valve is controlled with switching telegrams (on or off). DPT: 1.001 (switch)				
20, 30,..., 250	Channel X Heating	Manipulated Value (1-Byte)	1 byte	CW
This object is only visible when the “Type of Manipulated Variable” is set to “Continuous (1-Byte)”. Via this object, the valve is controlled with percentages taking the limits, previously configure, into consideration. DPT: 5.001(percentage (0...100%))				
21, 31,..., 251	Channel X Heating	Status	1 bit	CRT
This object is only visible when the “Feedback Telegram” function is enabled (Normal or Inverted). Via the group address linked, it indicates the current status of a related output. DPT: 1.001 (switch)				
22, 32,..., 252	Channel X Heating	Summer/Winter Mode Switch Ov.	1 bit	CW
This object is only visible when the “Summer/Winter Mode Switch Over?” is set to the value “Yes”. Via the group address linked, the operating mode can be defined. DPT: 1.001 (switch)				

23, 33,..., 253	Channel X Heating	Forced Position	1 bit	CW

This object is only visible when the “Forced Position” function is enabled. Via this object, it is possible to activate or deactivate the forced. When the forced is activated, the output takes the value configured previously and remains it until the disabling forced.
DPT: 1.001 (switch)

4.5. Staircase Objects

In this section, staircase objects are described in the table below. Staircase group objects are used to control staircase lighting functions, such as enabling or disabling channels, activating or resetting staircase timers, presetting runtime values, or performing forced control operations. Additional functions like manual switch, scene control, and priority control are also supported.

X: 1…24

Object Number	Object Name	Function	Type	Flags
19, 29,..., 249	Channel X Staircase	Block	1 bit	CW

This object is used to set the Combo+ channel X status. “Enabled” or “Disabled” telegram is received via this object.
For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the channel X will continue working.
DPT: 1.003 (enable)

20, 30,..., 250	Channel X Staircase	Staircase	1 bit	CW

This object is enabled if the additional function Staircase lighting has been enabled in the channel x parameter page.
This group object is used to activate/deactivate the Staircase lighting function. On deactivation, the channel acts like a "normal" actuator without a Staircase lighting function. The Staircase lighting function can be reactivated when the actuator receives a value 1 telegram via this group object.
Telegram value:
0 = Staircase lighting is deactivated
1 = Staircase lighting is activated
DPT: 1.001 (switch)

21, 31,..., 251	Channel X Staircase	Status	1 bit	CRT

This object is used to watch Switch X status. “Enabled” or “Disabled” telegram is transmitted to KNX bus via this object when Switch X status is changed over device.
DPT: 1.001 (switch)

22, 32,..., 252	Channel X Staircase	Staircase Time	2 bytes	CW

This object is used to obtain the staircase lighting duration via the bus.
DPT: 7.005 (time (s)) / 7.006 (time (min))

23, 33,..., 253	Channel X Staircase	Prewarning	1 bit	CT

This object sends a pre-warning on the bus before switching off the output.
Telegram value:
0 = Prewarning staircase lighting deactive
1 = Prewarning staircase lighting active
DPT: 1.001 (switch)

24, 34,..., 254	Channel X Staircase	Manual Switch	1 bit	CW

This communication object changes in functionality depending on the selected staircase function. In accordance with the parameter setting, this communication object can be switched by actuation of the input to ON, OFF.
DPT: 1.001 (switch)

25, 35,..., 255	Channel X Staircase	Forced control	2 bit	CW

This group object is enabled if enabled forced operation is set to the required option. 2-bit group object forcibly operates a channel, e.g. by higher-level control. The value of the group object directly defines the forced position of the group:

Telegram value:
0 or 1 = The channel x is not forcibly operated; existing forced operations are removed.
2 = The channel x is forcibly switched off. Forced operation is active.
3 = The channel x is forcibly operated and switched on. Forced operation is active.

DPT: 2.001 (switch control)

25, 35,..., 255	Channel X Staircase	Priority Switch	1 bit	CW

This group object is enabled if enabled forced operation is set to the required option. In the forced operation, a 1-bit group object forcibly operates channel x, e.g. by higher-level control.
DPT: 1.001 (switch)

4.6. Impulse Objects

TIn this section, impulse objects are described in the table below. Impulse group objects are used to enable or disable channels, initiate and repeat pulse operations, monitor channel status, and perform manual switching independent of pulse functions.
X: 1…24

Object Number	Object Name	Function	Type	Flags
19, 29,..., 249	Channel X Impulse	Block	1 bit	CW
This object is used to set the Combo+ channel X status. “Enabled” or “Disabled” telegram is received via this object. For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the channel X will continue working. DPT: 1.003 (enable)				
20, 30,..., 250	Channel X Impulse	Switch Pulse	1 bit	CW
If this object is ON, a pulse operation is initiated on the relay side. If the ‘Repeat impulse’ parameter is enabled, the pulse operation is repeated at the specified interval. If it is OFF, the pulse operation is terminated. DPT: 1.001 (switch)				
21, 31,..., 251	Channel X Impulse	Status	1 bit	CRT
This object is used to read Channel X status via the bus. DPT: 1.001 (switch)				
22, 32,..., 252	Channel X Impulse	Manual Switch	1 bit	CW
This object enables direct control of the relay output, regardless of the pulse function. Any other scheduled pulse operations are terminated. DPT: 1.001 (switch)				

4.7. Shutter/Blind Objects

In this section, shutter/blind objects are described in the table below. Shutter/Blind group objects are used to send up/down commands, stop or adjust slat angles, move to predefined positions, set position heights, and indicate the current position of shutters and slats. Depending on parameter settings, additional functions such as automatic positioning or slat adjustment may also be supported.
X: 1-2,…23-24 / **Y:**1-4,…19-22

Object Number	Object Name	Function	Type	Flags
19, 29,…, 239 19, 79, 139, 199	Channel X/Y Shutter	Blind/Shutter move Up/Down	1 bit	CW
This object is used to send the blind/shutter up or down command." DPT: 1.008 (up/down)				
20, 40,…, 240 20, 80, 140, 200	Channel X/Y Shutter	Slat adjustment / Stop Up/Down	1 bit	CW
Via this object stop and slat angle telegrams are sent. DPT: 1.007 (step)				
20, 40,…, 240 20, 80, 140, 200	Channel X/Y Shutter	Stop Up/Down	1 bit	CW
Via this object stop and slat angle telegrams are sent. DPT: 1.007 (step)				
21, 41,…, 241 21, 81, 141, 201	Channel X/Y Shutter	Move to 1-bit position	1 bit	CW
This object moves the shutter to the positions defined in the 'Shutter Position' window for the parameters 'Action on value = 1' and 'Action on value = 0'. DPT: 1.001 (switch)				
22, 42,…, 242 22, 82, 142, 202	Channel X/Y Shutter	Move to position height	1 byte	CW
Via this object it is possible to set a position of the blind in %. DPT: 5.001(percentage (0...100%))				

23, 43,..., 243 23, 83, 143, 203	Channel X/Y Shutter	Move to position slat	1 byte	CW

Via this object the current position of slat is indicated.
This object is displayed only if the 'Operating mode' parameter in the 'Shutter/Blind' window is set to 'Blind/Shutter control with slat adjustment'.
DPT: 5.001(percentage (0...100%))

24, 44,..., 244 24, 84, 144, 204	Channel X/Y Shutter	Trigger reference movement	1 bit	CW

This object is used to re-reference shifts caused by the mechanical movement of the blind.
Up (0): Reference movement to upper end position
Down (1): Reference movement to lower end position
DPT: 1.008 (up/down)

25, 35,..., 245 25, 85,145, 205	Channel X/Y Shutter	Forced operation, 1-bit Forced operation, 2-bit	1 bit 2 bit	CW

This group object is enabled if enabled forced operation is set to the required option.
In the forced operation, a 1-bit group object forcibly operates switch x, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

1 Bit Telegram Value	Description
0	The channel is not forcibly operated; existing forced operations are removed.
1	The channel is forcibly operated and switched on. Forced operation is active.

In the forced operation, a 2-bit group object forcibly operates a switch channel, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

2 Bit Telegram Value	Description
0 or 1	The channel x is not forcibly operated; existing forced operations are removed.
2	The channel x is forcibly switched off. Forced operation is active
3	The channel x is forcibly operated and switched on. Forced operation is active.

DPT: 1.001 (switch) / 2.001 (switch control)

26, 46,..., 246 26, 86, 146, 206	Channel X/Y Shutter	Block	1 bit	CW

This object is used to block the Channel X. When a "1" value is sent to this communication object, the Channel is blocked. If a value is sent to the Channel X via its communication objects, all values are ignored. For unlocking the Channel X, a "0" value must be sent.
Warning: The setting of the 'Order of priority' parameter in the 'Safety/Weather Alarms' window defines which Safety/Weather alarm objects take precedence.
DPT: 1.003 (enable)

27, 47,..., 247 27, 87,147, 207	Channel X/Y Shutter	Status Height	1 byte	CRT

This object is used to read the height value of the shutter/blind via the bus or to send its status to the bus line when the status changes.
DPT: 5.001(percentage (0...100%))

28, 38,..., 248 28, 88, 148, 208	Channel X/Y Shutter	Status Slat	1 byte	CRT

This object is used to read the slat value of the shutter/blind via the bus or to send its status to the bus line when the status changes.
DPT: 5.001(percentage (0...100%))

29, 49,..., 249 29, 89, 149, 209	Channel X/Y Shutter	Status Upper end position	1 bit	CRT

This object is used to read the status upper end position of the shutter/blind via the bus or to send its status to the bus line when the status changes.
DPT: 1.001 (switch)

30, 50,..., 250 30, 90, 150, 210	Channel X/Y Shutter	Status Lower end position	1 bit	CRT

This object is used to read the status lower end position of the shutter/blind via the bus or to send its status to the bus line when the status changes.
DPT: 1.001 (switch)

31, 51,..., 251 31, 91, 151, 211	Channel X/Y Shutter	Status operability	1 bit	CRT

This object sends a value of true when no alarm, blocking, or priority command is active. If none of the following conditions are active — 'Weather Alarm', 'Forced', 'Block', or 'Manual Control' — the object outputs true; otherwise, it outputs false.
In short, a true value from this object indicates that the blind can be controlled normally.
DPT: 1.011 (state)

32, 52,..., 252 32, 92, 152, 212	Channel X/Y Shutter	Status current direction	1 bit	CRT

This object is used to read the current direction of the shutter/blind via the bus or to send its status to the bus line when the status changes.
DPT: 1.008 (up/down)

33, 53,..., 253 33, 93, 153, 213	Channel X/Y Shutter	Status Shutter/Blind	4 bytes	CRT

This object is used to read the status of the shutter/blind via the bus or to send its status to the bus line when the status changes.

Data fields	Description		Unit / Range
HeightPosition	Height position of the blinds in percent		0 % to 100 % ~0,4 % resolution
SlatsPosition	Angle position of the slats in percent		0 % to 100 % ~0,4 % resolution
Attributes	Bit	Description	Bitset
- UpperEndPos	0	Upper end position reached	0: false 1: true
- LowerEndPos	1	Lower end position reached	0: false 1: true
- LowerPredefPos	2	Lower predefined position reached typically height 100 %, slatsangle < 100 %	0: false 1: true
- DriveState	3	Indicates whether the target position is reached or the drive is moving	0: drive is moving 1: target position is reached
- TargetHPosRestrict	4	Restriction of target height position. Position can not be reached	0: false 1: true
- TargetSPosRestrict	5	Restriction of target slats position. Position can not be reached	0: false 1: true
- WeatherAlarm	6	At least one of the inputs Wind-/Rain/Frost-Alarm is 'in alarm'	0: false 1: true
- Forced	7	up/down position is forced by MoveUpDownForced input	0: false 1: true
- Locked	8	movement is locked, e.g. by DeviceLocked input	0: false 1: true
- LocalOverride	9	true ⇒ actuator setvalue is locally overridden, e.g. via a local user interface	0: false 1: true
- Failure	10	General failure of the actuator or the drive	0: false 1: true
- reserved	11	shall be 0.	0
- reserved	12	shall be 0.	0
- reserved	13	shall be 0.	0
- ValidHeightPos	14	Validity of field HeightPosition	0: false 1: true
- ValidSlatsPos	15	Validity of field SlatsPosition	0: false 1: true

DPT: 241.800 (status sun&blind & shutter actuator)

34, 54,..., 254 34, 94, 154, 214	Channel X/Y Shutter	Status of movement	1 bit	CRT

This object sends TRUE to the bus when a blind movement is active, and FALSE when there is no movement.
DPT: 1.002 (boolean)

35, 55,..., 255 35, 95, 155, 215	Channel X/Y Shutter	Scene 1...64	1 byte	CW

This object is used to execute or store a scenario with a specified scenario number. According to the KNX scenario numbers could be between 1-64. If a scenario wanted to be stored, the scenario number + 128 value must be sent. Also, this object is always visible.
DPT: 18.00.1 (scene control)

4.8. Fancoil Objects

In this section, fancoil objects are described in the table below. Fancoil group objects are used to control heating and cooling values, changeover between heating and cooling modes, monitor and signal control value failures, set manual fan levels, and manage additional HVAC functions depending on the parameter configuration.
Up to 2 fancoil objects per channel can be configured, each supporting different functional roles such as heating, cooling, fan speed control, or safety states.
X: 1 / 2

Object Number	Object Name	Function	Type	Flags
19, 79, 139, 199	Channel X: Fancoil	Control value heating	1 byte	CW

This object is only visible when the “HVAC system” parameter is set to “1 control value” or “2 control value”. Via this object, command value for heating operation is sent.
DPT: 5.001(percentage (0...100%))

20, 80, 140, 200	Channel X: Fancoil	Control value cooling	1 byte	CW

This object is only visible when the “HVAC system” parameter is set to “2 control value”. Via this object, command value for cooling operation is sent.
DPT: 5.001(percentage (0...100%))

21, 81, 141, 201	Channel X: Fancoil	Heating/cooling change over	1 bit	CRWTU

This object is only visible when the “Fan Coil Function” parameter is set to “Heating/Cooling”. Via this object it is possible to define the operating mode of the fan coil.
DPT: 1.100 (cooling/heating)

22, 82, 142, 202	Channel X: Fancoil	Control value failure	1 bit	CRT

This object signals a malfunction in the control value—for example, due to a thermostat error. In such cases, the Fan Coil controller reports a fault and switches to a predefined safety position using the "Control value failure" object. This safety state affects both the fan speed and the valve positions.
DPT: 1.001(switch)

23, 83, 143, 203	Channel X: Fancoil	Manual fan level	1 byte	CW

This object is only visible when the “Manual Fan Control” function is enabled. Via this object, it is possible to force the fan speed to a certain level such as 0, 1, 2, 3 or 4. The last manual control value received is applied. There are three different manual control object groups. When a command is issued from any of these objects, the system switches to manual control mode. To reactivate automatic mode, an **ON** value must be sent to the ‘Automatic control On/Off’ object.
DPT: 5.100(fan stage (0...255))

24, 25, 26, 27/ 84, 85, 86, 87/ 144,145,146,147/ 204,205,206,207	Channel X: Fancoil	Set fan speed 1…4	1 bit	CW

This object is used to select fan speed 1…4 individually.
DPT: 1.001(switch)

28, 88, 148, 208	Channel X: Fancoil	Increase/decrease fan speed	1 bit	CW

This object is used to change between fan speed levels with a 1-bit value. If a continuous value is sent in the increasing direction, it follows the following sequence.
DPT: 1.007(up/down)

29, 89, 149, 209	Channel X: Fancoil	Status fan On/Off	1 bit	CRT

This object is used to monitor the status fan On/Off.
The object is set to 1 (ON) when any fan speed is active (i.e., greater than zero). It transmits its value only when it is different from zero. This object serves to indicate the fan's operating status—whether it is running or turned off.

DPT: 1.001 (switch)

30, 90, 150, 210	Channel X: Fancoil	Status fan speed	1 byte	CRT

This object is used to monitor the status fan speed.
You can configure whether the communication object value is merely updated internally or also transmitted on the bus—either upon change or upon explicit request. Additionally, it can be set whether the status communication object reflects the actual fan speed level or the requested one.
DPT: 5.100(fan stage (0...255))

31, 32, 33, 34/ 91, 92, 93, 94/ 151,152,153,154/ 211,212,213,214	Channel X: Fancoil	Status fan speed 1…4	1 bit	CRT

This object is used to monitor the status fan speed 1..4.
It can be configured whether the object value is only updated internally, sent on request, or transmitted only when a change occurs. Additionally, you can define whether the status should represent the actual fan speed or the target (required) speed. This object allows the fan speed to be shown in a visualization or indicated on a display.
DPT: 1.001 (switch)

35, 95, 155, 215	Channel X: Fancoil	Automatic control On/Off	1 bit	CW

This object is used to enable/disable Automatic control.
When automatic mode is enabled, it becomes active after a download, an ETS reset, or when an ON telegram is received via this communication object. Automatic mode is deactivated upon receiving a telegram on any manual control object. Manual communication objects include:
• Fan: Switch speed
• Fan: Speed x (x = 1, 2, 3)
• Fan: Fan speed switch
• Fan: Fan speed up/down
• Fan: Limitation x (x = 1, 2, 3, or 4)
During forced operation, automatic mode remains active but operates only within the defined limits.
The behavior of the communication object depends on the parameter setting:
If the parameter is set to value 1:
Telegram value 0 = automatic mode OFF
Telegram value 1 = automatic mode ON
If the parameter is set to value 0:
Telegram value 0 = automatic mode ON
Telegram value 1 = automatic mode OFF
DPT: 1.001 (switch)

36, 96, 156, 216	Channel X: Fancoil	Status fan automatic	1 bit	CRT

This object is used to monitor the status fan automatic.
DPT: 1.011 (state)

37, 97, 157, 217	Channel X: Fancoil	Forced operation	1 bit 2 bit	CW

This group object is enabled if enabled forced operation is set to the required option.
In the forced operation, a 1-bit group object forcibly operates switch x, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

1 Bit Telegram Value	Description
0	The channel is not forcibly operated; existing forced operations are removed.
1	The channel is forcibly operated and switched on. Forced operation is active.

In the forced operation, a 2-bit group object forcibly operates a switch channel, e.g. by higher-level control.
The value of the group object directly defines the forced position of the group:

2 Bit Telegram Value	Description
0 or 1	The channel x is not forcibly operated; existing forced operations are removed.
2	The channel x is forcibly switched off. Forced operation is active
3	The channel x is forcibly operated and switched on. Forced operation is active.

DPT: 1.001 (switch) / 2.001 (switch control)

4.9. Additional Functions – Converter Objects

In this section, converter objects are described in the table below. Converter group objects are used to make mathematical operations, data converting from different types. Up to 8 different converters can be configured. In the first column name of the object, in the second column function name, the third column data type and fourth column the objects flags, information is given.

X: 1 … 8

Object Number	Object Name	Function	Type	Flags
259, 270, 281, 292, 303, 314, 325, 336	Additional: Converter X	Disabling	1 bit	CW
This object is used to set the converter status. “Enabled” or “Disabled” telegram is received via this object. For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the converter will continue working. DPT: 1.003 (enable)				
260, 271, 282, 293, 304, 315, 326, 337	Additional: Converter X	Status	1 bit	CRT
This object is used to watch converter status. “Enabled” or “Disabled” telegram is transmitted to KNX bus via this object when converter status is changed over device. DPT: 1.003 (enable)				

4.9.1. Converter – Gate Forwarding Objects

In this section, Converter Gate Forwarding objects are described in the table below. In the first column name of the object, in the second column function name, the third column data type and fourth column the objects flags, information is given.

X: 1,…, 8

Object Number	Object Name	Function	Type	Flags
261, 272, 283, 294, 305, 316, 327, 338	Additional: Converter X	Input Bit Input 2Bit Input Byte Input 2Bytes	1 bit 2 bits 1 byte 2 bytes	CW
This object is used to input a value that needs to be converted. DPT: According to parameter selection, DPT changes				
269, 280, 291, 302, 313, 324, 335, 346	Additional: Converter X	Output Bit Output 2Bit Output Byte Output 2Bytes	1 bit 2 bits 1 byte 2 bytes	CRT
This object is used to output the converted value. DPT: According to parameter selection, DPT changes				

4.9.2. Converter – Format Converter Objects

In this section, Converter Format Converter objects are described in the table below. In the first column name of the object, in the second column function name, the third column data type and fourth column the objects flags, information is given.
X: 1 … 8

Object Number	Object Name	Function	Type	Flags
261, 272, 283, 294, 305, 316, 327, 338	Converter X	Input Bit Input Byte Input RGB Input RGBW	1 bit 1 byte 3 bytes 6 bytes	CW
This object is used to input a value that needs to be converted. DPT: According to parameter selection, DPT changes				
261, 272,…, 338/ 262, 273,…, 339/ 263, 274,…, 340/ 264, 275,…, 341/ 265, 276,…, 342/ 266, 277,…, 343/ 267, 278,…, 344/ 268, 279,…, 345	Converter X	Input Bit: 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7	1 bit	CW
This object is used to input a value that needs to be converted. DPT: 1.002 (boolean)				
262, 273,…, 339/ 263, 274,…, 340/ 264, 275,…, 341/ 265, 276,…, 342	Converter X	Input Red / Green / Blue / White	1 byte	CW
This object is used to input a value that needs to be converted. DPT: 5.001(percentage (0...100%))				
269, 280, 291, 302, 313, 324, 335, 346	Converter X	Output Byte Output 2Bytes Output RGB Output RGBW	1 byte 2 bytes 3 bytes 6 bytes	CRT
This object is used to output the converted value. DPT: According to parameter selection, DPT changes				

262, 273,..., 339/ 263, 274,..., 340/ 264, 275,..., 341/ 265, 276,..., 342/ 266, 277,..., 343/ 267, 278,..., 344/	Converter X	Output Bit: 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7	1 bit	CRT

This object is used to output the converted value.
DPT: 1.002 (boolean)

269, 280, 291, 302, 313, 324, 335, 346	Converter X	Output Red / Green / Blue / White	1 byte	CRT

This object is used to input a value that needs to be converted.
DPT: 5.001(percentage (0...100%))

4.10. Additional Functions – Logic Objects

This section contains information about KNX objects and their properties related to the logic function channels. The types, flags and properties of the objects are explained in detail below. There are 8 identical logic channels in the device, so only one logical channel is described here. The X values can be between 1…8 and Y values can also be 1…5. Please do not forget to take this into account.

X: 1 … 4, **Y:** 1 … 5

Object Number	Object Name	Function	Type	Flags
347, 375, 403, 431	Logic X	Lock	1 bit	CW

This object is used to set the logic lock status. “On” or “Off” telegram is received via this object.
According to the selected parameter in ETS, it will be disabled when an “On” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the logic will continue working or vice versa.
DPT: 1.001 (switch)

348, 376, 404,432	Logic X	Status	1 bit	CRT

This object is used to watch the alarm status. “On” or “Off” telegram is transmitted to the KNX bus via this object when the alarm status is changed over the device.
It becomes visible when the "use logic lock" parameter is set to yes.
DPT: 1.001 (switch)

349, 377, 405, 433	Logic X	External Movement	1 bit	CWU

This object is used to receive movement information from the KNX bus line. According to the ETS parameter configuration, the ‘0’ or ‘1’ value is accounted as there is a movement detection occurs.
DPT: 1.001 (switch)

350, 378, 406, 434	Logic X	External Brightness	2 bytes	CWU

This object is used to obtain a brightness value from the KNX bus line. The received brightness value will be used to evaluate the input status according to the brightness thresholds.
DPT: 9.004 (lux)

351, 379, 407, 435	Logic X	Brightness Threshold Lower	2 bytes	CW

This object is used to receive the brightness threshold lower value from the KNX bus line. The value read on this object is will be used as a new brightness threshold lower value. This object becomes visible when the "Change brightness threshold via bus" parameter is set to yes.
DPT: 9.004 (lux)

352, 380, 408, 436	Logic X	Brightness Threshold Upper	2 bytes	CW

This object is used to receive the brightness threshold upper value from the KNX bus line. The value read on this object is will be used as a new brightness threshold upper value. This object becomes visible when the "Change brightness threshold via bus" parameter is set to yes.
DPT: 9.004 (lux)

353, 381, 409, 437	Logic X	External Temperature	2 bytes	CWU

This object is used to obtain a temperature value from the KNX bus line. The received temperature value will be used to evaluate the input status according to the temperature thresholds.
DPT: 9.001 (temperature)

354, 382, 410, 438	Logic X	Temperature Threshold Lower	2 bytes	CW

This object is used to receive the temperature threshold lower value from the KNX bus line. The value read on this object is will be used as a new temperature threshold lower value. This object becomes visible when the "Change temperature via bus" parameter is set to yes.
DPT: 9.004 (lux)

355, 383, 411, 439	Logic X	Temperature Threshold Upper	2 bytes	CW

This object is used to receive the temperature threshold upper value from the KNX bus line. The value read on this object is will be used as a new temperature threshold upper value. This object becomes visible when the "Change temperature via bus" parameter is set to yes.
DPT: 9.004 (lux)

356, 357, 358 / 384, 385, 386 / 412, 413, 414 / 440, 441, 442	Logic X	External Input – 1/2/3	1 bit / 1 byte / 2 byte / 4 byte	CWU

This object is used to obtain external input 1 / 2 / 3 information from the KNX bus line. According to the ETS parameter configuration, the received values are accounted as TRUE or FALSE for this external input. For 1 bit configuration, there is only '1' or '0' values for calculating the input status. But for other input (such as 1 byte, etc.) the received value is compared to the external input value parameter.
DPT: According to parameter selection, DPT changes.

359, 387, 415, 443	Logic X	Result Status	1 bit	CRT

This object is used to send the related logic function block's result status to the KNX bus line. According to the ETS parameter configuration, this value can be sent periodically, on change or only configured value. (TRUE or FALSE).
DPT: 1.002 (boolean)

360, 363, 366, 369, 372 / 388, 391, 394, 397, 400 / 416, 419, 422, 425, 428 / 444, 447, 450, 453, 456	Logic X	Output Switch Controller Output Absolute Dimming Controller Output Shutter Controller Output Alarm Controller Output Sequence Controller Output Scene Controller Output String Controller Output Threshold Controller	1 bit 1 byte 2 bytes	CRT

This object is used to send the related output object's value to the KNX bus line. When the logic function block's status changes, the sending value also can be configured separately. In addition, according to the output type, the object's value type will be changed.
DPT: According to parameter selection, DPT changes.

361, 364, 367, 370, 373 / 389, 392, 395, 398, 401/ 417, 420, 423, 426, 429 / 445, 448, 451, 454, 457	Logic X	Delay Time on True State	2 bytes	CW

This object is used to receive the 'delay time on TRUE state' value from the KNX bus line. When a new value is received from this object, the received value is used as the output on delay time for the TRUE state value. The configured parameter value will not be used anymore. This object becomes visible when the "Change on time via bus" parameter is set to Yes.
DPT: 7.005 (time (s))

362, 365, 368, 371, 374 / 390, 393, 396, 399, 402/ 418, 421, 424, 427, 430 / 446, 449, 452, 455, 458	Logic X	Delay Time on False State	2 bytes	CW

This object is used to receive the ‘delay time on FALSE state’ value from the KNX bus line. When a new value is received from this object, the received value is used as the output on delay time for the FALSE state value. The configured parameter value will not be used anymore. This object becomes visible when the "Change on time via bus" parameter is set to Yes.
DPT: 7.005 (time (s))

Appendix A: Manual Control

The combo actuator has one push button for each output of the device. It allows the manual control of the outputs even when a bus communication failure occurs.

When locking, forced, or disabling functions are activated, manual control via the push buttons on the device is still possible.

This appendix aims to explain the correct use of these push buttons depending on the configuration chosen for each output.

Switch

Each press of the push button sends to the bus a telegram with the value “0” or “1” depending on the previous status. The light is switched on and off alternately in every press and its status is represented via the status led. Moreover, after any manual change, the current status of the output is transmitted to the bus via the feedback object.

Heating

The valve is opened or closed alternately with every press of the push button, depending on the previous status. The current status of the valve is represented via the status led and is transmitted to the bus via the status object.

Shutter/Blind

Shutter and blinds can be lowered or raised with a long push button action while a short push button action ends the movement when it is moving. Moreover, depending on the configuration (shutter or shutter/blind), a short push-button action executes short movements or positions the slats when the shutter is at rest.

Configuration as Shutter/Blind: When the positioning of the slats reaches its maximum or minimum (0° or 360°), the following short press of the button will execute short movements of the shutter. For example, if the value 0° is reached and a new short push button is executed, it will be interpreted as a short UP movement. Similarly, when the value 360° is reached, it will be interpreted as a short DOWN movement.

Fancoils

Using the push button which corresponds to the valve output, it is possible to open the valve and modify the fan speed. Depending on the previous status, each pressing increases the fan speed. However, if the fan coil is deactivated, the first pressing opens the valve and switches on the speed 1. Conversely, if the fan coil is active and operating with speed 3, a new pressing turns the fan coil off.

Appendix B: Logic Gates

Function	Input 1	Input 2	Input 3	Input 4	Output
AND	0	0	0	0	0
	0	0	0	1	0
	0	0	1	0	0
	0	0	1	1	0
	0	1	0	0	0
	0	1	0	1	0
	0	1	1	0	0
	0	1	1	1	0
	1	0	0	0	0
	1	0	0	1	0
	1	0	1	0	0
	1	0	1	1	0
	1	1	0	0	0
	1	1	0	1	0
	1	1	1	0	0
	1	1	1	1	1

Function	Input 1	Input 2	Input 3	Input 4	Output
OR	0	0	0	0	0
	0	0	0	1	1
	0	0	1	0	1
	0	0	1	1	1
	0	1	0	0	1
	0	1	0	1	1
	0	1	1	0	1
	0	1	1	1	1
	1	0	0	0	1
	1	0	0	1	1
	1	0	1	0	1
	1	0	1	1	1
	1	1	0	0	1
	1	1	0	1	1
	1	1	1	0	1
	1	1	1	1	1

Function	Input 1	Input 2	Input 3	Input 4	Output
XOR	0	0	0	0	0
	0	0	0	1	1
	0	0	1	0	1
	0	0	1	1	0
	0	1	0	0	1
	0	1	0	1	0
	0	1	1	0	0
	0	1	1	1	1
	1	0	0	0	1
	1	0	0	1	0
	1	0	1	0	0
	1	0	1	1	1
	1	1	0	0	0
	1	1	0	1	1
	1	1	1	0	1
	1	1	1	1	0

Appendix C: Scene Example

The following example shows the creation of a scene in which both lights and a shutter are involved.
The number of the scene will be 14 therefore, the number of recall will be 14 and the number of storage will be 142 (128+14).
The activation of the scene involves the following actions:

- The shutter is positioned to 50% and 90°.
- 25 seconds after scene recall, the switch 1 is switched off.
- 30 seconds after scene recall, the switch 2 is switched on.
- 35 seconds after scene recall, the switch 3 is switched on.

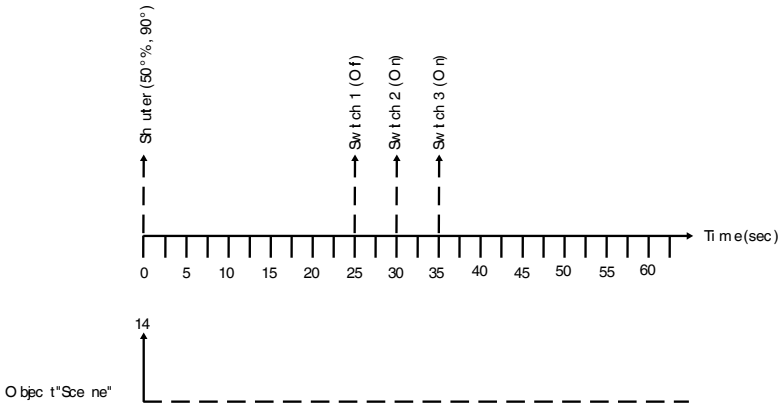


Fig.37: Scene Example

A telegram is sent with the number of the scene, which must correspond with the scene number in the parameters configuration. The parameters can be defined as follows for the example scene:

Shutter

Scenes	Enable	Scene number	Delay	Height	Slat
1	✓	14	00:00:00	50 %	90 %

Switch 1

Scenes	Enable	Scene number	Delay	Reaction on scene
1	✓	14	00:00:25	On / Off

Switch 2

Scenes	Enable	Scene number	Delay	Reaction on scene
1	✓	14	00:00:30	On / Off

Switch 3

Scenes	Enable	Scene number	Delay	Reaction on scene
1	✓	14	00:00:35	On / Off

A scene may involve outputs of the same or different devices. The important thing is that all are configured with the same scene number and the objects “scene” are grouped in the same group address. With this function, it is possible to connect multiple KNX devices in a scene.

The value of the scene can be modified through the storage option. In the above example, switch 2 is switched on recalling scene 14. If it is required that switch 2 is switched off instead of, the output can be switched to the value desired via the object “On/Off” and then the new value can be saved. For storing the new value, a telegram with the value 132 must be sent via the object “scene”.

The delays configured for the recall scenes do not influence the storage of scene values.

Appendix D: Measurings

Measuring Of Movement Duration

For the correct operation of the positioning of shutters, it is imperative that the measure time of up and down movements is done correctly to achieve the best possible positioning results. The combo actuator needs to know the exact time of both movements up and down.

For measuring the up movement duration, the shutter should be positioned to the completely closed position (100%) and then start measuring when the shutter starts to move from that position to the completely opened position. On the contrary, for measuring the down movement duration, the shutter should be positioned to the completely opened position (0%) and then start the measuring when the shutter starts to move from that position to the completely closed position. The time measurement must be stopped when the shutter is completely opened or closed.

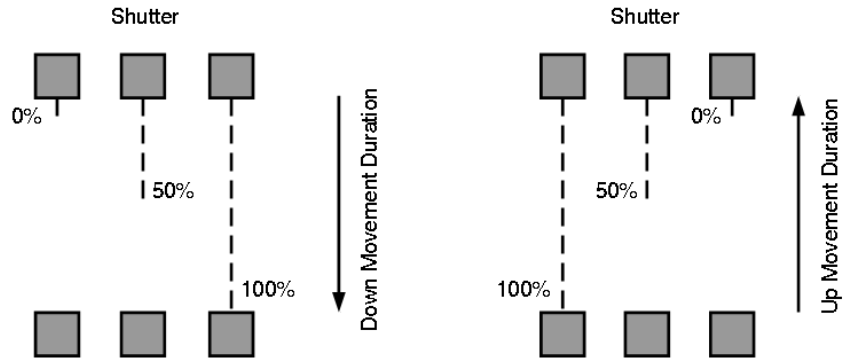


Fig.38: Shutter Movement Duration

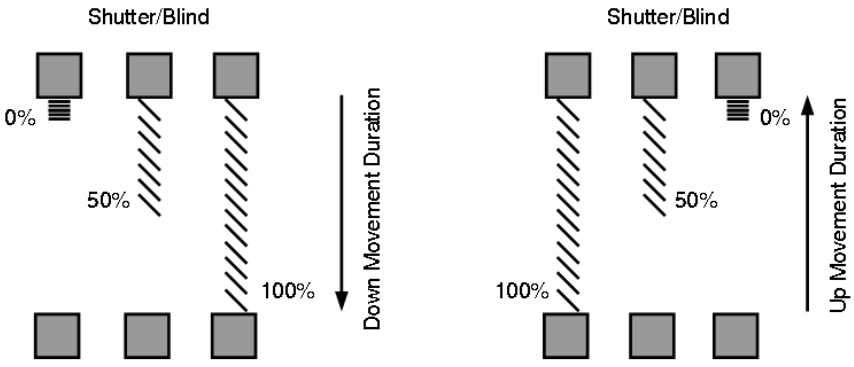


Fig.39: Shutter/Blind Movement Duration

These times must be measured in situ and introduced into the ETS as parameters. For a higher precision, it is recommended to repeat the measures several times and to take the average of these values as the last value for the ETS parameterization.

MEASURING OF SLAT STEPS

For the correct operation of the positioning of the blind slats, it is imperative that the measure of the steps to move the slats is done correctly in order to achieve the best possible positioning results. The combo actuator needs to know the exact number of steps required to move the slats from the 0° position to the 180° position.

For measuring this number of steps, the slats should be positioned to the completely closed position (0°) and then start to move the slats step by step (and counting them at the same time) to the completely opened position (180°).

In the following example, the number of steps required is 4:

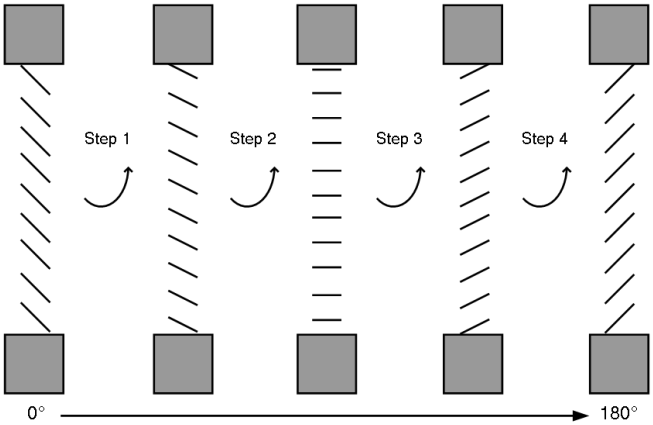


Fig. 40: Slat Steps

This number of steps required must be measured in situ and introduced into the ETS as parameters. For a higher precision, it is recommended to repeat the measures several times and to take the average of these values as the last value for the ETS parameterization.

Appendix E: Possible Configurations

The combo actuator allows multiple configurations. This appendix aims to show every possible output configuration and to warn that posterior changes in the configuration can be fatal. Thus, it is highly recommended to be clear about the output destination before starting the parameter configuration.

The configuration of the outputs through the window parameter works as a tree, depending on the previous configuration, it allows different options. This configuration tree is divided into blocks of 6 outputs. The output 1 of the block permits choosing every option and depending on the option selected, the next outputs of the block can be configured differently.

Device	Number of Blocks	Outputs Distribution
ITR525-0XX4	1	1-4
ITR525-0XX8	1	1-8
ITR525-0X12	2	1-6 and 7-12
ITR525-0X16	3	1- 6, 7-12 and 13-16
ITR525-0X20	3	1-6, 7-12 and 13-20
ITR525-0X24	4	1-6, 7-12, 13-18 and 19-24

Example:

Out 1+2+3+4 configured as fan coil 2 pipes. This allows configuring the output 5 and 6 as shutter/blind or lighting and heating.

If the parameters for the outputs 5 and 6 are modified by the user and then the output configuration for the outputs are modified (for example output 1 as lighting), the previous parameterization for output 5 and 6 is lost and it is necessary to do it again.

The following tables show some possible output configurations from input 1 to 6:

Out 1	Switch
Out 2	Switch/Heating/…
Out 3	Switch
Out 4	Switch/Heating/…
Out 5	Switch
Out 6	Switch/Heating/…

Out 1	Switch
Out 2	Switch/Heating/…
Out 3	Switch
Out 4	Switch/Heating/…
Out 5	Heating
Out 6	Switch/Heating/…

Out 1	Switch
Out 2	Switch/Heating/…
Out 3	Switch
Out 4	Switch/Heating/…
Out 5+6	Shutter&Blind

Out 1	Switch
Out 2	Switch/Heating/…
Out 3+4	Shutter&Blind
Out 5	Switch
Out 6	Switch/Heating/…

Out 1	Switch
Out 2	Switch/Heating/…
Out 3+4	Shutter&Blind
Out 5	Staircase
Out 6	Switch/Heating/…

Out 1	Switch
Out 2	Switch/Heating/…
Out 3+4	Shutter&Blind
Out 5+6	Shutter&Blind

Out 1	Heating
Out 2	Switch/Heating/…
Out 3	Staircase
Out 4	Switch/Heating/…
Out 5	Impulse
Out 6	Switch/Heating/…

Out 1	Heating
Out 2	Switch/Heating/…
Out 3	Switch
Out 4	Switch/Heating/…
Out 5	Heating
Out 6	Switch/Heating/…

Out 1	Staircase
Out 2	Switch/Heating/…
Out 3	Impulse
Out 4	Switch/Heating/…
Out 5+6	Shutter&Blind

Out 1	Heating
Out 2	Switch/Heating/…
Out 3	Heating
Out 4	Switch/Heating/…
Out 5	Switch
Out 6	Switch/Heating/…

Out 1	Heating
Out 2	Switch/Heating/…
Out 3	Heating
Out 4	Switch/Heating/…
Out 5	Heating
Out 6	Switch/Heating/…

Out 1	Impulse
Out 2	Switch/Heating/…
Out 3	Impulse
Out 4	Switch/Heating/…
Out 5+6	Shutter&Blind

Out 1	Heating
Out 2	Switch/Heating/…
Out 3+4	Shutter&Blind
Out 5	Switch
Out 6	Switch/Heating/…

Out 1	Heating
Out 2	Lighting/Heating
Out 3+4	Shutter&Blind
Out 5	Heating
Out 6	Switch/Heating/…

Out 1	Heating
Out 2	Switch/Heating/…
Out 3+4	Shutter&Blind
Out 5+6	Shutter&Blind

Out 1+2	Shutter&Blind
Out 3	Switch
Out 4	Switch/Heating/…
Out 5	Switch
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3	Switch
Out 4	Switch/Heating/…
Out 5	Heating
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3	Switch
Out 4	Switch/Heating/…
Out 5+6	Shutter&Blind

Out 1+2	Shutter&Blind
Out 3	Heating
Out 4	Switch/Heating/…
Out 5	Switch
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3	Heating
Out 4	Switch/Heating/…
Out 5	Heating
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3	Heating
Out 4	Switch/Heating/…
Out 5+6	Shutter&Blind

Out 1+2	Shutter&Blind
Out 3+4	Shutter&Blind
Out 5	Switch
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3+4	Shutter&Blind
Out 5	Heating
Out 6	Switch/Heating/…

Out 1+2	Shutter&Blind
Out 3+4	Shutter&Blind
Out 5+6	Shutter&Blind

Out 1+2+3+4	Shutter&Blind (24 VDC)
Out 5	Switch
Out 6	Switch/Heating/…

Out 1+2+3+4	Shutter&Blind (24 VDC)
Out 5	Heating
Out 6	Switch/Heating/…

Out 1+2+3+4	Shutter&Blind (24 VDC)
Out 5+6	Shutter&Blind

Out 1+2+3+4	Fancoil 2 Pipes 3 Speed
Out 5	Switch
Out 6	Switch/Heating/…

Out 1+2+3+4	Fancoil 2 Pipes 3 Speed
Out 5	Heating
Out 6	Switch/Heating/…

Out 1+2+3+4	Fancoil 2 Pipes 3 Speed
Out 5+6	Shutter&Blind

Out 1+2+3+4+5	Fancoil 4 Pipes 3 Speed
Out 6	Switch/Heating/…

Note: The same configurations can be done for the different blocks of 6. The combo+ module with 4 channels does not support Fancoil configuration.

Appendix F: Connection Diagram

- Example Configuration 1

Channel No	Function	Channel No	Function
A1	Switch	B7	Heating
A2	Switch	B8	Switch
A3	Heating	B9	Heating
A4	Heating	B10	Heating
A5	Switch	B11	Switch
A6	Heating	B12	Switch

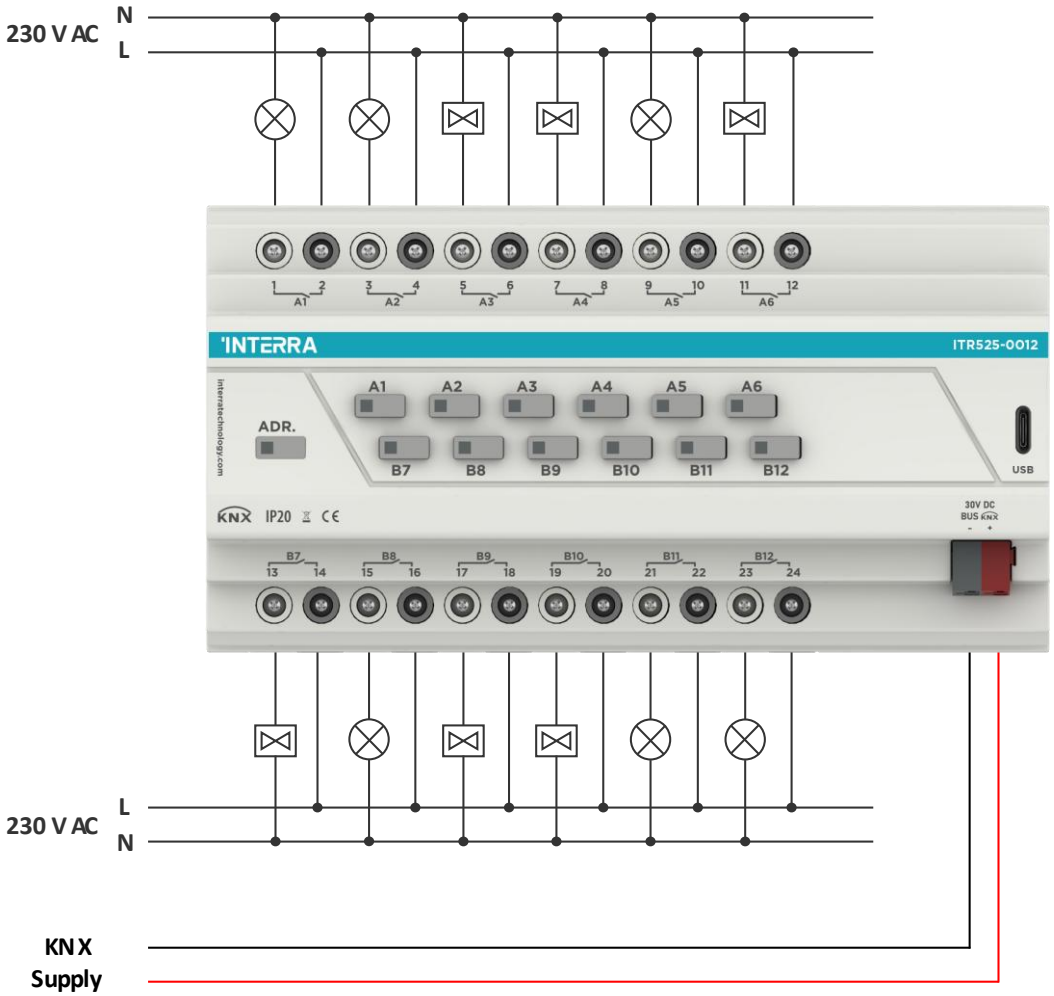


Fig. 41: Connection Diagram Example Configuration 1

Every output of the combo module can be configured as a switch, heating, staircase, or impulse. The example above is to show the connection of these loads.

- Example Configuration 2

Channel No	Function	Channel No	Function
A1+2+3+4	Fan Coil 2 Pipes	**B7+8+9+10+11**	Fan Coil 4 Pipes
A5	Switch	**B12**	Switch
A6	Heating		

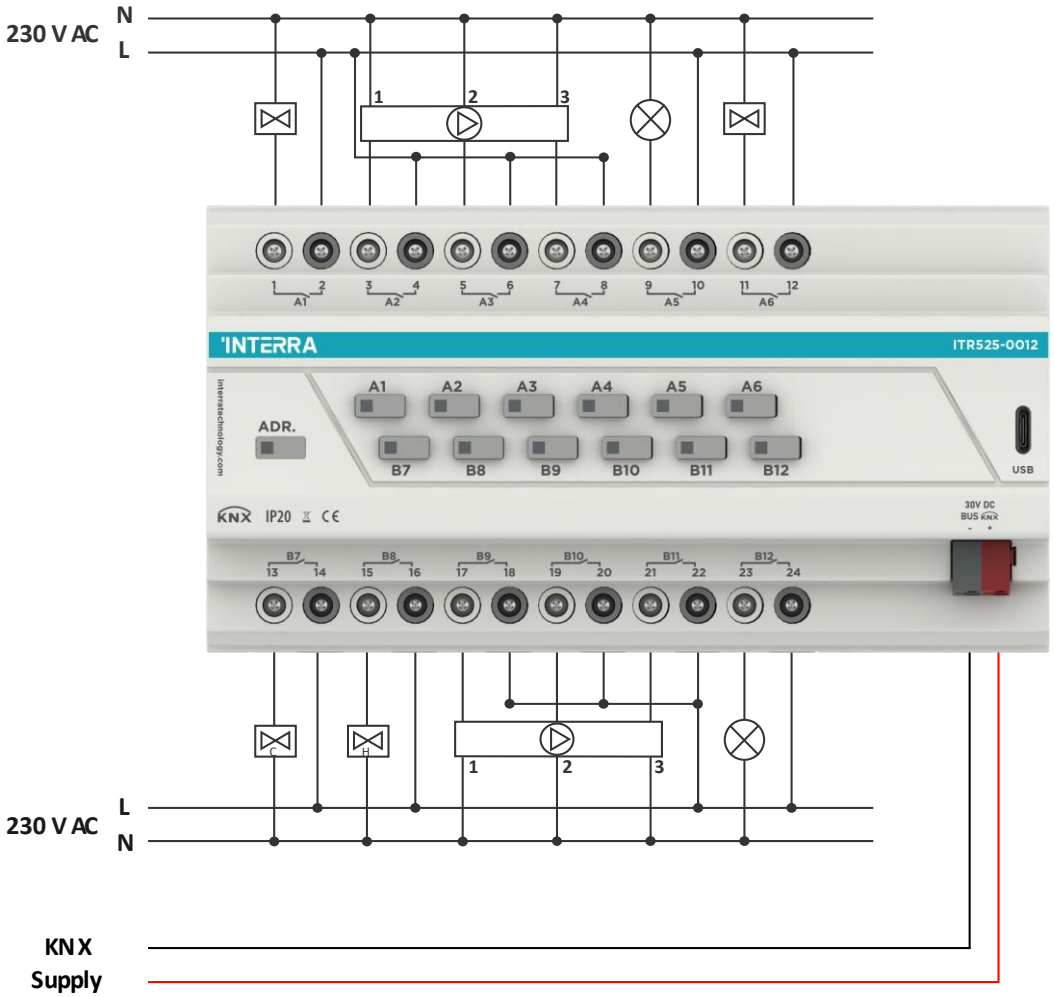


Fig. 42: Connection Diagram Example Configuration 2

The combo module only allows configuring the first inputs as fancoil 2 or 4 pipes. In the example above the inputs A1-A4 are used for the connection of a 2-pipe fancoil and the inputs B7-B11 for a 4 pipes fancoil.

Channel No	Function	Channel No	Function
A1	Valve (Heating or Cooling)	**B7**	Valve Cooling
A2	Fan Speed 1	**B8**	Valve Heating
A3	Fan Speed 2	**B9**	Fan Speed 1
A4	Fan Speed 3	**B10**	Fan Speed 2
		B11	Fan Speed 3

- Example Configuration 3

Channel No	Function	Channel No	Function
A1+2	Shutter/Blind	**B7+8+9+10**	Shutter/Blind 24 VDC
A3	Switch	**B11**	Heating
A4	Heating	**B12**	Switch
A5+6	Shutter/Blind		

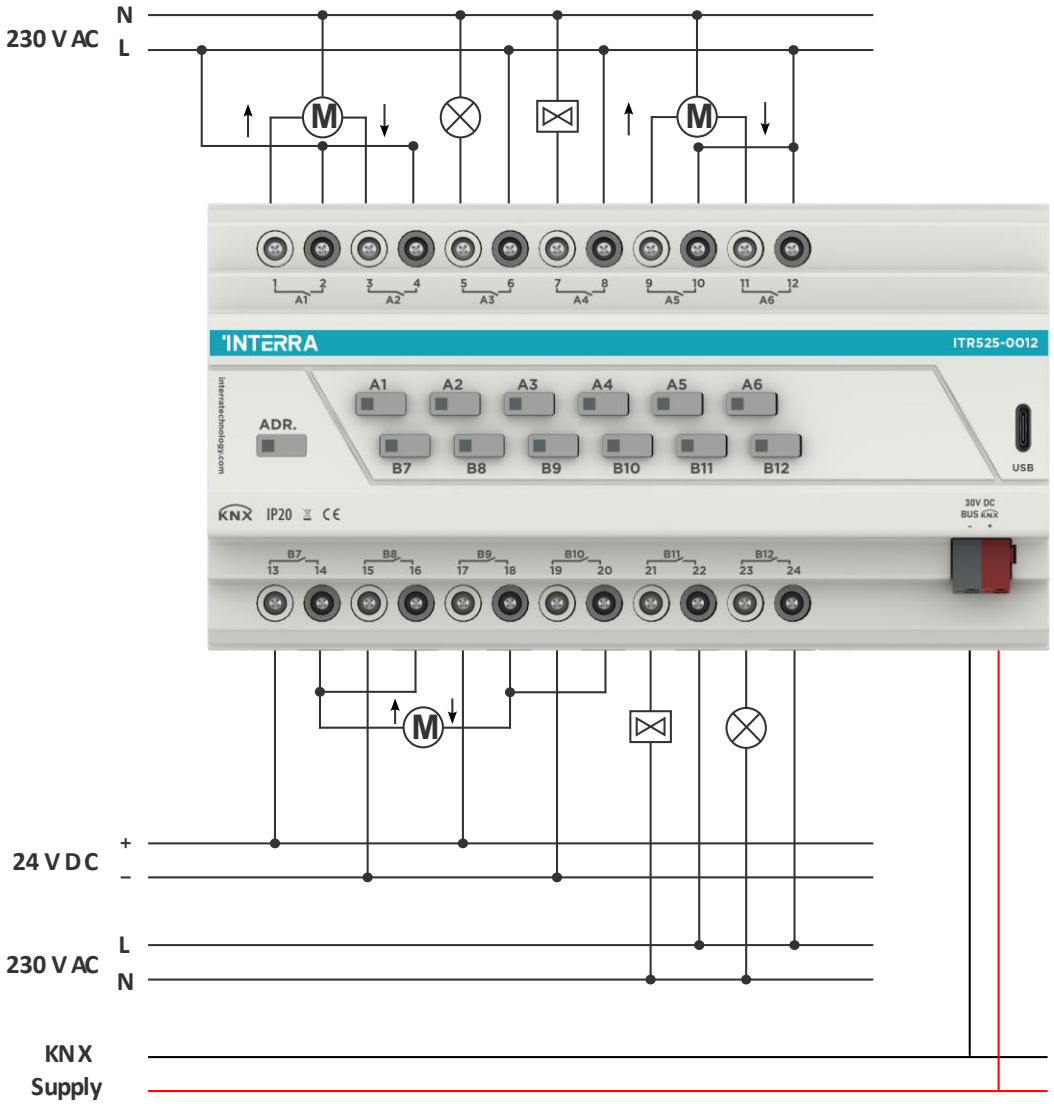


Fig. 43: Connection Diagram Example Configuration 3

Every output of the combo module can be configured as a shutter/blind, provided that 2 consecutive outputs are available. However, for the Shutter/Blind 24 V configuration, 4 outputs, so that this configuration is only available in the first four outputs of the blocks. In the example above, the inputs B7-B10 are used to connect Shutter/Blind 24 V DC.

CONTACT INFORMATION

THE INTERRA WEBSITE

Interra provides documentation support via our website www.interratechnology.com. This website is used as a means to make files and information easily available to customers. Accessible by using your favourite Internet browser, the website contains the following information:

- Information about our products and projects.
- Overview of the Interra company and values.
- Product Support: Datasheets, product manuals, application descriptions, latest software releases, ETS databases and archived software.

EUROPE, Türkiye

Interra Technology
Cumhuriyet Mah. Kartal Cad. Interra R&D Centre No:95/1 Kartal/İstanbul
Tel: +90 (216) 326 26 40 Fax: +90 (216) 324 25 03
Web address: http://www.interratechnology.com