



KAA-4R4V-S Dimming Actuator Instruction Manual

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1. Overview

1.1 Overview devices

The manual refers to the following devices: (Order Code respectively printed in bold type):

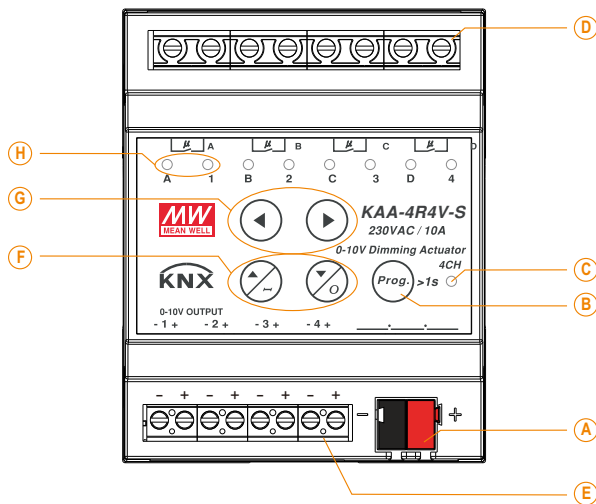
- **KAA-4R4V-10S** Dimming Actuator 4-fold, DC 0(1)-10V dimmer 4-fold, 230V AC, 10A .
 - ⊙ 4 Channels for LED drivers, lighting switching outputs or for ohmic loads up to 2300W per channel.
 - ⊙ Any supposable mixed form of switching outputs and dimming control possible.
 - ⊙ Build-in with KNX secure function.
- **KAA-4R4V-S** Dimming Actuator 4-fold, DC 0(1)-10V dimmer 4-fold, 230V AC, 16A.
 - ⊙ 4 Channels for LED drivers, lighting switching outputs or for ohmic loads up to 3680W per channel.
 - ⊙ Any supposable mixed form of switching outputs and dimming control possible.
 - ⊙ Build-in with KNX secure function.

Note: The dimming outputs of KAA-4R4V-S(-10S) is a passive type.

1.2 Usage & possible applications

The KAA-4R4V-S can be used for lighting switches as well as for controlling LED drivers equipped with DC 0(1)-10V dimming function. There are a great number of options for adjusting the dimming process e.g. dimming speeds, transition time, On-/Off-Behavior.... Furthermore, the LED actuator contains of a large scene function and different automatic functions.

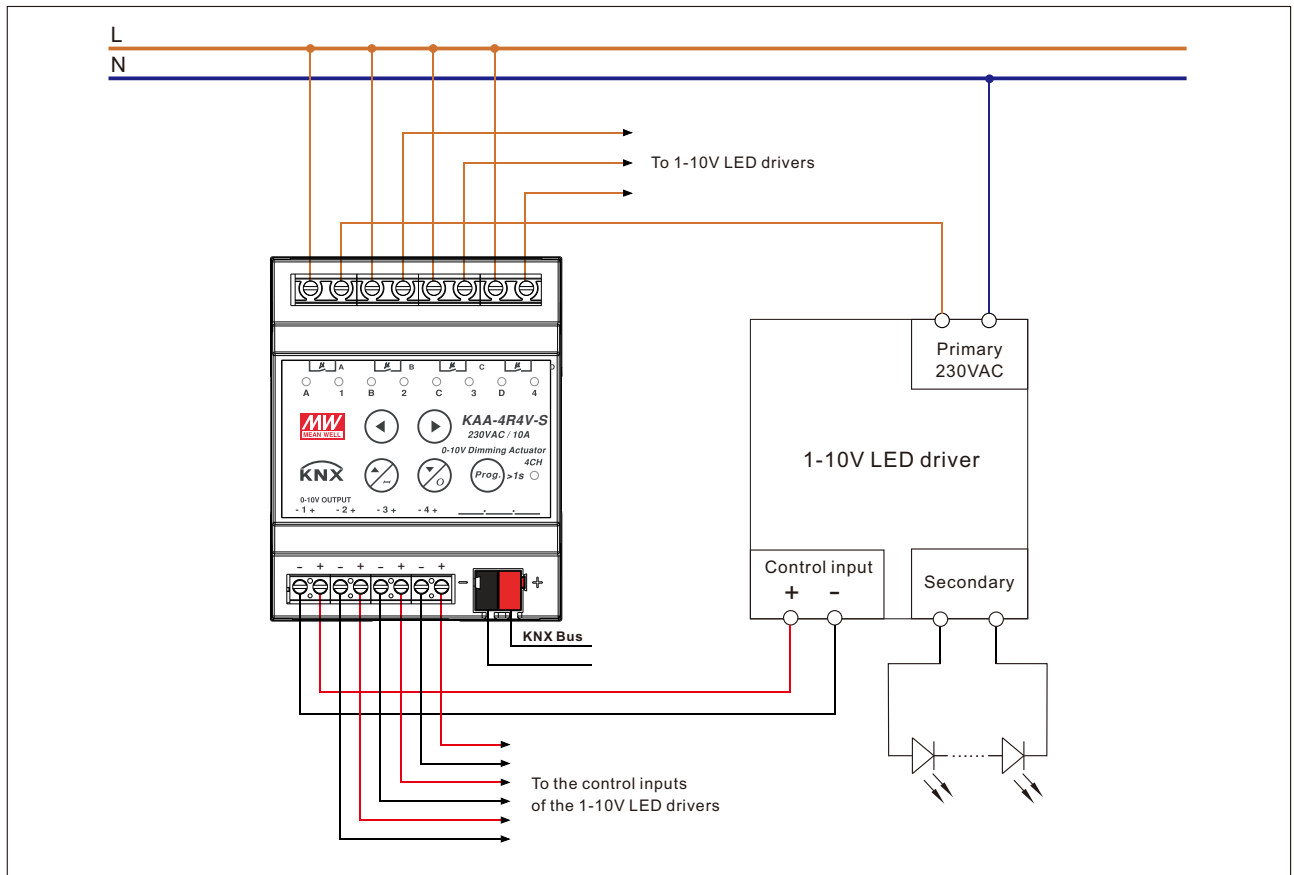
1.3 Displays and operating elements



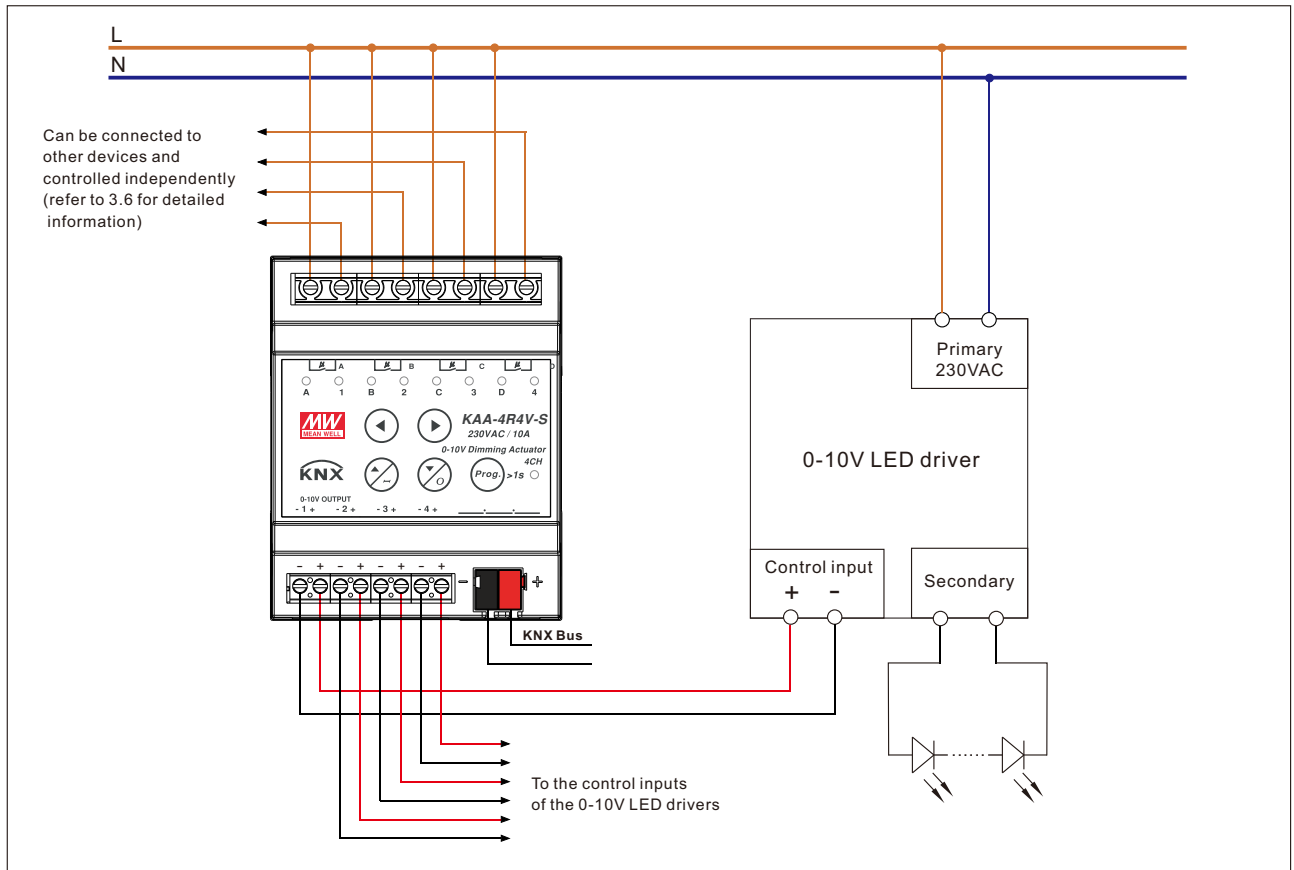
- (A) : Bus connection terminal
- (B) : Programming button
- (C) : Programming LED
- (D) : Connections for the relay outputs
- (E) : Output for the 0(1)-10V control voltages
- (F) : Buttons for the manual on/off/dimming of the selected channel
- (G) : Buttons for channel selection and manual control
- (H) : Indicators for relay (left) and dimming (right) output of channels

1.4 Circuit diagrams

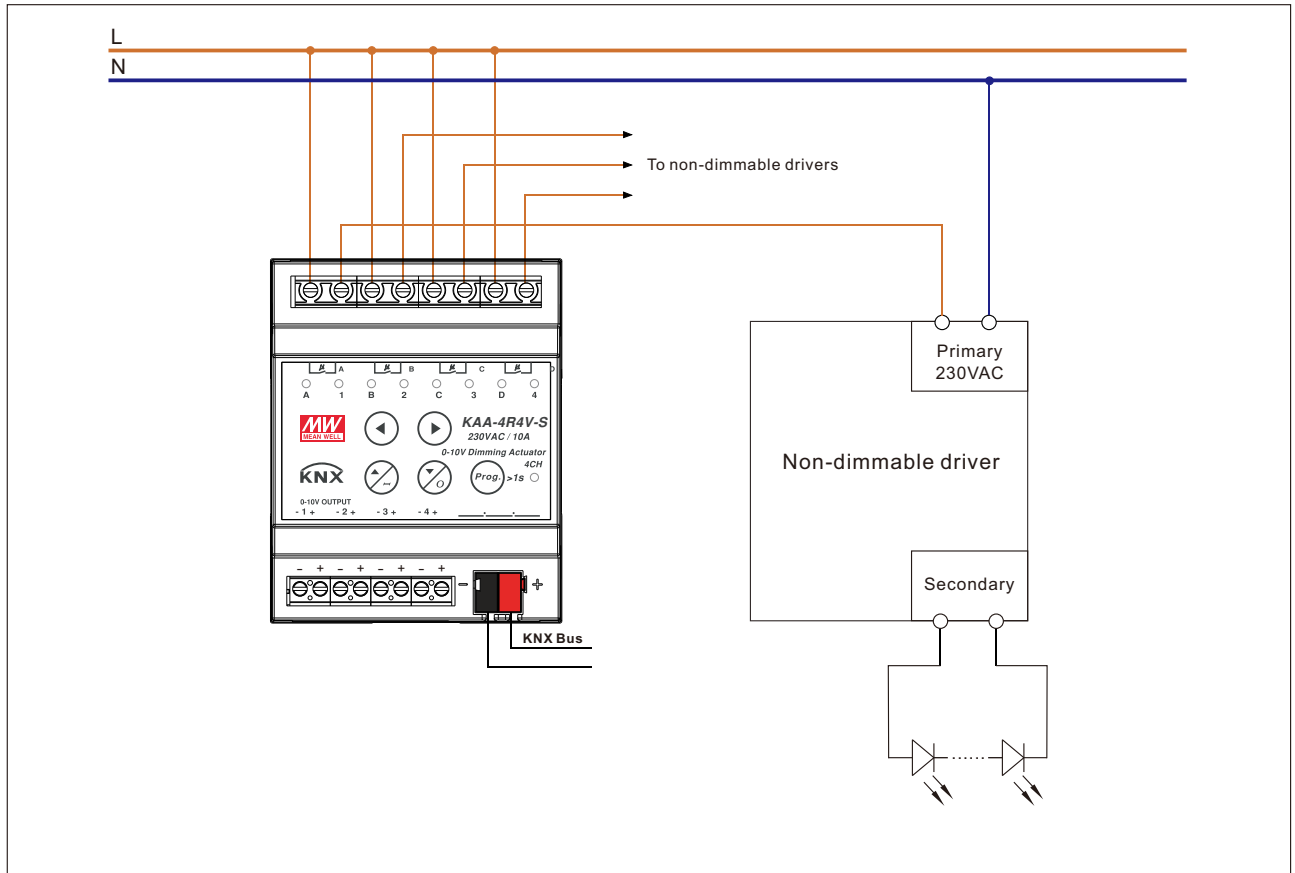
Configuration 1: Work with DC 1-10V LED driver



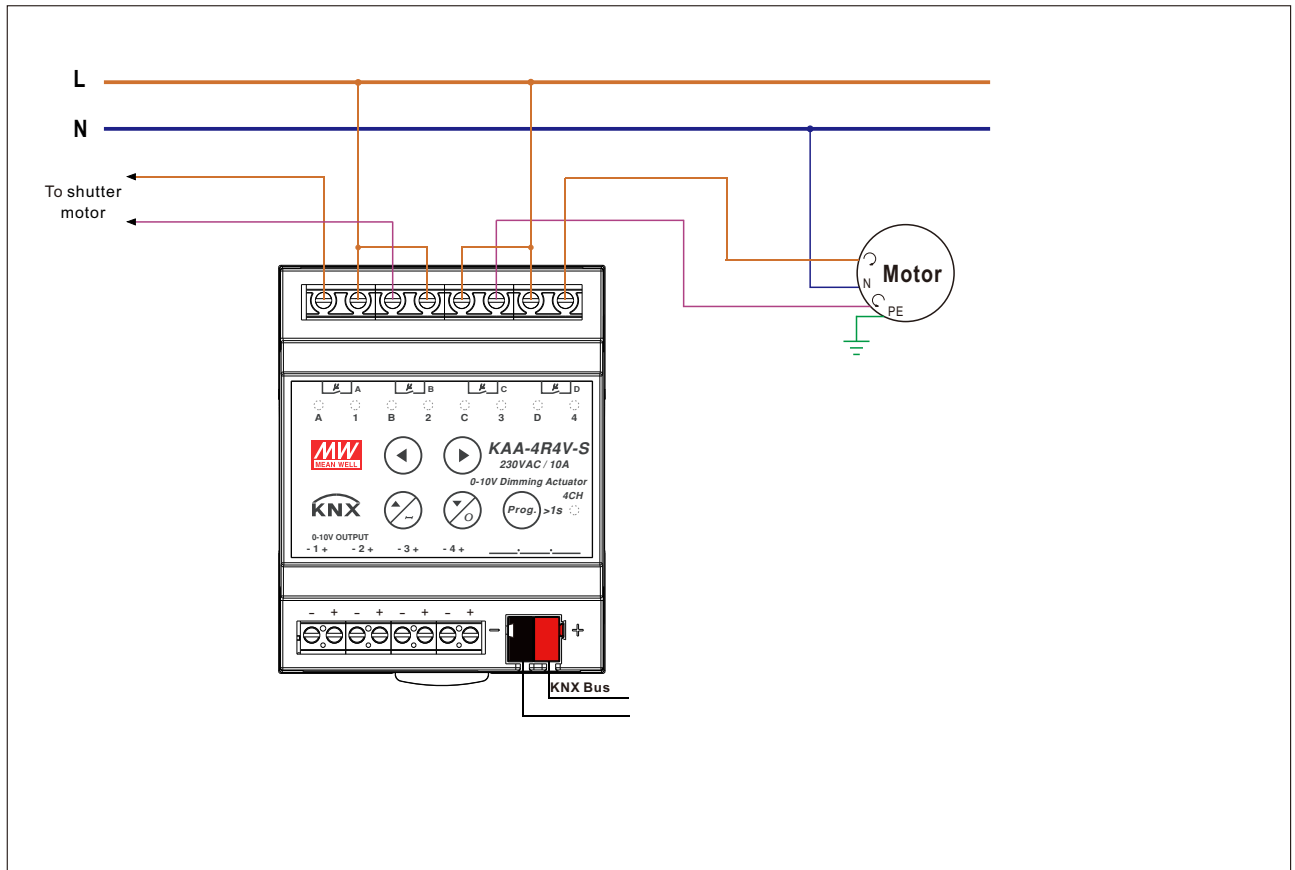
Configuration 2: Work with DC 0-10V LED driver



Configuration 3: Work with non-dimmable driver



Configuration 4: Work with shutter/blind control



1.5 Wiring

- Use wires with an adequate cross-section.
- Use suitable mounting tools to do the wiring and mounting.
- The maximum number of bus devices connected is 256.
- The maximum length of a line segment is 350 m, measured along the line between the power supply and the furthest bus device.
- The maximum distance between two bus devices cannot exceed 700 m.
- The maximum length of a bus line is 1000 m, keeping into account all segments.

Type	Relay terminals (A, B, C, D, 1, 2, 3, 4)	Dimming terminals (1±, 2±, 3±, 4±)	KNX bus terminal (BUS V±)
Solid wire	0.5 ~ 4.0mm ²	0.5 ~ 4.0mm ²	0.6 ~ 0.8Φ
Stranded wire	0.5 ~ 2.5mm ²	0.5 ~ 2.5mm ²	-----
American wire gauge	12 ~ 26AWG	12 ~ 26AWG	20 ~ 22AWG
Wire stripping length	6.5mm (0.255")	6.5mm (0.255")	5mm (0.196")
Screwdriver	3mm Slotted	3mm Slotted	-----
Recommended tightening torque	5 kgf-cm (4.4 lb-in)	5 kgf-cm (4.4 lb-in)	-----

1.6 Structure & Handling

The KAA-4R4V-S dimming actuator is a 4 channel device with high quality independent latching relays, suitable for all kinds of MEANWELL LED drivers. The new version also supports KNX Data Secure function. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. There is, in addition, a DC 0(1)-10V signal output to perform the dimming on the connected drivers at each channel at the bottom terminal. The dimming curve can be adjusted to linear or logarithmic mode so as to provide an excellent dimming experience for the end users. It also can be used with motion sensors in buildings to save energy. The actuator is powered via the EIB/KNX bus and do not require any additional power supply. The KAA-4R4V-S is featuring both reliability and multi-functionality to meet various needs in a modern building.

1.7 LEDs and manual control

Every single channel can be switched on or off as well as being dimmed up or down via the manual control.

The buttons left/right are used for selection of the channels. A chosen channel is indicated by its status LED. These LEDs can show the following conditions:

LED behavior	Stage of the channel
LED lights permanently	Channel is in use or dimming value > 0%
LED is permanent OFF	Channel is switched off or dimming value = 0%
LED flashes with fast speed	Channel is switched on and chosen by the manual control or dimming output is at a value and chosen by the manual control
LED flashes with low speed	Channel is switched off and chosen by the manual control or dimming output is at 0V and chosen by the manual control

By the keys up/down, the channels can be switched and dimmed. A short keystroke at the button "up" switches the channel on, a short keystroke at the button "down" switches the channel off. With a long keystroke, the chosen channel can be dimmed. As long as the "up-button" is pressed, the channel is dimmed brighter. By a long keystroke at the button "down", the channel is dimmed darker. The dimming process is stopped, when the channel reaches 100%, the lowest value or the button is released.

Relay and dimming output channels can be used independently to create a more flexible application by setting the parameter of "Relay switch mode" in each channel, refer to 3.5 Relay behavior for detailed information.

Output mode	<input checked="" type="radio"/> 0-10V Output	<input type="radio"/> 1-10V Output
Relay switch mode	<input type="radio"/> Dimming with relay control	<input checked="" type="radio"/> Dimming without relay control

1.8 Information at the ETS-Software

Selection at the product database:

Manufacturer: MEANWELL Enterprises Co.Ltd.

Product family: Output.

Product type: Switch, Dimming Actuator.

Product name: addicted to the used type, e.g.: KAA-4R4V-10S Switch, Dimming Actuator, 4-fold, 10A, MDRC.

Order number: addicted to the used type, e.g.: KAA-4R4V-10S.

1.9 Starting up

After wiring, the allocation of the physical address and the parameterization of every channel follow:

- (1) Connect the interface with the bus, e.g. MEANWELL USB interface KSI-01U.
- (2) Switching the power supply.
- (3) Set bus power up.
- (4) Press the programming button at the device (red programming LED lights).
- (5) Loading of the physical address out of the ETS-Software by using the interface (red LED goes out, as well this process was completed successful).
- (6) Loading of the application, with requested parameterization.
- (7) If the device is enabled you can test the requested functions (also possible by using the ETS-Software).

2.KNX Data Secure

KNX Data Secure is supported in ETS5 from version 5.5.0. KNX Data Secure signs and encrypts the communication telegram therefore the KNX Data Secure devices are protected against unauthorized access.

In the ETS Catalog, the KNX Secure products can be clearly recognized by the Secure icon:

  KAA-4R4V-10S Switch Dimming Actuator, 4-fold, 10A, MDRC

  KAA-4R4V-S Switch Dimming Actuator, 4-fold, 16A, MDRC

As soon as a "KNX-Secure" device is included in the project, the ETS requests a project password. If no password is entered, the device is without activation of secure mode. However, the password can also be set or changed later in the project overview.

2.1 Start-up with KNX Data Secure

For secure communication, the FDSK (Factory Device Setup Key) is required. If a KNX product supports "KNX Data Secure", the ETS requires the input of the FDSK. This device-specific key is printed on the device label and can either be entered by keyboard or read by using a code scanner or the camera from a PC or laptop.

Example of FDSK on device label:

MEAN WELL

AFROO4-HWZ3JO
K4YDZN-WTILLR
4OBU7Y-3IVXYR

0162E770F6CE



After entering the FDSK, the ETS generates a device-specific tool key. The ETS sends the tool key to the device to be configured via the bus. The transmission is encrypted and authenticated with the original and previously entered FDSK key.

The device only accepts the tool key for further communication with the ETS. The FDSK key is no longer for further communication used, unless the device is reset to the factory setting. In this case, all set safety-related data will be deleted.

The ETS generates as many runtime keys as needed for the group communication you want to protect. The ETS sends the runtime keys to the device to be configured via the bus. Transmission takes place by encrypting and authenticating them via the tool key. The FDSK is saved in the project and can be viewed in the project overview.

Also, all keys of this project can be exported (backup).

During project planning, it can be defined subsequently which functions/ objects are to communicate securely. All objects with encrypted communication are identified by the "Secure" icon in the ETS.

The icon is:



2.2 Start-up without KNX Data Secure

Alternatively, the device can also be put into operation without KNX Data Secure. In this case, the device is unsecured and behaves like any other KNX device without KNX Data Secure function.

To start up the device without KNX Data Secure, select the device in the 'Topology' or 'Devices' section and then set the 'Secure start up' option in the 'Properties' area of the 'Settings' tab to 'Disabled'.

Properties

Settings | Comments | Information

Name
KAA-4R4V-10S Switch, Dimming Actuator, 4-fold, 10A, MC

Individual Address
1.1 . 1 Park

Description

Last Modified 2021/10/18 19:14
Last Downloaded -
Serial Number -

Secure Commissioning

Deactivated ▼
Activated
Deactivated ✓

3.Communication Objects

3.1 Summary and Usage

Num	Name	Object Function	Length	DPT	Flag	Function Area	Description
Central Objects:							
1	Central Function	Manual control	1 bit	Enable (DPT 1.003)	CW	Central Function	This Communication is shown permanently and can be used to set manual control function in action or no by telegram signal when "Manual Operation" is "lockable over object".
2	Central Function	Switch On/Off	1 bit	Switch (DPT 1.001)	CW	Central Function	This Communication Object is for controlling the main function Switch On/Off and normally connected to all desired control keys.
3	Central Function	Dim absolutely	1 byte	Percentage (DPT 5.001)	CW	Central Function	This Communication is shown permanently and allows the controlling of the main function Dim Absolutely for all channels with activated central function.
4	Central Function	Operation	1 bit	state (DPT 1.011)	CRT	Central Function	This Communication is shown permanently and can be used to send status of the device to the system at regular intervals when active.
Objects per Channel:							
5	Channel 1	Switch On/Off	1 bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is for controlling Switch On/Off for this channel, which is normally connected to all desired control keys.
6	Channel 1	Switch State	1 bit	State (DPT 1.011)	CRT	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for showing the switching state On/Off of this channel.
7	Channel A	Additional Switch On/Off	1 bit	Switch (DPT 1.001)	CW	"0-10V output" Mode & Relay switch mode="dimming without relay control"	This Communication Object is shown when the channel's output mode="0-10V Output" and Relay switch mode="dimming without relay control" and can be used to switch the relay on of this channel
8	Channel A	Additional Switch state	1 bit	State (DPT 1.011)	CRT	"0-10V output" Mode & Relay switch mode="dimming without relay control"	This Communication Object is shown when the channel's output mode="0-10V Output" and Relay switch mode="dimming without relay control" and can be used for showing the relay state of this channel.
9	Channel 1	Dim relatively	4 bit	Dimming control (DPT 3.007)	CW	Normal dimmer	This Communication Object is for controlling the main function Dim Up/Down for this channel, which is normally connected to all desired control keys.
10	Channel 1	Dim absolutely	1 byte	Percentage (DPT 5.001)	CW	Normal dimmer	This Communication Object is for controlling the main function Dim absolutely for this channel, which is normally connected to all desired control keys.
11	Channel 1	State Dimm Value	1 byte	Percentage (DPT 5.001)	CRT	Normal dimmer/ Staircase light	This Communication Object is for showing dimming value of this channel .
12	Channel 1	Scene	1byte	Scene number (DPT 17.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling scenes. (= Additional function if desired)
				Scene control (DPT 18.001)			This Communication Object is only shown after activating in the parameter settings and can be used for calling scenes and learning a new scene. (= Additional function if desired)

13	Channel 1	Automatic 1	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
14	Channel 1	Automatic 2	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
15	Channel 1	Automatic 3	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
16	Channel 1	Automatic 4	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
17	Channel 1	Block I	1bit	Enable (DPT 1.003)	CW	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for blocking this channel. (= Additional function if desired)
18	Channel 1	Block II	1bit	Enable (DPT 1.003)	CW	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for an extended blocking function. (= Additional function if desired)
19	Channel 1	Staircase light	1bit	Switch (DPT 1.001)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase function on .
20	Channel 1	Staircase light with time	2byte	time(0-65535)s (DPT 7.005)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase function on with a certain delay.
21	Channel 1	Prewarning	1bit	Alarm (DPT 1.005)	CRT	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to show status of Prewarning. The object will send a signal when Staircase light enters the period of prewarning and it will send out a signal again when prewarning finished.
22	Channel 1	Permanent ON	1bit	Switch (DPT 1.001)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase light permanently on.
23	Channel 2						

41	Channel 3						

59	Channel 4						

77	Central Function	Shutter up/down	1bit	up/down (DPT 1.008)	CW	Central Function	This parameter is valid when the output channel is set to Blinds/Shutter. Related functions can be set through the Parameter "Central Objects". Object value=0: UP Object value=1: Down
78	Central Function	Slats adjustment /stop	1bit	Step (DPT 1.007)	CW	Central Function	This parameter is valid when the output channel is set to Blinds/Shutter. Related functions can be set through the Parameter "Central Objects".
79	Central Function	stop	1bit	Trigger (DPT 1.017)	CW	Central Function	This parameter is valid when the output channel is set to Blinds/Shutter. It is used to stop the channel in action.
80	Central Function	Absolute position	1byte	Percentage (DPT 5.001)	CW	Central Function	This parameter is valid when the output channel is set to Blinds/Shutter. Related functions can be set through the Parameter "Central Objects".It is used to set the absolute position of blinds/shutter.
81	Central Function	Absolute position of slats	1byte	Percentage (DPT 5.001)	CW	Central Function	This parameter is valid when the output channel is set to Blinds/Shutter. Related functions can be set through the Parameter "Central Objects".It is used to set the absolute position of slats.
82	Automatic I	Automatic position 1	1bit	switch (DPT 1.001)	CW	Automatic I	This Communication Object is shown when Automatic Block I in General Setting is active. This object is shared by object "Automatic Position 1" in block I of all channels, each channel configures its own position parameter. For example, the "Height Position" in "Automatic Position 1" of channel A/B is set to 80%. The "Height Position" in "Automatic Position 1" of channel C/D is set to 70%. Then, when Object "Automatic Position 1" in Block A receives message as "On", channels A/B and C/D will reach the target value according to their setting.
83	Automatic I	Automatic position 2	1bit	switch (DPT 1.001)	CW	Automatic I	This Communication Object is shown when Automatic Block I in General Setting is active. For other information, please refer to Automatic Position 1.
84	Automatic I	Automatic position 3	1bit	switch (DPT 1.001)	CW	Automatic I	This Communication Object is shown when Automatic Block I in General Setting is active. For other information, please refer to Automatic Position 1.
85	Automatic I	Automatic position 4	1bit	switch (DPT 1.001)	CW	Automatic I	This Communication Object is shown when Automatic Block I in General Setting is active. For other information, please refer to Automatic Position 1.
86	Automatic II	Automatic position 1					Please refer to Automatic I.

90	Channel A/B	Blinds up/down	1bit	up/down (DPT 1.008)	CW	Blinds	Object Value = 0: Up The relay-operating time of channel A is determined by parameter "Movement time" or "Time for up movement".
		Shutter up/down				Shutter	Object Value = 1: Down The relay-operating time of channel B is determined by parameter "Movement time" or "Time for down movement".

91	Channel A/B	Slats adjustment /stop	1bit	Step (DPT 1.007)	CW	Blinds	Object value=0: Open(Slat position=0%) Object value=1: Close(Slat position=100%) The action time is determined by the parameter "Step time for slats adjustment". The command will not be answered until the last action has finished. If Blinds are in the action process and receives the message of object "Slats adjustment/Stop", the ongoing action will be aborted regardless of the object value.
		Short term operation/Stop		Trigger (DPT 1.017)		Shutter	This Communication Object is shown when parameter "Short term operation" is active. Object value=0: UP. Object value=1: Down. The action time is determined by the parameter "Movement time for short term operation". The command will not be answered until the last action has finished. If Shutter is in the action process and receives the message of object "Slats adjustment/Stop", the ongoing action will be aborted regardless of the object value.
92	Channel A/B	stop	1bit	Trigger (DPT 1.017)	CW	Shutter	This Communication Object is shown when parameter "Short term operation" is not active. Object Value=0: STOP, stops the ongoing action. Object value=1: Invalid.
93	Channel A/B	Status current position	1byte	Percentage (DPT 5.001)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Status current position" is active. Object "Status current position" indicates the current position. The value ranges from 0 to 255, indicating 0% to 100%. Object "Status current position" = 0%: the highest position; Object "Status current position" = 100%: the lowest position. The current position information is reported after each movement. If the reference position is not determined after startup, the position information is not reported.
94	Channel A/B	Status current position of slats	1byte	Percentage (DPT 5.001)	CRT	Blinds	This Communication Object is shown when parameter "Status current position" is active. Object "Status current position of slats" indicates the current position of the Slats. The value ranges from 0 to 255, indicating 0% to 100%. The current position information is reported after each movement. If the reference position is not determined after startup, the position information is not reported.
95	Channel A/B	Status current direction	1bit	Up/Down (DPT 1.008)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Status current direction/position/up/down" is active. Object value = 0: Up; Object value = 1: Down. This Object is used to indicate the current movement direction of the blinds/shutter. If the object value changes, the current object value is sent to the bus once.
96	Channel A/B	Status upper position	1bit	State (DPT 1.011)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Status current direction/position/up/down" is active. When Object:Status current position is 0%,Object value =01; When Object:Status current position isn't 0%,Object value =0. If the object value changes, the current object value is sent to the bus once.

97	Channel A/B	Status lower position	1bit	State (DPT 1.011)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Status current direction/position/up/down" is active. When object "Status current position" is 100%, object value =01. When object "Status current position" isn't 100%, object value =0. If the object value changes, the current object value is sent to the bus once.
98	Channel A/B	Status lock/alarm	1bit	State (DPT 1.011)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Status for current blocking/alarms" is active. It is used to indicate whether the current "Lock (Blocking function)" or "Alarm (Rain, Wind, Frost)" is active. Object "Status Lock/Alarms" = 01 active, when this function is enabled. Object "Status Lock/Alarms" = 00 inactive, when this function is disabled. If the object value changes, the current object value is sent to the bus once.
99	Channel A/B	Status of movement	1bit	state (DPT 1.011)	CRT	Blinds/Shutter	This Communication Object is shown when parameter "Object for movement status" is set to "move(1 object)". Object value = 1: the channel is active, Object value = 0: the channel is not active. If the object value changes, the current object value is sent to the bus once.
		Status of movement up					This Communication Object is shown when parameter "Object for movement status" is set to "moving up + moving down". If the channel is in the UP state, Object value = 1 indicates that the channel is active; If the channel is not in the UP state, Object value =0 indicates that the channel is not active. If the object value changes, the current object value is sent to the bus once.
100	Channel A/B	Status of movement down	1bit	state (DPT 1.011)	CRT	Blinds/Shutter	This communication object is shown when parameter "Object for movement status" is set to "moving up + moving down". If the channel is in the Down state, Object value = 1 indicates that the channel is active; If the channel is not in the Down state, Object value = 0 indicates that the channel is not active. If the object value changes, the current object value is sent to the bus once.
101	Channel A/B	Start driving to reference	1bit	Up/Down (DPT 1.008)	CW	Blinds/Shutter	This communication object is shown when parameter "Object for reference drive" is active. Whether to return to message about the current position after reaching the reference point is determined by parameter "Action after movement to reference ". Object value =00 UP: It means moving up to the reference point(0%). Object value=01 Down: It means moving down to the reference point(100%). The command will not be answered until the last action has finished.
102	Channel A/B	Scene number	1byte	Scene number (DPT 17.001)	CW	Blinds/Shutter	It is activated when parameter "Scene" is active while "Learn scene" is not active. Specific actions are performed according to settings of the parameter "Scene".
		Scene Control		Scene Control (DPT 18.001)			It is activated when parameter "Scene" and "Learn scene" are active. It has the ability to learn the current scene and set it to the corresponding scene number.

103	Channel A/B	Driver to position	1bit	Star/stop (DPT 1.010)	CW	Blinds/Shutter	This communication object is shown when parameter "1Bit object for "Move to position"" is active. Specific actions are performed according to settings of the parameter "1Bit object for "Move to position"".
104	Channel A/B	Absolute position	1byte	Percentage (DPT 5.001)	CW	Blinds/Shutter	This communication object is shown when parameter "objects for absolute position" is active. It is used to set the absolute position of blinds/shutter. After startup, the first step is to confirmed the reference position and then blinds/shutter will be moved to the target position.
105	Channel A/B	Absolute position of slats	1byte	Percentage (DPT 5.001)	CW	Blinds	This communication object is shown when parameter "objects for absolute position" is active. It is used to set the absolute position of slats. If the reference position of salts isn't confirmed after startup, no action is performed.
106	Channel A/B	Wind alarm	1bit	alarm (DPT 1.005)	CW	Blinds/Shutter	This communication object is shown when parameter "Wind alarm" is active. Specific actions are performed according to settings of the parameter "Wind alarm".
107	Channel A/B	Rain alarm	1bit	state (DPT 1.005)	CW	Blinds/Shutter	This communication object is shown when parameter "Rain alarm" is active. Specific actions are performed according to settings of the parameter "Rain alarm".
108	Channel A/B	Frost alarm	1bit	alarm (DPT 1.005)	CW	Blinds/Shutter	This communication object is shown when parameter "Frost alarm" is active. Specific actions are performed according to settings of the parameter "Frost alarm".
109	Channel A/B	Normal Block	1bit	enable (DPT 1.003)	CW	Blinds/Shutter	This communication object is shown when parameter "Normal blocking function" is active. Specific actions are performed according to settings of the parameter "block".
110	Channel A/B	Diagnosis text	14bytes	Character String(ASCII) (DPT 16.000)	CRT	Blinds/Shutter	This communication object is shown when parameter "Diagnosis as character" is set to "Send at request" or "Send at change". "Send at request":Return message only when there is a query. "Send at change":It is actively sent when the status changes.
111	Channel A/B	Window contact	1bit	Boolean (DPT 1.002)	CW	Blinds/Shutter	This communication object is shown when parameter "Air function over window contacts" is active and parameter "window contacts" is set to "1 contact for "open"/"tilted" window". Specific actions are performed according to settings of the parameter "air function".
		Window contact 1					This communication object is shown when parameter "Air function over window contacts" is active and parameter "window contacts" is set to "2 contact for "open"/"tilted" window". Specific actions are performed according to settings of the parameter "air function".
112	Channel A/B	Window contact 2	1bit	Boolean (DPT 1.002)	CW	Blinds/Shutter	This communication object is shown when parameter "Air function over window contacts" is active and parameter "window contacts" is set to "2 contact for "open"/"tilted" window". Specific actions are performed according to settings of the parameter "air function".
113	Channel A/B	Block absolute position mode	1bit	Enable (DPT 1.003)	CW	Blinds/Shutter	This communication object is shown when parameter "Advanced function" is active and object "Block absolute position/clouding" is active. Message as "01 Enable", "00 Disable". When this Object receives the message as "Enable", Object "Absolute Position" and "Absolute Position of SLat" are not active,while the limit will be removed when the message as "Disable" is receives.

114	Channel A/B	Block function	1bit	Enable (DPT 1.003)	CW	Blinds/Shutter	This communication object is shown when parameter "Advanced function" and "Block functions" are active. "01 Enable","00 Disable". When object "Block Functions" receive the message "Enable", all options set to "active" take effect.
115	Channel A/B	Block central object	1bit	Enable (DPT 1.003)	CW	Blinds/Shutter	This communication object is shown when parameter "Advanced function" is active and "block central objects" is not active. "01 Enable","00 Disable". When "Enable" is received, the blocking item is enabled. When "Disable" is received, the blocking item is disabled
116	Channel C/D						Please refer to channel A/B.

142	Channel A/B	Up/Down in automatic control	1bit	Up/Down (DPT 1.008)	CW	Blinds/Shutter	Object Value=0: Move up. Object Value=1: Move down. The relay-operating time is determined by parameter "Movement Time" or "Time for Down Movement"
143	Channel A/B	Short Term in automatic control	1bit	alarm (DPT 1.007)	CW	Blinds	Object value=0: Move up. Object value=1: Move down. The actuation time is determined by parameter "Step time for slats adjustment".
144	Channel A/B	Stop in automatic control	1bit	Switch (DPT 1.017)	CW	Shutter	If Object value=0/1, the current action will be aborted.
145	Channel A/B	Absolute Position in automatic control	1byte	Percentage (DPT 5.001)	CW	Blinds/Shutter	It is used to set the absolute position of the Blinds/Shutter in Automatic Control Function.
146	Channel A/B	Absolute Slat in automatic control	1byte	Percentage (DPT 5.001)	CW	Blinds	It is used to set the absolute position of the Slats in Automatic Control Function.
147	Channel A/B	Lock in automatic control	1bit	enable (DPT 1.003)	CW	Blinds/Shutter	When activated, the objects in Automatic Control Function are locked and the MCU doesn't respond.
148	Channel C/D						Please refer to channel A/B.

4.Reference ETS-Parameter

4.1 General setting

General setting is permanently displayed at the first menu and provides some useful functions for users. Eco mode can be parameterized here, to switch off LEDs on the panels to reduce further power consumption for the actuator.

Startup timeout	2 s
Manual operation	active
Eco Mode,switch LED's off after	not active
Send "operation" cyclic(0=not active)	0 min
<div style="border: 1px solid #ccc; padding: 5px; background-color: #e6f2ff;"> i Automatic Block I ,Automatic Block II are only used for Shutter/Blinds function </div>	
Automatic Block I	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic Block II	<input checked="" type="radio"/> not active <input type="radio"/> active

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Startup timeout	2 -60s [2]	All functions run after startup timeout finished. NOTE: The timeout starts counting when power-on initialization is done. So it always takes longer than you expected
Manual operation	<ul style="list-style-type: none"> • active • disable • lockable over object 	Whether to allow manual operation from device front panel. Lockable over object: Means to enable or disable the Manual Operation from device front panel via this object.
Eco Mode, switch LED's off after	30S, 1min, 2min, 5min, 10min, 20min, 30min, 40min, 50min, 60min, not active not active	Used to set a timer for switching off the LED indicators to save energy
Send "Operation" cyclic (0=not active)	0 - 30,000min [0s]	Sends status signals from the object Operation at intervals you desire
Automatic Block I/II	<ul style="list-style-type: none"> • not active • active 	Activates Automatic Position 1 ~ 4 in Automatic Block I/II

The following chart shows the objects that belong to general setting:

Number	Name	Length	Usage
1	Manual control	1 bit	Sets manual control in action or not when lockable over object in Manual operation is selected
4	Operation	1 bit	Sends status of the device to the system at regular intervals when active

4.2 Channel selection

Every channel can be activated or deactivated individually. This setting can be done at the submenu "Channel selection":

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Channel 1-[4]	<ul style="list-style-type: none"> • not active • active 	Activation of the depending channel
Channel A/B for Shutter/Blinds	<ul style="list-style-type: none"> • not active • active 	not active: Channel A and Channel B work in single-channel mode. Channel A and Channel B work independently. active: Work in Shutter/Blinds mode. Channel A and Channel B are used together

ETS-text	Dynamic range [default value]	Comment
Channel C/D for Shutter/Blinds	<ul style="list-style-type: none"> • not active • active 	not active: Channel C and Channel D work in single-channel mode. Channel C and Channel D work independently. active: Work in Shutter/Blinds mode. Channel C and Channel D are used together

When a channel is activated, a new submenu is shown at the left selection menu. By choosing the submenu for this channel, the further parameterization can be done. Furthermore, a new submenu, with additional functions according the channel, is shown and the depending communication objects are shown.

A channel, which is chosen as “not active”, cannot be parameterized. There are no communication objects shown for deactivated channels.

5. Dimming channel

5.1 Overview

By choosing a channel as dimming, a sub menu, called Dimming Channel 1/A, appears for this channel at the left drop down menu.

The sub menu is shown at the following illustration:

--- KAA-4R4V-S Switch, Dimming Actuator, 4-fold, 16A, MDRC > Dimming Channel 1/A

General setting	Staircase light	<input checked="" type="radio"/> not active <input type="radio"/> active
Channel selection	On delay	<input type="text" value="0"/> s
	Off delay	<input type="text" value="0"/> s
+ Dimming Channel 1/A	Starting behavior	<input checked="" type="radio"/> On-value setting <input type="radio"/> Last light value (Memory)
	Value of start up	<input type="text" value="50%"/>
	Dim speed for relative dimming	<input type="text" value="5"/> s
	Dim speed for absolute dimming (0=Jump)	<input type="text" value="5"/> s
	On speed	<input type="text" value="2 s"/>
	Off speed	<input type="text" value="2 s"/>
	Scenes	<input checked="" type="radio"/> not active <input type="radio"/> active
	Automatic function	<input checked="" type="radio"/> not active <input type="radio"/> active
	Maximum light	<input type="text" value="100%"/>
	Minimum light	<input type="text" value="1%"/>
	Send dim value after change	<input type="radio"/> not active <input checked="" type="radio"/> at dim end
	Send On/Off state	<input type="radio"/> no send, passive State object <input checked="" type="radio"/> at change
	Central function	<input checked="" type="radio"/> not active <input type="radio"/> active
	Dimming curve	<input checked="" type="radio"/> Linear <input type="radio"/> Log
	Output mode	<input checked="" type="radio"/> 0-10V Output <input type="radio"/> 1-10V Output
	Relay switch mode	<input checked="" type="radio"/> Dimming with relay control <input type="radio"/> Dimming without relay control
	Behavior after bus power up	<input type="text" value="Last value"/>
	Switch status when bus power off	<input checked="" type="radio"/> Contact opened <input type="radio"/> Contact closed

The functions are described in detail at the following segments.

5.2 Handling/ basic functions

The basic functions of the dimming actuator are divided in three sections: Switching, dimming relatively and dimming absolutely. As soon as a channel is activated, the communication functions for the basic functions are standardly shown.

5.2.1 Switching

A channel can be switched on or off by the switching command. In addition, there is a state object, which shows the actual switching state of the output. This object, State On/Off, can be used for visualization. When the actuator shall be switched by a binary input or a push button, this object must be connected with the state object of the binary input or the push button for toggling.

Number	Name	Length	Usage
5	Switch On/Off	1 bit	Switches 1 Bit switches the channel on or off
6	State On/Off	1 bit	Shows the switching state of the channel

5.2.2 Dim relatively

The relative dimming allows continuous dimming. So the lights can be dimmed evenly from 0%(10%) to 100% or from 100% to minimum light. The relative dimming process can be stopped at every state. The behavior of the dimming process can be adjusted via additional parameters, Increase: 1%/3%/6%/12%/25%/50%/100%/break ; Derease: 1%/3%/6%/12%/25%/50%/100%/break

Number	Name	Length	Usage
9	Dim relatively	4 bit	Dims the channel continuous up and down

5.2.3 Dim absolutely

A discrete brightness level can be set by the absolute dimming process. By sending an absolute percent value to the 1 Byte object "Dim absolutely", the output assumes a certain brightness level.

Number	Name	Length	Usage
10	Dim absolutely	1 byte	Adjusts a certain brightness level

5.3 Time functions

The dimming actuator has the opportunities of connecting different time functions. Besides the normal on/off delay, an additional staircase function with different sub functions is available.

5.3.1 On/ Off delay

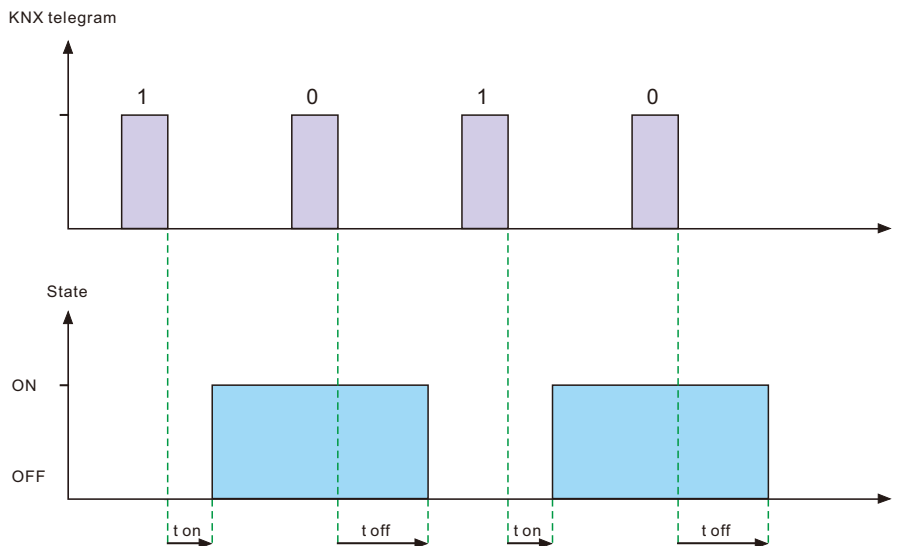
The on and off delay allows a delayed switching. The following chart shows this parameter:

On delay	<input type="text" value="0"/>	s
Off delay	<input type="text" value="0"/>	s

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
On delay/ Off delay	0s – 30,000s [0s]	Adjustment of the time at which the switch-on/switch off process shall be delayed

By using the On delay and Off delay, switching commands can be delayed. The delay can affect only to the rising edge (switch-on delay) or the falling edge (switch-off delay). Furthermore, both functions can be combined. The following diagram shows the functional principle of both functions, which are activated in this example:



5.4 Staircase light

Staircase light allows an automatic off-switching of the channel, when the adjusted time runs out. To parameterize this function, the staircase light must be activated at the corresponding channel:

Staircase light not active active

If the staircase light is activated, the corresponding functions are shown at the same menu and the further parameterization can be done.

Duration for staircase light	<input type="text" value="90"/>	s
Prewarning	<input checked="" type="radio"/> not active <input type="radio"/> active	
Extension	<input checked="" type="radio"/> not active <input type="radio"/> active	
Manual switching off	<input checked="" type="radio"/> not active <input type="radio"/> active	
Brightness value during permanent ON	<input type="text" value="50%"/>	
When permanent OFF	<input checked="" type="radio"/> Dimm down off <input type="radio"/> Start time of staircase light	

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Duration of staircase light	1s -30,000s [90s]	Duration of the switching process.
Prewarning	• active • not active	Activates the prewarning.
Prewarning duration in [s]	1-30,000 [10s]	Is only shown, when the prewarning is activated.
Value of dimming down	1-100% [20%]	Is only shown, when the prewarning is activated Value of which the channel shall be dimmed down, when the staircase time ran out .
Extension	• active • not active	Activation of a possible extension of the staircase light .
Manual switching off	• active • not active	Activation of Deactivation of the staircase light, before the whole time ran out .
Brightness value during permanent ON	0%(OFF)-100% [50%]	Dimming value at "Permanent ON" mode. Tirggered when the object Permanent ON is "1".
When permanent OFF	• Dim down off • Start time of staircase light	Tirggered after the the object Permanent ON is "0". The channel turns off when the parameter is Dim down off; the channel continues a new staircase light when set at Start time of staircase light.

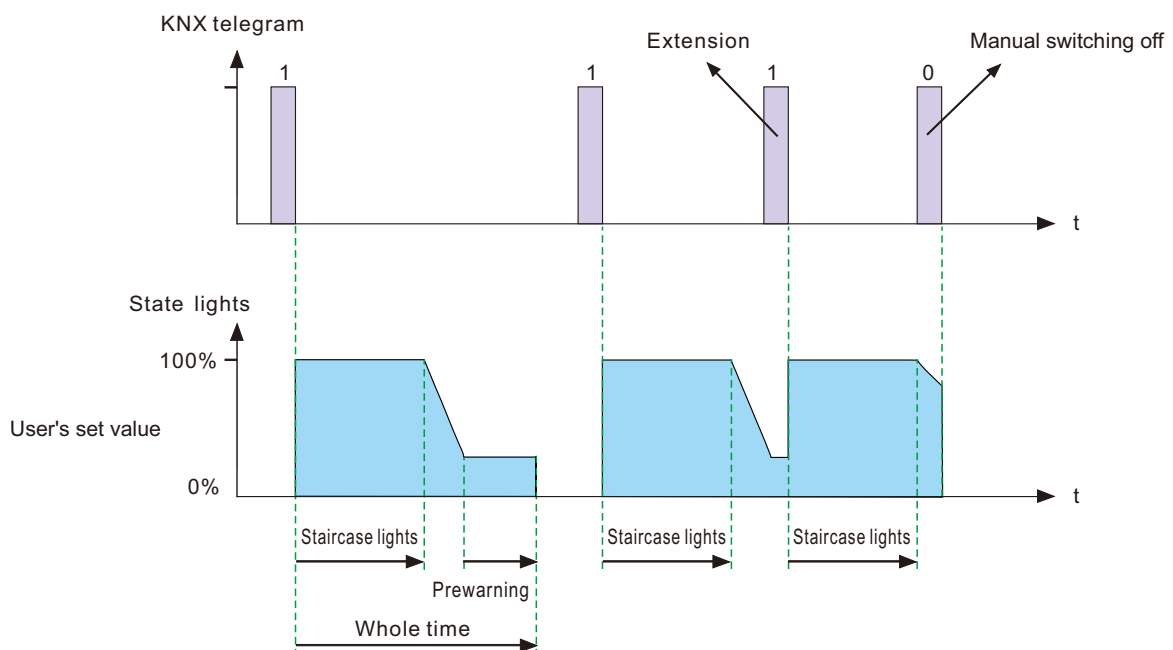
The duration of the staircase light indicates how long the channel shall be switched on after an ON-signal. After lapse of time, the channel is switched off automatically. Via the parameter "Extension"/ "Manual switching off", the staircase function can be modified. The "Manual switching off" allows switching off the channel before the time ran out. The "Extension" allows an extension of the staircase time, by sending another on-telegram, so the time is restarted. The prewarning function creates a dimming down of the lights after expiration of the staircase time. So the lights are still switched on, but with another value. The lights stay at this position for the duration of the prewarning. If the staircase function is activated, the communication object "Switch" is replaced by the communication object "Staircaselight":

Number	Name	Length	Usage
19	Staircase light	1 bit	switches the staircase function on

The staircase function has no influence to the relative or absolute dimming.

At the following diagram, the staircase function is shown, with an activated deactivation and extension.

The prewarning is activated with a dim down value of 20%:



5.5 Relay behavior

Operation mode of the programmable relays can be parameterized, such as normally closed after power off, which gives the actuator the ability to work with all kinds of LED drivers.

Output mode	<input checked="" type="radio"/> 0-10V Output <input type="radio"/> 1-10V Output
Relay switch mode	<input checked="" type="radio"/> Dimming with relay control <input type="radio"/> Dimming without relay control
Behavior after bus power up	Light value ▼
Light value	50% light ▼
Switch status when bus power off	<input checked="" type="radio"/> Contact opened <input type="radio"/> Contact closed

The chart shows the dynamic range for this parameter:

ETS- text	Dynamic range [default value]	Comment
Output mode	<ul style="list-style-type: none"> • 0-10V Output • 1-10V Output 	Chooses which dimming type of LED drivers to work with.
Relay switch mode	<ul style="list-style-type: none"> • Dimming with relay control • Dimming without relay control 	Is only shown, when 0-10V Output is chosen. Used to set whether relay and dimming outputs work independently or not.
Additional relay switch on delay ★	0-3,000s [0s]	Adjustment of the time at which the switch-on process shall be delayed
Additional relay switch off delay ★	0-3,000s [0s]	Adjustment of the time at which the switch-off process shall be delayed
Behavior of relay after bus power up ★	Off, On, no change [no change]	Defines the relay behavior when bus power on
Behavior of relay when bus power off ★	Off, On, no change [no change]	Defines the relay behavior at a bus power breakdown
Behavior after bus power up	Off, On, Last value, Light value [Last value]	Defines the action after bus power up. Note: Last value is the light level before bus power up, meaning that light level will be kept the same after bus power up.
Light value	10%, 20%, 30%..., 100% light [50%]	Is only shown, when Last value in Behavior after bus power up is chosen.
Switch status when bus power off	<ul style="list-style-type: none"> • Contact opened • Contact closed 	Defines the action when bus power off. There is no this option when Dimming without relay control is activated.

★: Only appears when “Dimming without relay control” is selected

Relays and dimming outputs of the actuator are able to be controlled separately when Relay switch mode is Dimming without relay control. The relays can be used to switch on/off those devices connected, e.g. a heater, meanwhile, the 0-10V outputs provide signals for dimming-up 0-10V LED drivers or even dimming-off the drivers.

The following chart shows the objects for the additional relay.

Number	Name	Length	Usage
7	Additional Switch ON/Off	1 bit	Switches the relay on or off
8	Additional Switch state	1 bit	shows the switching state of the relay

5.6 Absolute Values

The dimming area of the dimming actuator can be restricted by absolute values. Furthermore absolute or saved values can be called, when the actuator is switched on.

5.6.1 Starting behavior

The function "Starting behavior" defines the turn on behavior of the channel. The function can be parameterized for every channel individually.

Starting behavior On-value setting
 Last light value (Memory)

Value of start up 50% ▼

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
On-value setting	Sub-function: Value of start up 1-100% [50%]	If this sub-function is chosen, a new sub-function is shown, at which an absolute value for switching on can be chosen
Last light value (Memory)		The channel starts with the last value before switching off

Via the parameter "Value of start up", an absolute value for switching on can be assigned to the channel. The value for startup contains the whole technical possible area, so from 1-100%. But if the dimming area is restricted, the dimming actuator will be at least switched on with the lowest allowed value and maximum with the highest allowed value; independent from the chosen Value of startup.

The parameter "Last light value", also called memory function, causes a switching on of the actuator with the value before the last switching off. So the actuator saves the last value. If, for example, the channel is dimmed to 50% and switched off by switch object afterwards, the channel will be switched on with 50% again.

5.6.2 Dimming area

Via the parameters "maximum light" and "minimum light", the dimming area can be restricted.

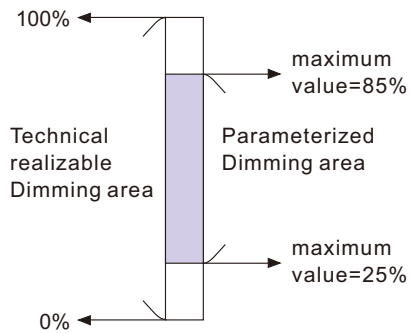
Maximum light 100% ▼

Minimum light 1% ▼

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Maximum light	2-100% [100%]	Highest, maximum allowed light value
Minimum light	1-99% [1%]	Lowest, minimum allowed light value

If the technical possible dimming area (1-100%) shall be restricted to a lower area, you have to set values for the minimum light above 1% and for the maximum light under 100%. This restriction of the dimming area is possible for every channel. If the dimming area is restricted, the channel will only move in the adjusted restriction. This setting has also effects to the other parameter: If, for example, the channel is restricted to a maximum of 85% and the value of startup is chosen as 100%, the channel will switch on with the maximum of 85%. An excess of the maximum value is no longer possible. The restriction of a dimming area is useful when certain values must not be reached, because of technical reasons, for example preservation of the life span or the avoidance of flickering at lower dim values (especially at Energy saver).



Example: Minimum light = 25%, maximum light = 85%, Value for startup= 100%

- On telegram → adjusted light value 85%
- 50% telegram → adjusted light value 50%
- 95% telegram → adjusted light value 85%
- 15% telegram → adjusted light value 25%
- Off telegram → adjusted light value 0% (Off)

5.7 Specific Dimming settings

The dimming behavior and Soft-Start/Stop can be adapted individually via the functions below.

Dim speed for relative dimming	<input type="text" value="5"/>	s
Dim speed for absolute dimming(0=Jump)	<input type="text" value="5"/>	s
On speed	<input type="text" value="2 s"/>	
Off speed	<input type="text" value="2 s"/>	

5.7.1 Dimming speed

The dimming speed allows parameterizing the duration of the dimming process individually.

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Dimming speed for relative dimming	1-120s [5s]	Defines the time for all relative dim processes related to relative dimming process of 100%. If a time of 10s is adjusted, the relative dimming from 0% to 100% and vice versa would last 10s. So the relative dimming from 0% to 50% would last 5s.
Dimming speed for absolute dimming (0=Jump)	0-120s [5s]	Defines the time for all absolute dimming processes related to an absolute dimming process of 100%. If a time of 10s is adjusted, the absolute dimming from 0% to 100% and vice versa would last 10s. So the absolute dimming from 0% to 50% would last 5s.
On speed	1-240s [2s]	The On Speed realizes a Soft Start function. At an On Speed of 2s, the LED drivers will be dimmed up to 100% in 2s when switching on.
Off speed	1-240s [2s]	The Off Speed realizes a Soft Stop function. Speed of 2s, the LED drivers will be dimmed down to 0% in 2s when switching off.

5.7.2 Send dimming value after change

To visualize the dimming value, for example via a display, the following communication object must be activated:

Send dim value after change not active at dim end

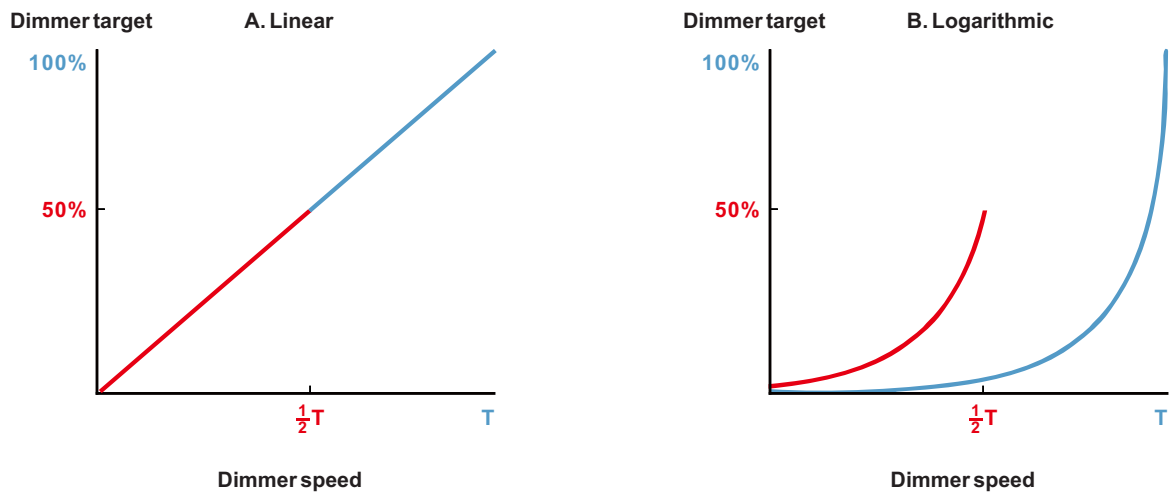
ETS-text	Dynamic range [default value]	Comment
Send dim value after change	<ul style="list-style-type: none"> • not active • at dim end 	Activates the status object for the dimming process

The communication object for the actual dimming value is shown continuous, but sends only the actual dimming value, when the parameter "Send dimming value after change" is activated.

Number	Name	Length	Usage
11	State dim value	1 byte	Sends the actual dimming value in %

5.7.3 Dimming curve

The actuator provides both linear and logarithmic dimming curves for selection. In a linear dimming curve, the signal sent to the drivers is linear, increasing in a steady rate. In contrast to logarithmic - the signal to the drivers changes slower at deeper dimming levels and faster at the brighter end. Although linear and logarithmic curves behave in different form, they will reach the dimming target at the same time.



Dimming curve Linear Log

ETS-text	Dynamic range [default value]	Comment
Dimming curve	<ul style="list-style-type: none"> • Linear • Log 	Selection of linear or logarithmic dimming signal

5.8 Central objects

For each channel can be chosen whether it should react to the central objects or not. The activation of the central objects can be done at the following parameter:

Central function not active active

If the central function is activated for a channel, the channel will react to the central objects with its individual parameterization. The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Central function	<ul style="list-style-type: none"> • not active • active 	Sets whether a channel shall react to the central objects or not

There are two central objects for the handling of the activated channels. At the one hand the 1 Bit switching object, which switches the channels with activated central function on or off and to the other hand the 1 Byte object "Dim absolutely". This object assigns absolute light values to the relevant channels.

To watch at the central objects is, that every channel is called with its individually parameter settings.

If, for example, a channel with activated staircase light function is called by the central objects, the channel will be switched on for the adjusted staircase time and will be switched off afterwards.

Number	Name	Object function	Length	Usage
2	Central	Switch On/Off	1 bit	Switches all channels with activated central function
3	Central	Dim absolutely	1 byte	Dims all channels with activated central function

5.9 Scene function

When functions of different groups (e.g. light, heating and shutter) shall be changed simultaneously with only one keystroke, it is practical to use the scene function. By calling a scene, you can switch the lights to a specific value, drive the shutter to an absolute position, switch the heating to the day mode and switch the power supply of the sockets on. The telegrams of these functions can have as well different formats as different values with different meaning (e.g. "1" for switch the lights off and open the shutters). If there were no scene function, you would have to send a single telegram for every actuator to get the same function.

The scene function of the switch actuator enables you to connect the channels of the switch actuator to a scene control. For that, you have to assign the value to the appropriated space (scene A-H). It is possible to program up to 8 scenes per switching output. When you activate the scene function at the switching output, a new sub menu for the scenes appears at the left selection menu. There are settings to activate single scenes, set values and scene numbers and switch the learn scene function on/off at this sub menu.

Scenes are activated by receiving their scene numbers at the communication object for the scenes. If the "Learn scene" function of the scenes is activated, the current value of the channel will be saved at the called scene number.

The communication objects of the scenes have always the length of 1 byte.

The following illustration shows the setting options at the ETS-Software for activating the scene function:



The scene function can only be activated for the normal switching mode. If the staircase light function is activated, the scene function cannot be activated for this channel.

The following chart shows the communication object for calling a scene:

Number	Name	Length	Usage
12	Scene	1 byte	Call of the scene

For calling a certain scene, you have to send the value for the scene to the communication object.

The value of the scene number is always one number less than the adjusted scene number. For calling scene 1, you have to send a "0". So the scene numbers have the numbers from 1 to 64, but the values for the scenes only from 0 to 63.

If you want to call scenes by a binary input or another KNX device, you have to set the same number at the calling device as at the receiving device. The calling device, e.g. a binary input, sends automatically the right value for calling the scene.

5.9.1 Submenu scene

If a scene is activated, a new submenu will appear at the left selection menu. At this submenu, the further parameterization can be done. For every channel are up to 8 storage options available. These 8 presets have numbers A-H. One of the 64 scene numbers can be assigned to each scene. The following illustration shows the setting options at the submenu for the scenes (Channel X: Scene) for the scenes A-H:

Learn scene not active active

Scene A not active active

Scene number

Light value

Transition time to new brightness s

Scene B not active active

Scene C not active active

Scene D not active active

Scene E not active active

Scene F not active active

Scene G not active active

Scene H not active active

The following chart shows the dynamic range for an activated scene function:

ETS-text	Dynamic range [default value]	Comment
Learn scene	<ul style="list-style-type: none"> • not active • active 	<p>Adjusts whether the learning/saving function shall be enabled for the scenes of this channel or not. For instance: Light value of the Scene A is 20%, this Light value can be adjusted according to user's preference afterwards, say 35%, and the new value is able to be saved via DPT 18.001 scene control by other KNX devices, such as a smart home control panel.</p> <p><u>not active</u>: learn scene function is disabled and object value follows DPT 17.001 scene number.</p> <p><u>active</u>: learn scene function is enabled and object value follows DPT 18.001 scene control.</p>
Scene A-[H]	<ul style="list-style-type: none"> • not active • active 	Activation of the depending scene
Scene Nr. A-[H]	1-64 [A:1; B:2; ... H:8]	Adjusts the number for calling a scene
Light value scene A-[H]	Off, 10%, 20%, 30%, 40%, 50%, 60%,70%, 80%, 90%, 100% light [Off]	Adjusts the light value for a scene call
Transition time to new brightness	1-240s [10]	The time taken from the privuous setting to this new scene

At the submenu for the scenes, a reaction can be assigned for the call of each scene. This reaction includes an absolute light value (0-100%) for this channel. Every channel can react to 8 different scenes. By sending of the pick-up value of the relevant scene, the scene is called and the channel adjusts its parameterized values. The individual parameterization is also watched at calling the scene.

If the channel shall dim to 50% at the call of the scene A and the channel has a parameterized switch on delay of 5s, the channel will be switched on after this 5s and be dimmed to the 50% in compliance to the adjusted dimming speed.

To watch at the programming is that if two or more channels shall react to the same scene number, the communication objects for the scenes of these channels have to be connected to the same group address. By sending of the pick-up value for the scenes, all channels will be called. It is practical to divide the group addresses by scenes at the programming. If a channel shall react now to 8 scenes, the communication object has to be connected to 8 different group addresses.

5.10 Automatic function

An automatic function can be activated for every channel. The automatic function allows calling up to 4 absolute exposure values for every channel. Calling can be done via a 1 bit commands.

For further setting options, the automatic function of a channel must be activated.

Automatic function
 not active
 active

By activating the automatic function a submenu for further parameterization is shown. Furthermore, the following communication objects are shown:

Number	Name	Length	Usage
13	Automatic 1	1 bit	Calling of the automatic value 1
14	Automatic 2	1 bit	Calling of the automatic value 2
15	Automatic 3	1 bit	Calling of the automatic value 3
16	Automatic 4	1 bit	Calling of the automatic value 4

5.10.1 Submenu automatic function

The further parameterization can be done at the submenu of the automatic function.

Automatic function 1-Exposure value 30% light ▼

Automatic function 2-Exposure value off ▼

Automatic function 3-Exposure value off ▼

Automatic function 4-Exposure value off ▼

ETS-text	Dynamic range [default value]	Comment
Automatic function 1-[4] – Exposure value	Off, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% light [Off]	Defines the exposure value for an automatic call. Setting only activates when the corresponding object is 1

Every automatic function can be assigned an absolute exposure value (in 10% steps). The call of the automatic function is done by an 1 bit object.

5.11 Block function

Block function can be parameterized for every channel. Via the Block function, the behavior of the channel for calling the blocking objects can be assigned.

Behavior at Block I=value "1"	Light value	▼
Light value	100% light	▼
Behavior at Block I=value "0"	Light value	▼
Light value	10% light	▼
Invert Block I input	<input checked="" type="radio"/> not active	<input type="radio"/> active
Release time for Block I (value "1" to "0") (0 min = not active)	0	▲▼ min
<hr/>		
Behavior at Block II=value "1"	Light value	▼
Light value	100% light	▼
Behavior at Block II=value "0"	Light value	▼
Light value	10% light	▼
Invert Block II input	<input checked="" type="radio"/> not active	<input type="radio"/> active
Release time for Block II (value "1" to "0") (0 min = not active)	0	▲▼ min

5.11.1 Blocking objects

For both blocking objects an action for activation as well as deactivation can be defined

ETS-text	Dynamic range [default value]	Comment
Behavior at Block I = Value 1	Off, no change, Light value (10%,20%,30%,..., 100%) [Light value]	Defines the action for activation of the first blocking object
Behavior at Block I = Value 0	Off, no change, Light value (10%,20%,30%,..., 100%) [Light value]	Defines the action for deactivation of the first blocking object
Light value	10%, 20%, 30%, 40%, 50%, 60%,70%, 80%, 90%, 100% light [100% light]	Adjusts the light
Invert Block I input	• not active • active	If active, inverter singals recived from the Block I Object, that is 1→0; 0→1
Release time for Block I (value "1" to "0") (0 min = not active)	0-600min [0min]	Release the channel from "Behavior at Block I = Value 1" after countdown and enter "Block I = Value 0"
Behavior at Block II = Value 1	Off, no change, Light value (10%,20%,30%,..., 100% [Light value]	Defines the action for activation of the second blocking object
Behavior at Block II = Value 0	Off, no change, Light value (10%,20%,30%,..., 100% [Light value]	Defines the action for activation of the second blocking object
Light value	10%, 20%, 30%, 40%, 50%, 60%,70%, 80%, 90%, 100% light [100% light]	Adjusts the light
Invert Block II input	• not active • active	If active, inverter singals recived from the Block II Object, that is 1→0; 0→1
Release time for Block II (value "1" to "0") (0 min = not active)	0-600min [0min]	Release the channel from "Behavior at Block II = Value 1"after countdown and enter "Block II =Value 0"

By using the blocking objects, the channel can be blocked for further usage. Additional, the channel can perform an adjusted function, as dimming to a certain value, switch the channel of or stay in its current state, when it is blocked. The same actions can be performed by the channel, when it is unblocked.

It is important to be aware that the channel cannot be operated when it is blocked. Furthermore the manual usage is blocked during a blocking process. All telegrams, which are sent to the corresponding channel during a blocking process, have no effect for the channel.

If both blocking processes are activated, the first one is of prime importance. But if you activate the second blocking process during the first blocking process, the second blocking process will get active when the first one is deactivated. The action for the deactivation of the first blocking process will not be performed, but the channel calls the adjusted settings for the second blocking process.

Number	Name	Length	Usage
17	Block I	1 bit	Activation/Deactivation of the first blocking process
18	Block II	1 bit	Activation/Deactivation of the second blocking process

Priority from the highest to the lowest is Block I > Block II > Manual Operation > Permanent ON > On/Off & Dimming output.

6. Blinds, Shutter

If channel A/B (or C/D) is activated, a new submenu will appear at the left selection menu.

General setting	Dimming Channel 1/A	<input checked="" type="radio"/> not active <input type="radio"/> active
Channel selection	Dimming Channel 2/B	<input checked="" type="radio"/> not active <input type="radio"/> active
+ Channel A/B	Dimming Channel 3/C	<input checked="" type="radio"/> not active <input type="radio"/> active
	Dimming Channel 4/D	<input checked="" type="radio"/> not active <input type="radio"/> active
<div style="border: 1px solid #ccc; padding: 5px; background-color: #e6f2ff;"> <p>i When Shutter/Blinds function is active, the binary relay (to switch load on/off) for corresponding dimming channel is not available anymore.</p> </div>		
	Channel A/B for Shutter/Blinds	<input type="radio"/> not active <input checked="" type="radio"/> active
	Channel C/D for Shutter/Blinds	<input checked="" type="radio"/> not active <input type="radio"/> active

The channel can be set as Blinds or Shutter. The user has a wide range of opportunities to parameterize the channel. These ones are expounded at the following segments.

Function Channel A/B	<input checked="" type="radio"/> Blinds <input type="radio"/> Shutter
----------------------	---

6.1 Blinds

The following chart shows some objects:

Number	Name	Length	Usage
90	Blinds up/down	1 Bit	Movement of the blinds
91	Slats adjustment/stop	1 Bit	Adjustment of the slats/ Stopping of the slat movement

The communication object Blinds up/down is used to move the blinds. Thereby is to consider that a logical "0" starts the up-movement and a logical "1" starts the down-movement. This configuration is standardly defined by KNX and controls an identical communication between KNX devices. The communication object "Slats adjustment/stop" is used to adjust the slats. By calling this object the current movement of the blinds is simultaneous stopped.

6.2 Shutter

There are also a wide range of opportunities to parameterize the channel at shutter function. The shutter function and the blind function are almost identical, but there are no options to parameterize or move the slats at the blind function. As soon as the channel is selected as shutter appears standardly three communications objects.

The following chart shows some objects:

Number	Name	Length	Usage
90	Shutter up/down	1 Bit	Movement of the shutter
91	Short term operation/Stop	1 Bit	Appears when "Short term operation" is active. To start the short time operation
92	Stop	1 Bit	Stopping the shutter movement

The communication object "shutter up/down" is used to move the shutter. Thereby is to consider that a logical "0" starts the up-movement and a logical "1" starts the down-movement. The communication object "Stop" is used to stop the current movement of the shutters. The object stop can be called by a logical "0".

6.3 Time for movement

By setting different times for movement the user is able to parameterize the Actuator individually for almost every shutter/blind. To be sure that the movement function works properly, you have to parameterize these times carefully. If the channel is selected as blinds there are additional settings for the moving time. You can see the screen for setting these times in the following illustration.

Blinds:

Time for Up/Down movement	<input checked="" type="radio"/> same <input type="radio"/> different
Movement time	45 s
Extension of movement time	5%
Step time for slats adjustment	200 ms
Slat adjustment time	1200 ms
Pause on reverse	500 ms
Switch-On delay motor	200 ms
Switch-Off delay motor	200 ms
Interchange connections for motor Up/Down	<input checked="" type="radio"/> normal <input type="radio"/> Up/Down inverted
Position of slats at end of driving (Move Down)	100%

Shutter:

Time for Up/Down movement	<input checked="" type="radio"/> same <input type="radio"/> different
Movement time	45 s
Extension of movement time	5%
Short term operation	<input checked="" type="radio"/> not active <input type="radio"/> active
Up/Down movement can stop (single object control)	<input checked="" type="radio"/> not active <input type="radio"/> active
Pause on reverse	500 ms
Switch-On delay motor	200 ms
Switch-Off delay motor	200 ms
Interchange connections for motor Up/Down	<input checked="" type="radio"/> normal <input type="radio"/> Up/Down inverted

In the following chart, you can see the setting range for the movement times:

ETS-text	Dynamic range [default value]	Comment
Time for Up/Down movement	<ul style="list-style-type: none"> • same • different 	Adjustment, whether up and down movement should be different or not
Movement time	5-1000s [45s]	Sets the duration for an up/down movement
Time for up movement	10-1000S [45s]	Sets the duration for an up movement
Time for down movement	10-1000S [45s]	Sets the duration for an down movement
Extension of time for movement	no extension, 2%, 5%, 10%, 15%, 20%	The extension of movement is for the definitely driving to the end stop and has no effects to the calculation of the absolute positions

ETS-text	Dynamic range [default value]	Comment
Step time for slats adjustment	50-5000ms [200ms]	Only at Blinds. Duration for a step at the adjustment of blinds
Slat adjustment time	10-10000ms [1200ms]	Only at Blinds. Duration for the whole adjustment of blinds(0-100%)
Pause on reverse	100-2000ms [500ms]	Sets the pause time between an up and down movement
Switch-On delay motor	0-500ms [200ms]	Switch-on delay for motors, which have not the whole power at the beginning
Switch-Off delay motor	0-500ms [200ms]	Switch-off delay for motors, which have time lag after set off
Position of slats at end of Driving (Move Down)	0-100% [100%]	Only at Blinds. Sets the position of slats after driving the shutter
Short term operation	• not active • active	Only at Shutter. Sets the short time operation on/off
Movement time for short term operation	50-5000ms [200ms]	Only at Shutter. Adjusts the time for one short time operation
Up/Down movement can stop(Single Object Control)	• not active • active	Only at Shutter. Sets whether the object "Shutter Up/Down" can be stopped

The functions are described in detail at the following segments

6.3.1 Measure of the times for Movement

The individual times for the movement of shutter/blinds can be normally determined very precise by using a stop watch. If there are very short times for the movement, the measuring by using a watch will maybe cause problems. In this case it is suggested to adjust initially an approximated value, which should be a little bit shorter than the real time for movement. Afterwards you can test the adjusted time by triggering the shutters or blinds and control whether the final positions are achieved. If they are not achieved, you should set the time for movement gradually higher by using small steps until the final positions are achieved.

6.3.2 Movement time

The movement time describes the time which the shutter actuator needs to drive the shutter/blinds from one final position to the other. When the adjusted time is over the channel is set off even when the final position was not achieved. So the shutter actuator triggers the down-movement/ up-movement for the adjusted time. Because shutters and blinds have often different times for the up down movement, different times can be adjusted for the up and down movement. The extension of time for movement guarantees the definitely driving to the end stops. This function has no effects to the calculation of the absolute positions. So you should always adjust the precise time for the movement time and activate the extension for the guaranteed driving to the end stops. Check if the manufactory gives any data for the movement times.

6.3.3 Step time for slats adjustment

→only at blinds

You can adjust in which steps the slats shall be shifted with the setting "step time for slats". The opening angle can adjust thereby in small steps to prevent e.g. a glare of the sun after a changing of the solar altitude or tighten sunblind. Additional, it is possible to adjust the step range in a way so that the slats drive from one final position to the other in a specific number of steps. For this way of slat-movement, you have to set the step time for blinds to a multiple of the "Slat adjustment time". Thereby the multiple of the duration time specifies the number of steps, which are required to drive the slats from one final position to the other.

For Example: Slat adjustment time: 3000ms; Step time for slats = 300ms

→Number of steps=10 → therefore the values 0%, 10%, ..., 100% can be appointed

6.3.4 Slat adjustment time

→only at blinds

The Slat adjustment time sets the interval, which is required to drive the slats from 0% to 100% or backwards. Therefore, the shutter actuator triggers the slat adjustment.

Tip for the measurement from very small durations of slat adjustment

- Drive the slats in a final position (either 100% closed or 100% opened)
- Now send step commands until the other final position is achieved
- Multiply the number of steps with the adjusted time for the step time of slats
- Enter the result to the “duration of slat adjustment”

6.3.5 Pause on reverse

The Pause on reverse is for the protection of the shutter motor, if the shutter actuator receives simultaneously commands for the up- and down-movement. A direct shift from the one to the other direction can contract the duration of the motor significantly and even by some motors a total damage is caused. If the shutter actuator receives during a running movement a command for a movement to the other direction, the shutter actuator will switch off the movement. Before the shutter actuator switches the movement to the other direction on, the actuator stops for the adjusted time for the pause at change of direction. The pause at change of direction counts as well for the change of direction of the up-/down movement as for the blind adjustment.

NOTE: Too short adjusted pause at change of direction can cause damages of the motor!

Notice the manufacturer's data at the datasheet of the drive absolutely.

6.3.6 Switch-on/Switch-off delay motor

Some motors cannot bring the full power at the moment of switching it on, but first after some milliseconds. The time, which the motor needs to get the full power, can be balanced with the adjustment of the switch-on delay of the motor. On the other hand, there are motors, which run after it was switched off. This characteristic can be balanced by using the setting switch-off delay motor.

6.3.7 Position of slats at end of Driving (Move Down)

→only at blinds

By using the adjustment “position of slats at end of Driving (Move Down)” be adjusted in which position the slats shall be set after a down -movement. The shutter actuator drives automatically to this position after the end of a blind-movement, by using the object “Blinds up/down”. The position of slats at end of driving can be set percentage in 1% steps, from 0% to 100%, whereby 0% full opened and 100% full closed correspond. If the movement is stopped by sending a stop-command, this position will not be driven to, because the process is stopped.

6.3.8 Short term operation

→only at shutter

The short time operation helps you to drive the shutter to a certain position, e.g. for sun protection. With small steps, the shutter can be driven to every possible position. It is often useful to set the short time operation as a multiple of the movement time. So the shutter can be driven from the bottom to the top, or the other way around, in a certain number of steps.

6.4 Position Objects

The following illustration shows the setting options at the ETS-Software:

Object for reference drive	<input type="radio"/> not active	<input checked="" type="radio"/> active
Action after movement to reference	<input checked="" type="radio"/> no action	<input type="radio"/> move to former position
Object for absolute position	<input type="radio"/> not active	<input checked="" type="radio"/> active
1Bit object for "Move to position"	<input type="radio"/> not active	<input checked="" type="radio"/> active
Action at value 1	always ▼	
Position of blinds	0% ▼	
Position of slats	0% ▼	
Action at value 0	not active ▼	

The following table shows the possible settings for the position objects:

ETS-text	Dynamic range [default value]	Comment
Object for reference drive	<ul style="list-style-type: none"> • not active • active 	<ol style="list-style-type: none"> 1. When it's active, object "Start driving to Reference" appears. 2. It's used to move the blinds/shutter to the reference position, which means the highest or lowest point. 3. Their subsequent actions are set by parameter "Action After Movement to Reference"
Action after movement to reference	<ul style="list-style-type: none"> • no action • move to former position 	<p>No action</p> <p>Move to former position</p>
Objects for absolute position	<ul style="list-style-type: none"> • not active • active 	<ol style="list-style-type: none"> 1. When it's active, object "Absolute position" appears, but object "Absolute position of slats" also appears only at Blinds. 2. It's used to set absolute position. (0~100%) 3. If you want to execute the command about object "Absolute position", please perform the position initialization of blinds first. You can move the blinds to the highest or lowest position, then move them to the specified position. 4. At Blinds, before executing the command about object "Absolute position", please confirm that the position of slats remains unchanged. 5. At Blinds, if the position of blinds isn't initialized, the command about object "Absolute position of Slats" will not be executed.
1Bit object for "Move to position"	<ul style="list-style-type: none"> • not active • active 	<p>When it's active, object "Drive to position" appears.</p> <p>The actions can be set.</p>
Action at value =1	<ul style="list-style-type: none"> • Always • If position is top • If position is bottom 	<ol style="list-style-type: none"> 1. Always: The action will be executed when the values of object "Status current position" and object "Shutter position" are different. 2. If position is top: It can only be moved down when object "Status current Position" is in the highest position (0%). 3. If position is bottom: It can only be moved up when object "Status current Position" is in the lowest position (100%)
Position of blinds	<p>0%-100%</p> <p>Default:0%</p>	<p>Only at Blinds.</p> <p>It's used to set the target position of blinds</p>
Position of slats	<p>0%-100%</p> <p>Default:0%</p>	<p>Only at Blinds.</p> <p>It's used to set the target position of slats</p>
position of Shutter	<p>0%-100%</p> <p>Default:0%</p>	<p>Only at Shutter.</p> <p>It's used to set the target position of Shutter</p>
Action at value = 0	<ul style="list-style-type: none"> • no active • move up • move down 	<p>If other commands aren't executed after "Action at Value=1" is executed, it will perform the action set by "Action at value = 0".</p> <p>Note: If other commands are executed after the "Action at Value=1" is executed, it will not perform any action</p>

The following chart shows these objects:

Number	Name	Length	Usage
101	Start driving to reference	1 bit	<p>1. It is activated when "Object for reference drive" is set to active.</p> <p>2. "Action after movement to reference": Whether to return to the current position after moving the reference point.</p> <p>Object value =00 Up: Move up to the highest position (0%)</p> <p>Object value =01 Down: Move down to the lowest position (100%)</p> <p>Note: The command will not be answered until the last action has finished.</p>
103	Drive to position	1 bit	<p>1. It is activated when 1Bit object for "Move to position" is set to active.</p> <p>2. The specific action is performed according to the setting of 1Bit object for "Move to position".</p>
104	Absolute position	1 byte	<p>1. It is activated when "Objects for absolute position" is set to active.</p> <p>2. It is used to set absolute position of blinds/shutter.</p> <p>Note: After startup, the first step is to confirmed the reference position and then blinds/shutter will be moved to the target position.</p>
105	Absolute position of slats	1 byte	<p>1. It is activated when "Objects for absolute position" is set to active.</p> <p>2. It's used to set the absolute position of slats.</p> <p>Note: If the reference position of slats is not confirmed after startup, no action is performed.</p>

6.5 Status objects

The following figure shows the possible settings for the status objects:

Status current position	<input type="radio"/> not active <input checked="" type="radio"/> active
Position change report threshold	at the end ▼
Object for movement status	not active ▼
Status current direction/position up/down	<input checked="" type="radio"/> not active <input type="radio"/> active
Status current blocking/alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Diagnosis as character	send at request ▼

The following table shows the possible settings for the status objects:

ETS-text	Dynamic range [default value]	comment
Status current position	<ul style="list-style-type: none"> • not active • active 	Activates/deactivates the objects for absolute position/absolute position of slats
Position change report threshold	<ul style="list-style-type: none"> • At the end • Change 5% • Change 10% • Change 20% 	It appears when the "Status current position" is active. Actuator automatically reports the position while moving
Object for movement status	<ul style="list-style-type: none"> • not active • move(1 object) • moving up + moving down 	Activates the status objects for movement status
Status current direction / position up/down	<ul style="list-style-type: none"> • not active • active 	Activates the status objects for current direction and reaching the upper / lower end stop
Status current blocking/alarm	<ul style="list-style-type: none"> • not active • active 	Activates the status object for current blocking/alarms
Diagnosis as character	<ul style="list-style-type: none"> • not active • send at request • send at change 	When activated, the transmission condition for the diagnostic text is defined

The following chart shows these objects:

Number	Name	Length	Usage
93	Status current position	1 byte	Indicates the actual shutter/blinds position
94	Status current position of slats	1 byte	Only at Blinds Indicates the actual position of the slats
95	Status current direction	1 Bit	Indicates the actual direction of the movement
96	Status upper position	1 Bit	Indicates reaching the upper limit position
97	Status lower position	1 Bit	Indicates reaching the lower limit position
98	Status lock/alarm	1 Bit	Indicates an active alarm or an active lock function
99	Status of movement	1 Bit	Indicates an active movement
110	Diagnosis text	14 bytes	Output of the diagnostic text in "Characters"

6.5.1 Status objects current position

The status objects "Status current position" and "Status current slat position" are used to display the absolute position. The two objects indicate the current state of the height and the opening angle of the slats, each after the end of the movement. The objects can be used e.g. for visualization.

6.5.2 Report objects lower/upper position

The 1-bit objects "Status lower position" and "Status upper position" each output a 1 signal when the lower or upper end position has been reached. As soon as the end position has been left, the signal changes from 1 to 0. The two objects can be used for monitoring the blinds/shutters.

6.5.3 Movement Status/Current direction

The object "status of movement" can be selected as one or two objects. As one object, it reports a momentary movement with a "1". In the case of two objects it reports an active up- and an active down movement via two separate objects. The 1-bit object "Status of the current direction" indicates an upward travel via a logical "0" and a downward travel via a logical "1". The status is sent as soon as a movement is started and remains internally until a new up / down command is sent.

6.5.4 Status Lock/Alarms

The Object "status lock/alarms" indicates an active lock function or an active alarm with a "1".

6.5.5 Diagnosis as character

Data sent from this function utilizes American Standard Code for Information Interchange or ASCII character encoding. It combines characters by using hexadecimal numbers.

Diagnose text	Last executed command
Up	Upward movement
Down	Down movement
Bit position	Object "Drive to position" generates Bit position
Reference	Reference drive
Blind/Stop	Slats adjustment/Stop
Absolute pos	Absolute position
Wind alarm	Wind alarm activated
Rain alarm	Rain alarm activated
Frost alarm	Frost alarm activated
Alarm End	Alarm finished
Auto position	Automatic position
Scene	Scene call
Locked	Channel is locked
Window open	Window open - Action for air function executed
Window close	Window closed
Abs lock	Absolute positions are locked
Function lock	Object "Block functions" has been activated
Bus Reset	Bus power recovery
Stop	Object "Stop" stops
Manual Oper	Manual operation on the device
Up dn lock	Object: Block function is active and
Man Oper lock	Manual operation is locked
Auto Pos lock	Automatic position is locked
Scene lock	Scene call is locked
Central up	Upward movement via central object
Central down	Down movement via central object
Blind/Stop	Slats adjustment/Stop
Central abs	Absolute position via central object
Cen Blind/Stop	Slats adjustment /Stop via central object

6.6 Scene function

Blinds and shutter also has scene function for use. The following illustration shows the setting options at the ETS-Software for activating the scene function. If a scene is activated, a new submenu called Scenes will appear at the left selection menu. At this submenu, the further parameterization can be done.

Scene
 not active
 active

The following chart shows the relevant communication object:

Number	Name	Length	Usage
102	Scene number	1 Byte	Call of the scene
	Scene Control		

For calling a certain scene, you have to send the value for the scene to the communication object. The value of the scene number is always one number less than the adjusted scene number. There are up to 8 storage options for scenes at every channel.

Blinds:

Learn scene not active active

Scene number A	not active ▼
Scene A height position	0% ▼
Scene A position of slats	0% ▼
Scene A block function	not active ▼
Scene number B	not active ▼
Scene B height position	0% ▼
Scene B position of slats	0% ▼
Scene B block function	not active ▼
Scene number C	not active ▼
Scene C height position	0% ▼
Scene C position of slats	0% ▼
Scene C block function	not active ▼
Scene number D	not active ▼
Scene D height position	0% ▼

Shutter:

Learn scene not active active

Scene number A

Scene A height position

Scene A block function

Scene number B

Scene B height position

Scene B block function

Scene number C

Scene C height position

Scene C block function

Scene number D

Scene D height position

The chart shows the possible settings for scenes, which are identical for all channels:

ETS-text	Dynamic range [default value]	comment
Learn scene	<ul style="list-style-type: none"> • not active • active 	not active: The Learn scene function is not enabled. Object Value corresponds to DPT 17.001 scene number. active: Enable the Learn scene feature. Object Value corresponds to DPT 18.001 scene control
Scene number A	<ul style="list-style-type: none"> • not active • 1-64 	Whether to enable the setting of scene A
Scene A – Height position	0%-100% [0%]	Setting for absolute position when the scene is called
Scene A – position of slats	0%-100% [0%]	Only at Blinds Setting for absolute slat position when calling the scene
Scene A – block functions	<ul style="list-style-type: none"> • not active • enable block for abs, position • disable block for abs, position • enable "Block functions" • disable "Block functions" • enable "Block functions" and abs, position • disable "Block functions" and abs, position 	Response to the function you set when calling the scene
Scene number B	<ul style="list-style-type: none"> • not active • 1-64 	Whether to enable the setting of scene B
-----	-----	-----
Scene H – block functions	-----	-----

6.7 Automatic function

An automatic function can be activated for each channel. Via the automatic function, up to 4 different states can be called up for each channel. The automatic function is divided into 2 blocks (I and II). The automatic function also makes it possible to carry out several actions simultaneously, e.g. via one command to move to a shutter position as well as to a blind position and, in addition, to adjust the slats of the blind Blinds.

The following figure shows the activation of the automatic function for a channel:

Automatic functions not active active

If the automatic function for a channel is activated, a new sub-point (channel X/Y: automatic) appears in the left selection menu for the automatic function, in which the further settings can be made. The automatic function can still be executed even when the window is open or tilted.

Blinds:

Used automatic objects Block I Block II

i Selected block must be enable under "General setting".

Automatic position 1	<input type="radio"/> not active <input checked="" type="radio"/> active
Height position	<input type="text" value="0%"/>
Position of slats	<input type="text" value="0%"/>
Move to position(value=1)	<input type="text" value="always"/>
Action at withdrawal of automatic position(value=0)	<input type="text" value="not active"/>
<hr/>	
Automatic position 2	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Automatic position 3	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Automatic position 4	<input checked="" type="radio"/> not active <input type="radio"/> active

Shutter:

Used automatic objects Block I Block II

i Selected block must be enable under "General setting".

Automatic position 1	<input type="radio"/> not active <input checked="" type="radio"/> active
Height position	<input type="text" value="0%"/>
Move to position(value=1)	<input type="text" value="always"/>
Action at withdrawal of automatic position(value=0)	<input type="text" value="not active"/>
<hr/>	
Automatic position 2	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Automatic position 3	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Automatic position 4	<input checked="" type="radio"/> not active <input type="radio"/> active

In the following chart, you can see the setting range for the positions

ETS-text	Dynamic range [default value]	comment
Used automatic objects	<ul style="list-style-type: none"> • Block I • Block II 	Select which automatic block this channel should react
Automatic position 1	<ul style="list-style-type: none"> • not active • active 	Active or not active the position
Height position	0%-100% [0%]	Height position to be approached by the automatic function
Position of slats	0%-100% [0%]	Only at Blinds. Slat position to be approached by the automatic function
Move to position(value=1)	<ul style="list-style-type: none"> • always • if position is top • if position is bottom 	Restriction when the automatic position is to be approached
Action at withdrawal of automatic position(value=0)	<ul style="list-style-type: none"> • not active • move up • move down 	The action at withdrawal defines an action after the automatic position has been reset (sending value 0). The withdrawal action is executed only if the position is equal to the set automatic position, i.e. it has not been moved

6.8 Automatic Control Function

In addition to manual control of the blind/roller shutter drives (using the communication objects for the manual operation options), the software application also provides you with another group of communication objects for automatic control. Automatic control can take place from other bus devices, e.g., presence detectors, light controllers or through a building control center. When you have activated automatic control for a channel, then initially you can position the connected drive equally using manual or automatic control. The drive responds identically to control telegrams received from both types of control. Using parameter settings and objects you can change the operating principle of both control options. You can also configure manual and automatic control to influence each other.

6.8.1 Activating automatic control function

In order to be able to use automatic control function, you have to activate it first. The “Automatic Control Function” and “Automatic Function” have the same priority.



By activating the automatic control function, the following communication objects are shown:

Number	Name	Length	Usage
142	Up/Down in automatic control	1 bit	Object Value=0: Move up. Object Value=1: Move down. The relay-operating time is determined by parameter “Movement Time” or “Time for Down Movement”.
143	Short term in automatic control	1 bit	Only at Blinds. Object value=0: Move up. Object value=1: Move down. The actuation time is determined by parameter “Step time for slats adjustment”.
144	Stop in automatic control	1 bit	Only at Sutter. If Object value=0/1, the current action will be aborted.
145	Absolute position in automatic control	1 bit	It is used to set the absolute position of the Blinds/Shutter in Automatic Control Function.
146	Absolute Slat in automatic control	1 bit	Only at Blinds. It is used to set the absolute position of the Slats in Automatic Control Function.
147	Lock in automatic control	1 bit	When activated, the objects in Automatic Control Function are locked and the MCU doesn't respond.

The further parameterization can be done at the submenu of the Automatic Control Function:

Automatic locking at object value "1" ▼

Behavior on deactivating the automatic locking via object value no reaction
 accept current automatic mode position

i manual object : Absolute position(104), Shutter up/down(90), Stop(92), Scene(102)

Reaction in automatic mode on receipt of a manual object value automatic mode temporarily locked ▼

Time base for deactivation period in automatic mode 1 s ▼

Factor for deactivation time in automatic mode(1-255) 60 ▲▼

The following chart shows the dynamic range for these parameters:

ETS-text	Dynamic range [default value]	Comment
Automatic locking	<ul style="list-style-type: none"> • inactive • at object value "0" • at object value "1" 	<p>Whether to enable the locking function in Automatic Control Function.</p> <p>If activated, the object "Lock in automatic mode" appears.</p> <p>When object "Lock in automatic mode" is activated, all objects in Automatic Control Function will be locked.</p>
Reaction in automatic mode on receipt of a manual object value	<ul style="list-style-type: none"> • automatic mode remains enabled • automatic mode locked • automatic mode temporarily locked 	<ul style="list-style-type: none"> • automatic mode remains enabled:When "Manual Object" is received, the objects in Automatic Control Function remain enabled. • automatic mode locked:When "Manual Object" is received, the objects in Automatic Control Function are locked. • automatic mode temporarily locked:When "Manual Object" is received, the objects in Automatic Control Function are temporarily locked. These objects will return to normal after a period of time which is determined by the product of "Time base for deactivation period in automatic mode" and "Factor for Deactivation time in automatic mode". <p>Note: Only when the "Automatic locking" isn't set to "inactive", the "automatic mode locked" appears. In addition, the default parameter will be "automatic mode temporarily locked".</p>
Time base for deactivation period in automatic mode	<ul style="list-style-type: none"> • 1 s • 1 min • 1 hr 	Time base
Factor for deactivation time in automatic mode	1-255 [60]	Factor for deactivation time
Behavior on deactivating the automatic locking via object value	<ul style="list-style-type: none"> • no reaction • accept current automatic mode position 	<ul style="list-style-type: none"> • no reaction: When Object "Lock in automatic mode" changes from the active state to the inactive state, no action is performed. • accept current automatic mode position: In Automatic Control Function, when object "Lock in automatic mode" changes from the active state to the inactive state, the actions received in the active state are performed. <p>Note: When "Automatic locking" is set to "inactive", "Behavior on deactivating the automatic locking via object value" doesn't appear.</p>

6.9 Air function

The air function includes the logic for querying window contact. To use the air function, this has to be activated in the parameters of the channel. If activated, a new submenu called air function will appear at the left selection menu. At this submenu, the further parameterization can be done.

Air function over window contacts not active active

Blinds:

Window contacts 1 contact for "open" window
 2 contact for "open"/"titled" window

Set condition for "open" value 0 value 1

Behavior if window open execute air function
 set normal block function

Action if window is "open"

Blinds position for "open"

Slats position for "open"

Action if window is closed

Shutter:

Window contacts 1 contact for "open" window
 2 contact for "open"/"titled" window

Set condition for "open" value 0 value 1

Behavior if window open execute air function
 set normal block function

Action if window is "open"

Shutter position for "open"

Action if window is closed

The chart shows the possible settings for s air function:

ETS-text	Dynamic range [default value]	Comment
Window contacts	<ul style="list-style-type: none"> • 1 contact for "open" window • 2 contacts for "open/titled" window 	Select whether one or two window contacts are installed
1 contact for "open" window is selected		
Set condition for "open"	<ul style="list-style-type: none"> • Value 0 • Value 1 	Select which signal "0" or "1" to activate the function
Behavior if window open	<ul style="list-style-type: none"> • execute air function • set normal block function 	<p>Execute air function: functions of Action if window is "open", Height position for "open" ... etc. will appear when this option is selected;</p> <p>Set normal block function: action as normal blocking function is activated</p>

ETS-text	Dynamic range [default value]	Comment
Action if window is "open"	<ul style="list-style-type: none"> • not active • move to position if bottom • move to position if lower 	<p>Action to be executed when opening the window;</p> <p>Move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%;</p> <p>Move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position.</p>
Blinds position for "open"	0% – 100% [0%]	Only at Blinds Sets position of the blinds for the position
Slat position for "open"	0% – 100% [0%]	Only at Blinds Sets position of slats for the position
Shutter position for "open"	0% – 100% [0%]	Only at Shutter Sets position of the shutter for the position
Action if window is closed	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Action to be executed after closing the window
2 contacts for "open/titled" window is selected		
Set condition for "open"	<ul style="list-style-type: none"> • Contact1="0"/contact2="0" • Contact1="1" /contact2="0" • Contact1="0"/contact2="1" • Contact1="1"/contact2="1" 	Select which signal to activate the function
Set condition for "titled"	<ul style="list-style-type: none"> • Contact1="0"/contact2="0" • Contact1="1" /contact2="0" • Contact1="0"/contact2="1" • Contact1="1"/contact2="1" 	Select which signal to activate the function
Behavior if window open	<ul style="list-style-type: none"> • execute air function • set normal block function 	<p>Execute air function: functions of Action if window is "open", Height position for "open" ... etc. will appear when this option is selected;</p> <p>Set normal block function: action as normal blocking function is activated</p>
Action if window is "open"	<ul style="list-style-type: none"> • not active • move to position if bottom • move to position if lower 	<p>Action to be executed when opening the window;</p> <p>Move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%;</p> <p>Move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position.</p>
Action if window is "tilted"	<ul style="list-style-type: none"> • not active • move position if bottom • move position if lower 	<p>Action to be executed when the window is tilted;</p> <p>Move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%;</p> <p>Move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position..</p>

ETS-text	Dynamic range [default value]	Comment
Action if window is closed	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Action to be executed after closing the window
Blinds position for "open"	0% – 100% [0%]	Only at Blinds. Sets position of the blinds for the position
Slat position for "open"	0% – 100% [0%]	Only at Blinds. Sets position of slats for the position
Shutter position for "open"	0% – 100% [0%]	Only at Shutter Sets position of the shutter for the position
Blinds position for "tilted"	0% – 100% [0%]	Only at Blinds Sets position of the blinds for the position
Slat position for "tilted"	0% – 100% [0%]	Only at Blinds. Sets position of slats for the position
Shutter position for "tilted"	0% – 100% [0%]	Only at Shutter Sets position of Shutter for the position

6.10 Central objects

The following illustration shows the setting options at the ETS-Software. You can set the functions of the Central Object and the actions for repowering the KNX Bus.

Central objects only absolute position and up/down ▼

Behavior after power up not active ▼

ETS-text	Dynamic range [default value]	Comment
Central objects	<ul style="list-style-type: none"> • not active • only up • only down • only Up/Down • only absolute position • only absolute position and up • only absolute position and Down • only absolute position Up/Down 	Select and activate central functions.
Behavior after power up	<ul style="list-style-type: none"> • no action • move to top • move to bottom • "Move to position" 	Settings for repowering the KNX Bus. no action; move to top: Move to the highest position; move to bottom: Move to the lowest position; "move to position": This parameter is valid only when 1Bit Object for "Move to Position" is activate.

6.11 Alarm and block functions

The menu for the alarm and block functions is permanently displayed and contains the settings for the alarms and the normal blocking function:

Blinds:

Alarm order	Wind alarm,Rain alarm,Frost alarm,Block function ▼
Normal Block function	<input checked="" type="radio"/> not active <input type="radio"/> active
Advanced block	<input checked="" type="radio"/> not active <input type="radio"/> active
Wind alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Rain alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Frost alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Height position for alarm/block	0% ▼
Slats position for alarm/block	0% ▼

Shutter:

Alarm order	Wind alarm,Rain alarm,Frost alarm,Block function ▼
Normal Block function	<input checked="" type="radio"/> not active <input type="radio"/> active
Advanced block	<input checked="" type="radio"/> not active <input type="radio"/> active
Wind alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Rain alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Frost alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Height position for alarm/block	0% ▼

6.11.1 Alarm Order (Priority)

The parameter "Alarm order" describes the priority of the individual alarms. The following table shows the possible settings for this parameter:

The following chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Alarm order	<ul style="list-style-type: none"> • Wind alarm, Rain alarm, Frost alarm, Block function • Wind alarm, Rain alarm, Block function, Frost alarm • Wind alarm, Block function, Rain alarm, Frost alarm • Block function, Wind alarm, Rain alarm, Frost alarm 	Indicates the priority order of the alarm function. For example: when choosing "Wind alarm, Rain alarm, Frost alarm, Block function", the priority order is "Wind alarm > Rain alarm > Frost alarm > Block function".

If two or more alarms are active at the same time, the actuator evaluates the alarms according to the set sequence. The actuator only performs the action of the higher priority alarm. The action for the lower priority alarm is not executed as long as the higher priority alarm is active. However, if the alarm with the higher priority is inactive and the lower priority alarm is still active, then the action of the lower priority alarm is executed.

6.11.2 Alarm types

Three different alarm types (wind alarm, rain alarm, frost alarm) can be activated, for which further settings can then be made.

ETS-text	Dynamic range [default value]	Comment
Wind alarm	<ul style="list-style-type: none"> • not active • active 	Activation of the wind alarm
Monitoring time (0= not active) (Only at active wind alarm)	0 – 120min [0min]	Cyclic monitoring of the wind alarm. Setting 0 deactivates the cyclic monitoring
Action at wind alarm (Only at active wind alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to height position 	Action after activation of the wind alarm
Action at reset of alarm (Only at active wind alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Action after removal of the wind alarm
Rain alarm	<ul style="list-style-type: none"> • not active • active 	Activation of the rain alarm
Monitoring time (0= not active) (Only at active rain alarm)	0 – 120min [0min]	Cyclic monitoring of the rain alarm. Setting 0 deactivates the cyclic monitoring
Action at rain alarm (Only at active rain alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to height position 	Action after activation of the rain alarm
Action at reset of alarm (Only at active rain alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Action after removal of the rain alarm
Frost alarm	<ul style="list-style-type: none"> • not active • active 	Activation of the frost alarm
Monitoring time (0= not active) (Only at active frost alarm)	0 – 120min [0min]	Cyclic monitoring of the frost alarm. Setting 0 deactivates the cyclic monitoring
Action at frost alarm (Only at active frost alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to height position 	Action after activation of the frost alarm
Action at reset of alarm (Only at active frost alarm)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Action after removal of the frost alarm

If an alarm is activated, the relevant communication object is displayed for this alarm. If the corresponding communication object receives a "1" signal, the alarm function is activated. A "0" signal deactivates the alarm.

The following table shows the related communication objects:

Number	Name	Length	Usage
106	Wind alarm	1 bit	Activation / deactivation of wind alarm
107	Rain alarm	1 bit	Activation / deactivation of rain alarm
108	Frost alarm	1 bit	Activation / deactivation of frost alarm

6.11.3 Periodical observation

The cyclic monitoring of the alarm function can be set separately for each of the three alarms. The setting range moves from 0-120 min, the setting 0 min switches off the cyclic monitoring. The communication object for the respective alarm must receive a signal within the set monitoring time. Otherwise the alarm is triggered automatically. In KNX weather stations there are settings, in which intervals a cyclic transmission is to take place. The time for the cyclic transmission should always be below the monitoring time set in the shutter actuator in order to prevent accidental triggering of an alarm. The cyclic monitoring ensures that a weather sensor is functioning properly. If a signal fails due to a failure of a weather station or a wire break, the shutter actuator triggers an alarm after the monitoring time has elapsed.

6.11.4 Normal blocking

The following table shows the possible settings for the locking object:

ETS-text	Dynamic range [default value]	Comment
Normal blocking function	<ul style="list-style-type: none"> • not active • active 	Activation of the normal blocking function
Action at block (value=1)	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to height position 	Setting the action which is to be triggered when activating a block with a 1
Action at reset of block	<ul style="list-style-type: none"> • no action • move to top • move to bottom • move to former position 	Setting the action which is to be triggered when deactivating a block with a 0

The shutter actuator can move to a defined position, move to top/button or remain in its former position when Action at rest of block is activated. When the block function is active, the channel cannot be operated.

Scenes, automatic positions and 1Bit move to position are also blocked!

When the block is released, the channel can move to top/button, move to the position it held before the block function or remain in the current position.

An example of using the block function is to block the blinds/shutters when opening a terrace door. Thus, e.g. when opening the terrace door, the blinds/shutters are moved upwards and are blocked.

The following table shows the related communication objects:

Number	Name	Length	Usage
109	Normal Block	1 bit	Activation/deactivation of the simple blocking function

6.11.5 Height position

The following figure shows the parameters of Height position:

Height position for alarm/block

Slats position for alarm/block

For each alarm/block, an absolute height position can be set, which is approached by the setting "move to height position":

ETS-text	Dynamic range [default value]	Comment
Height position for alarm/block	0% – 100% [0%]	Setting the absolute height position for alarms/blocking
Slat position for alarm/block	0% – 100% [0%]	Only at Blinds Setting the absolute slat position for alarms/blocking

An absolute height position can be defined per alarm/block, which can be approached with an active alarm or an active block.

6.11.6 Advanced block function

The advanced block functions can be activated for each channel via a separate sub-item in the submenu Alarm and block functions. If the advanced block functions have been activated, a new submenu of Extended block function appears in the selection menu under the respective channel.

The following figure shows the activation of the advanced block functions:

Advanced block not active active

The following figure shows the subdivision of the sub-menu Advanced block functions:

Object "Block absolute position" not active active

Block automatically "Absolute position" by using up/down movement not active active

Cancel blocking if upper position is reached not active active

Object "Block functions" not active active

Block manual operation not active active

Block up/down movement not active active

Block absolute position not active active

Block automatic position not active active

Block Scene not active active

Block air function not active active

Block central object

The following table shows the settings for the Advanced block function:

ETS-text	Dynamic range [default value]	Comment
Object "Block absolute position"	• not active • active	Activates the communication object for the blocking of an absolute position command
Block automatic "Absolute position" by using Up/Down movement	• not active • active	Activates the block for starting absolute position by manual movement Up/Down
Cancel blocking if upper position is reached	• not active • active	Deactivates the block for starting absolute position by reaching the upper position
Object "Block functions"	• not active • active	Activates the communication object and the settings for the universal blocking function
Block manual operation	• not active • active	When activated, the manual operation is blocked
Block Up/Down movement	• not active • active	When activated, the Up/Down movement is blocked
Block Absolute position	• not active • active	When activated, "absolute position" is blocked
Block Automatic position	• not active • active	When activated, "automatic position" is blocked
Block scene	• not active • active	When activated, "scene" is blocked
Block air function	• not active • active	When activated, the "air function" is blocked

ETS-text	Dynamic range [default value]	Comment
Block central object	<ul style="list-style-type: none"> • not active • lock only "Up" • block only Down • block only Up/Down • block "Absolute position" • block "Absolute position" and "Up" • block "Absolute position" and "Down" • block "Absolute position" and "Up/Down" 	Setting which central functions the object "Block central object" should block
Block Central objects automatically with "Down" (Only active when Block central object is not at "not active")	<ul style="list-style-type: none"> • not active • active 	When activated, Central objects automatically with "Down" is blocked
Cancel blocking of central objects with "Up" (Only active when Block central object is not at "not active")	<ul style="list-style-type: none"> • not active • active 	When activated, Central objects automatically with "Down" is blocked

If the individual blocking functions are activated, the corresponding communication objects are displayed.

The table shows the related block objects:

Number	Name	Length	Usage
113	Block absolute position mode	1 bit	Blocks the movement via absolute positionsm
114	Block function	1 bit	Blocks the functions according to the settings for this object
115	Block central object	1 bit	Blocks the central objects according to the set parameters

The parameter "Block absolute position " allows to block the absolute position commands at each channel as well as central. If the corresponding communication object "Block absolute position" is activated by sending a "1", the channel no longer reacts to absolute position commands.

Example: The function " Block automatic "Absolute position" by using Up/Down movement" allows to block the movement of the absolute position by a manual movement via Up/Down. This function finds its application when e.g. a weather station activates a sun protection function, but the user wants to move the blinds/shutter manually to any value. By the manual movement, the shutter actuator is now blocked from receiving the absolute position command for the sun protection but can be moved normally by Up/Down. The block can be automatically cancelled by activation of the parameter "Cancel blocking when upper position is reached" as soon as the upper limit stop is reached or by sending a 0 to the communication object 40 "Block absolute positions". The ventilation function, automatic positions (1 bit) and "1bit move to position" can still be used and are not blocked! These can be locked via "Block functions".

The "Block absolute position/clouding" object can send the status after parameter activation for internal switching.

The parameter "Block functions" makes it possible to configure the locking process itself and to configure it to its needs.

5 different sub-items are available for this purpose:

- Block manual operation
- Blocks the manual operation for this channel
- Block Up/Down movement
- Blocks the movement commands for the channel (at blinds also the slat adjustment)
- Block absolute position
- Blocks the object absolute position and the automatic clouding for this channel
- Block automatic position
- Blocks automatic positions for this channel
- Block scene
- Blocks the scene function for this channel, e.g. is a scene called where this channel is involved, the channel remains in current position
- Block air function
- Blocks the automatic air function for this channel

The object "Block functions" can send the status after parameter activation for internal switching. For example: with internal activation via a scene.

The function "Block central objects" blocks the call of the channel via the central objects. For each channel, you can specify which central functions are to be blocked. Additionally it is possible to lock the central objects automatically with a Down command and to unlock them again with an Up command. This setting makes sense especially when all blinds are moved centrally via a time switch.

If, however, a channel is no longer to be processed after a manual movement command, it can be automatically blocked.

The object "Block absolute position/clouding" can send the status after parameter activation at internal switching.

All blocking functions are activated with a logical "1" and deactivated by a logical "0".

7.Environmental declaration information

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