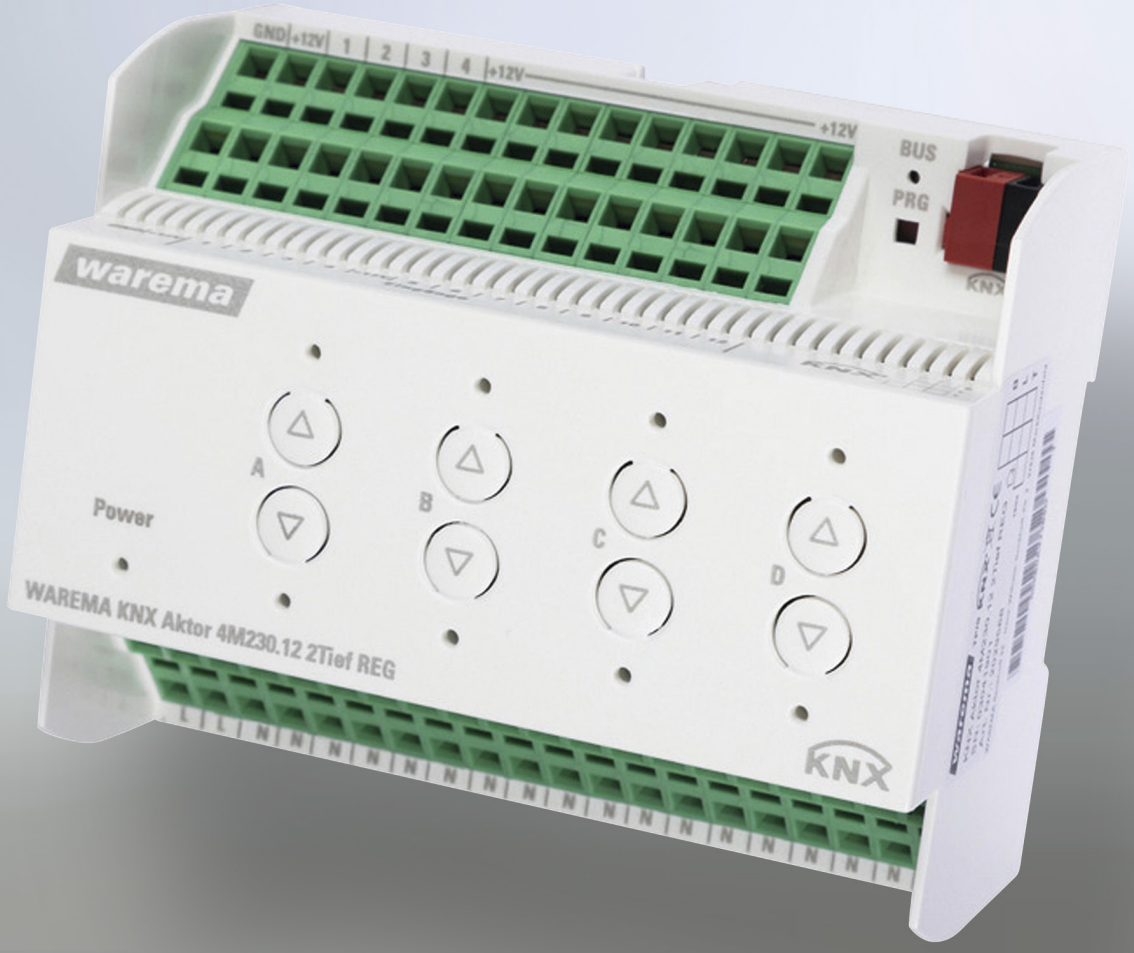
Sun shading actuator
KNX Actuator 4M230.12 2Down

Manual

Der SonnenLichtManager



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General notes

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Legal notes

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1 Description

The KNX Actuator 4M230.12 2Down REG is an electronic control device for the control of 4 motors with 3 limit switches (2 lower limit switches). 230 V AC is required for the power supply to the actuators and the drives.
The connected drives can be directly operated on the actuator and via connected push buttons.
The control mode can be specified externally or internally. Internally there are numerous possibilities for barriers, interlocks (e.g. master-slave) and priority determinations (e.g. manual–control mode). Scenes can be saved and retrieved via the bus (scene control with 16 scenes per drive).
Binary inputs can either be used for direct operation (e.g. push button) or as bus push buttons (or also for alarm messages, for example). The required behaviour can be determined exactly by selecting the reaction times in standard, comfort or dead man's mode.

Functions:

- 4 outputs for one drive each with 3 limit switches (2 lower limit switches)
- Keypad with 4 push button pairs and status LEDs
- 12 binary inputs for use as manual or as bus push buttons
- Position feedback on moving position
- Position memory (moving position) via 1 bit object (storage and retrieval via push button, for example)
- Control through internal or external control mode
- Integrated shading control for any drive output
- Scene control for moving position with 16 scenes per drive
- Safety objects of different priority with cyclical monitoring
- Activation or deactivation of the automatic inputs (for example sun control, slat tracking) with parameterisable control mode return function

The device is configured using the KNX software ETS (Engineering Tool Software). The product database required for this (.knxprod) can be found in the online catalogue of the ETS or on the Internet at www.warema.de/knx.

Scope of delivery

- Actuator

1.1 Technical data

KNX Aktor 4M230.12 2Down REG	min.	typ.	max.	Einheit
Supply				
Operating voltage	198	230	253	V AC
Power consumption		0.6	3.5	W
Mains frequency		50		Hz
Outputs				
Switching capacity 230 V AC/cos φ =0,6			500	VA
Inputs (FELV)				
local operating inputs "input active"	8	12	32	V DC
max. line length operating inputs				50 m
KNX Interface (SELV)				TP 1
Current consumption KNX		10		mA
Voltage		29		V DC
Group addresses				max. 1024
Allocations				max. 1024
Group objects				757
Housing				
Dimension				107 x 88 x 60 (W x H x D mm)
Housing type				DIN rail-mounted housing
Degree of protection				IP20
Safety class				II
Installation				EN-support rail - TH 35
Miscellaneous				
Conformity				CE can be viewed at www.warema.de/ce
This device complies with the EMC directives for use in residential and commercial areas.				
Software class				A
Ambient conditions				
Operating temperature	0		45	°C
Storage temperature	0		70	°C
Humidity (not condensing)	10		85	%RH
Degree of soiling				2
Connection				
Connecting line + motor outputs + inputs				Spring terminal
Permissible conductor cross-section (fixed)				0.2 - 2.5 mm^2
Permissible conductor cross-section (flexible with ferrule without collar)				0.2 - 2.5 mm^2
Permissible line cross-section (flexible with ferrule with collar)				0.2 - 1.5 mm^2
Stripping length				7 mm
KNX bus system				Spring terminal
Permissible conductor diameter				0.6 - 0.8 mm ⌀
Stripping length				5 mm

Article numbers	
KNX Aktor 4M230.12 2Tief REG	2029566
WAREMA Renkhoff SE Hans-Wilhelm-Renkhoff Straße 2 97828 Marktheidenfeld Deutschland	

The product conforms with the regulations of the EU directives.

2 Installation and commissioning

2.1 Installation information

WARNING
Only certified electricians (according to VDE 0100) may install/remove, examine, commission and troubleshoot the device.

CAUTION
Electrical voltage!
There are unprotected live components inside the device.
Observe the VDE regulations.
Connect all lines to be installed in a de-energised state and take safety precautions against accidental switch-on.
Do not commission the device if it is damaged.
Deactivate the device or unit and secure against accidental switch-on if it is to be assumed that hazard-free operation cannot be guaranteed.
The device is intended for proper use only. All warranties expire if the device is subjected to any improper adjustment or if the operating instructions are not complied with.

- The device must be inspected for potential mechanical damage immediately after being unpacked. If the device has been damaged during transport, the supplier must be notified of this immediately.
- The device may only be used as a fixed installation, i.e. only when fully assembled, after all installation and commissioning procedures are completed, and only in the intended surroundings.
  WAREMA Renkhoff SE cannot be held liable for any changes to the norms and standards after publication of the operating instructions.

CAUTION
During installation and line routing on the KNX connection, observe the standards applicable to SELV circuits! During installation and line routing to the inputs, including the auxiliary voltage output, observe the standards applicable to SELV circuits! A mixed installation of SELV and FELV circuits or the mixing of different auxiliary voltages is not permitted.

FELV **F**unctional **E**xtra **L**ow **V**oltage without safe isolation on the low voltage side (network).

- In the case of functional extra-low voltage (without safe isolation), protective measures must be taken against indirect contact and against direct contact. Do not use communication lines such as J-Y(ST)Y. Use cables that are approved for low voltage (e.g. NYM-J).

2.2 Information on installation and commissioning

- Never expose the device to water (rain). This can damage the electronics. The relative humidity may not exceed 95%. Avoid condensation.
  After the bus voltage is applied, the device performs an initialising phase lasting a few seconds. No information can be received or sent by the bus during this time.
- In the case of KNX devices with safety functions (for example a wind or rain barrier), cyclical monitoring of the safety objects must be set up.

2.3 Instructions for use

WARNING
Risk of injury due to automatically moved components!
The automatic control may cause system parts to start up and put people in danger.
- **Keep movement range of drives/curtains clear.**
- **Ensure that when you are outside of the building, the return path/ access is not blocked (risk of being locked out).**
- **Put unit properly out of operation during maintenance and cleaning work.**

The system cannot function if the power fails. For this reason, shading should, for example, be moved into a safe position in good time when bad weather conditions are pending, unless this has already been carried out by the control function (product protection).

If the 230 V AC operating voltage fails, the connected drive is switched off. If the operating voltage returns, the power consumer remains switched off until a new move command is received from the actuator.

2.4 Maintenance

The device must be regularly examined for proper function. There are no parts inside the device that require maintenance.

2.5 Cleaning

- Clean the housing with a soft, dry cloth.
- **Do not use detergents, cleaning agents, solvents, abrasive substances or steam cleaners!**

2.6 Obligations for the disposal of electrical devices

A marking with this symbol indicates the following obligations under the scope of legal regulations:

- The owner of this electrical device must dispose of it separately from unsorted municipal waste for further recycling.
- Used batteries and accumulators that are not enclosed in the old device, as well as lamps/bulbs that can be removed from the old device without breaking, must be disposed of separately.
- Distributors of electrical devices and disposal companies are obliged to take back the equipment free of charge.
- The owner must take it upon themselves to delete any personal data contained in the electrical device prior to disposal.

2.7 Connection

The device is suitable for operation in dry interiors. Connection in accordance with the wiring diagram. Access to the drive for maintenance purposes must be guaranteed at all times.

CAUTION
During installation and line routing on the KNX connection and the inputs, observe the regulations and standards applicable to SELV circuits! The connections of the binary inputs including the auxiliary voltage output comply with the requirements for SELV circuits. A mixed installation with non-SELV circuits or the mixing of different auxiliary voltages is not permitted

2.8 Device structure

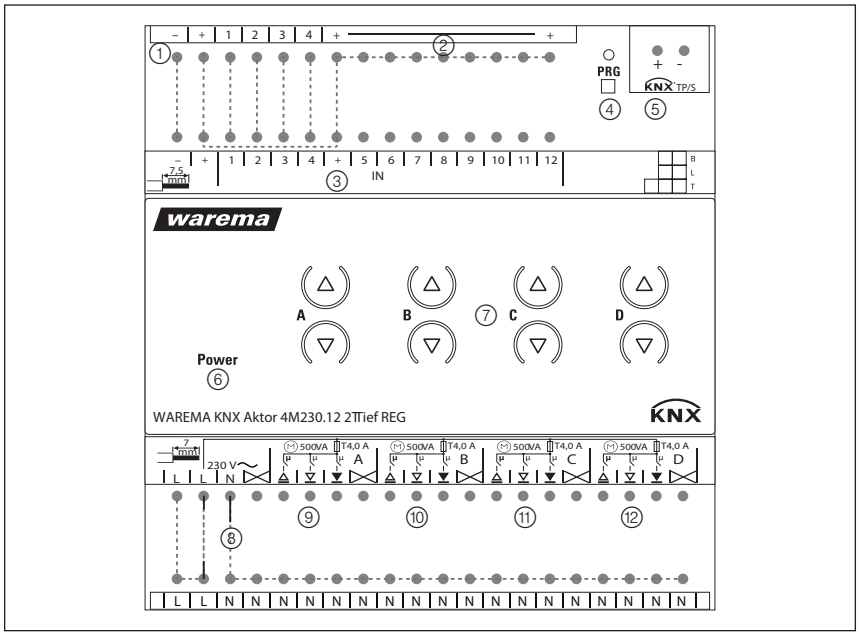

Fig. 1 View with frame and support plate

① Output 12 V GND
② Internal auxiliary voltage 12 V DC, only for binary inputs
③ Binary inputs 1-12 (1 to 4: per 2 connections)
④ Programming LED and programming button (PRG)
⑤ Slot, bus terminal (KNX+/-)
⑥ Power LED (mains), for display of operating status see Chapter below
⑦ Push button pairs Up/Down and LEDs channels A-D, for meaning of LEDs see Chapter below
⑧ Input operating voltage 230 V AC L/N/PE
⑨ Output A: UP-DOWN1-DOWN2
⑩ Output B: UP-DOWN1-DOWN2
⑪ Output C: UP-DOWN1-DOWN2
⑫ Output D: UP-DOWN1-DOWN2

2.9 Display of operating status through power LED

Behaviour	Colour	
On	Green	Normal operation. Bus connection/bus voltage available.
Flashes	Green	Normal operation. ***No*** bus connection/bus voltage available.
On	Orange	Device starts or is programmed via the ETS. No control functions are executed.
Flashes	Green (on) Orange (flash-es)	Programming mode active.

2.10 Display of operating status through channel LED

On	Top	Drive in upper limit position.
On	Bottom	Drive in lower limit position.
Flashes slowly	Top	Drive moving upwards.
Flashes slowly	Bottom	Drive moving downwards.
Flashes fast	Top	Drive in upper limit position, barrier active.
Flashes fast	Bottom	Drive in lower limit position (AB2), barrier active.
Flashes fast	Both at the same time	Drive in intermediate position, barrier active.
Off	Both	Drive in intermediate position.
"Running light" across all LEDs	All channels	The wrong application version has been loaded. Use the version appropriate for the device.

2.11 Connection example

2.12

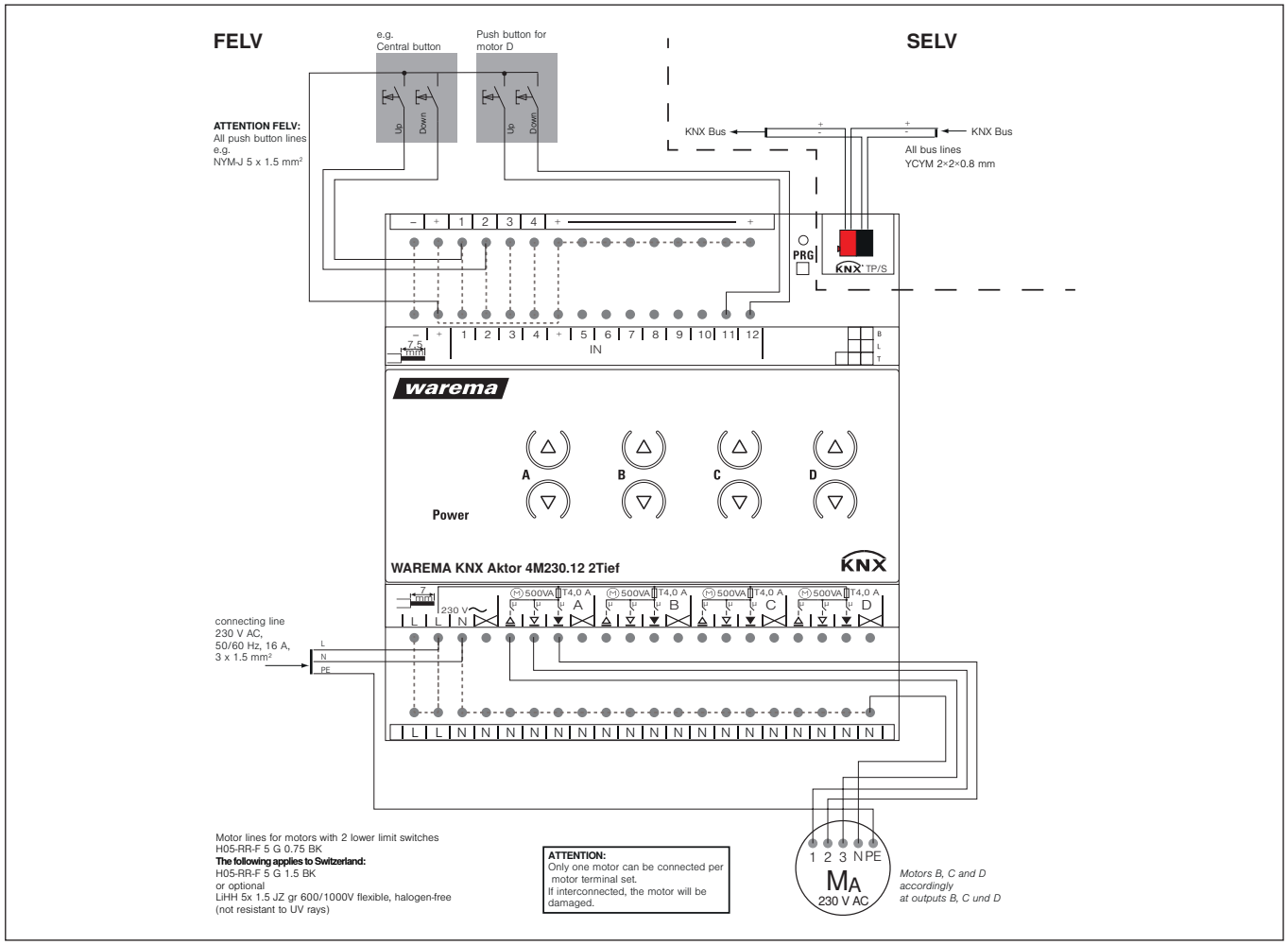

Fig. 2 Connection example KNX Actuator 4M230.12 2Down REG

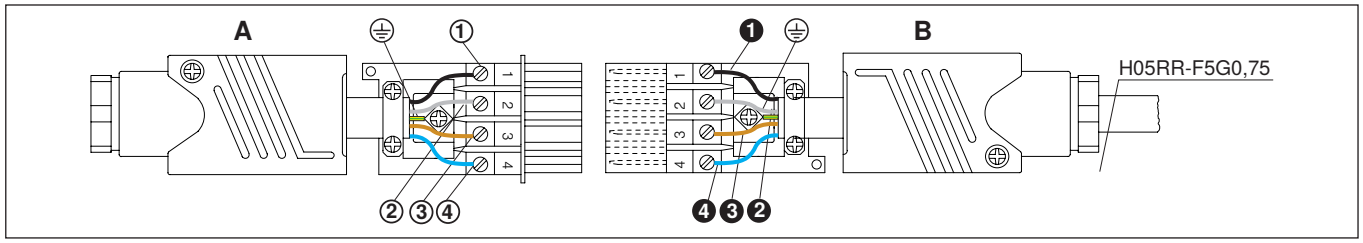

Fig. 3 Plug-in connection STAK 4 / STAS 4

Connection for motors with 2 lower limit switches:

A STAK coupling (on-site connection 230 V AC)
① DOWN1 command (black)
① DOWN2 command (grey)
③ UP command (brown)
④ Neutral conductor (blue)
⏚ PE conductor (green-yellow)

B STAS plug connector (power consumer connection)
❶ DOWN1 command (black)
B DOWN2 command (grey)
❸ UP command (brown)
❹ Neutral conductor (blue)
⏚ PE conductor (green-yellow)

When using a type H05RR-F 5G0.75 motor line, a supply voltage fuse protection of 6 A must be provided on-site.

3 Transmission protocol

3.1 List of all group objects

Flag abbreviations:

K Communication
L Read
S Write
Ü Transmit
A Update

No.	Text	Function	Flags	DPT type	Size
1	Software version	Readable	L-K-	[217.1] DPT_Version	2 bytes
50	Input 1 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
51	Input 1 - Short-term	Input	L-KÜ	[1.8] DPT_UpDown	1 bit
52	Input 1 - Switching	Input	LSKÜ	[1.1] DPT_Switch	1 bit
53	Input 1 - Dimming relative	Input	LSKÜ	[3.7] DPT_Control_Dimming	4 byte
54	Input 1 - 8 bit sensor	Input	L-KÜ	[5] 5.xxx	1 byte
55	Input 1 - Temperature sensor	Input	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
56	Input 1 - Brightness sensor	Input	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
57	Input 1 - Scene	Input	L-KÜ	[18.1] DPT_SceneControl	1 byte
58	Input 1 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
60	Input 2 - Long-term	Input	LSKÜ	[1.8] DPT_UpDown	1 bit
61	Input 2 - Short-term	Input/output	L-KÜ	[1.8] DPT_UpDown	1 bit
62	Input 2 - Switching	Output	LSKÜ	[1.1] DPT_Switch	1 bit
63	Input 2 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
64	Input 2 - 8 bit sensor	Input/output	L-KÜ	[5] 5.xxx	1 byte
65	Input 2 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
66	Input 2 - Brightness sensor	Input/output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
67	Input 2 - Scene	Input/output	L-KÜ	[18.1] DPT_SceneControl	1 byte
68	Input 2 - Disable object	Output	LSK-	[1.1] DPT_Switch	1 bit
70	Input 3 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
71	Input 3 - Short-term	Output	L–KÜ	[1.8] DPT_UpDown	1 bit
72	Input 3 - Switching	Output	LSKÜ	[1.1] DPT_Switch	1 bit
73	Input 3 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 byte
74	Input 3 - 8 bit sensor	Input	L-KÜ	[5] 5.xxx	1 byte

No.	Text	Function	Flags	DPT type	Size
75	Input 3 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
76	Input 3 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
77	Input 3 - Scene	Input/output	L-KÜ	[18.1] DPT_SceneControl	1 byte
78	Input 3 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
80	Input 4 - Long-term	Output	LSKÜ	[1.8] DPT_UpDown	1 bit
81	Input 4 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
82	Input 4 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
83	Input 4 - Dimming relative	Input	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
84	Input 4 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
85	Input 4 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
86	Input 4 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
87	Input 4 - Scene	Output	L-KÜ	[18.1] DPT_SceneControl	1 byte
88	Input 4 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
100	Channel A - Control mode or manual status	Output	LSK-	[1] 1.xxx	1 bit
101	Channel A - Manual long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
102	Channel A - Manual long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
103	Channel A - Manual short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
104	Channel A - Manual moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
106	Channel A - Manual move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
107	Channel A - Manual move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
108	Channel A - Control mode long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
109	Channel A - Control mode long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
110	Channel A - Control mode short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
111	Channel A - Control mode moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
113	Channel A - Control mode move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
114	Channel A - Control mode move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
115	Channel A - Control mode move to position memory	Input	LSK-	[1.1] DPT_Switch	1 bit
116	Channel A - Control mode position memory learning object	Input	LSK-	[1.1] DPT_Switch	1 bit
117	Channel A - Change from manual to control mode	Input	LSK-	[1] 1.xxx	1 bit
118	Channel A - Control mode disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
119	Channel A - Current moving position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
121	Channel A - Status object	Output	L-KÜ	[1] 1.xxx	1 bit
122	Channel A - Retrieval / storage of scenes	Input	LSK-	[18.1] DPT_Scene-Control	1 byte
123	Channel A - Outside temperature disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
124	Channel A - Outside temperature barrier measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
125	Channel A - Outside temperature barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
126	Channel A - Dusk object	Input	LSK-	[1.1] DPT_Switch	1 bit
127	Channel A - Dusk measuring value	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
128	Channel A - Dusk status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
129	Channel A - Time control	Input	LSK-	[1.1] DPT_Switch	1 bit
130	Channel A - Inside temperature enable object	Input	LSK-	[1.1] DPT_Switch	1 bit
131	Channel A - Inside temperature enable measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
132	Channel A - Inside temperature enable set value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
133	Channel A - Inside temperature enable status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
134	Channel A - Shading object	Input	LSK-	[1.1] DPT_Switch	1 bit
135	Channel A - Shading brightness measuring value 1	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
136	Channel A - Shading brightness measuring value 2	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
137	Channel A - Shading brightness measuring value 3	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes

No.	Text	Function	Flags	DPT type	Size
138	Channel A - Shading limit value	Input/output	LSKÜ	[9.4] DPT_Value_Lux	2 bytes
139	Channel A - Shading limit value 1 = + | 0 = -	Input	LSK-	[1]1.xxx	1 bit
140	Channel A - Shading limit value +	Input	LSK-	[1]1.xxx	1 bit
141	Channel A - Shading limit value -	Input	LSK-	[1]1.xxx	1 bit
142	Channel A - Shading status	Input	L-KÜ	[1.1] DPT_Switch	1 bit
143	Channel A - Shading position learning object	Input/output	LSK-	[1]1.xxx	1 bit
144	Channel A - Azimuth	Output	LSK-	[9]9 xxx	2 bytes
145	Channel A - Elevation	Input/output	LSK-	[9]9 xxx	2 bytes
161	Channel A - Zero position reached	Input	LSK-	[1.1] DPT_Switch	1 bit
162	Channel A - Zero position sensor faulty	Output	L-KÜ	[1.1] DPT_Switch	1 bit
163	Channel A - Master zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
164	Channel A - Master zero position command	Output	L-KÜ	[1.1] DPT_Switch	1 bit
165	Channel A - Slave zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
166	Channel A - Master zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
167	Channel A - Master zero position command	Input	LSK-	[1.1] DPT_Switch	1 bit
168	Channel A - Slave zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
171	Channel A - Barrier 1 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
172	Channel A - Barrier 1 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
173	Channel A - Barrier 1 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
174	Channel A - Barrier 1 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
175	Channel A - Barrier 1 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
176	Channel A - Barrier 2 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
177	Channel A - Barrier 2 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
178	Channel A - Barrier 2 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
179	Channel A - Barrier 2 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
180	Channel A - Barrier 2 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
181	Channel A - Barrier 3 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
182	Channel A - Barrier 3 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
183	Channel A - Barrier 3 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
184	Channel A - Barrier 3 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
185	Channel A - Barrier 3 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
186	Channel A - Barrier 4 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
187	Channel A - Barrier 4 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
188	Channel A - Barrier 4 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
189	Channel A - Barrier 4 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
190	Channel A - Barrier 4 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
191	Channel A - Barrier 5 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
192	Channel A - Barrier 5 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
193	Channel A - Barrier 5 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
194	Channel A - Barrier 5 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
195	Channel A - Barrier 5 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
249	Channel A - Local operation disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
250	Input 5 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
251	Input 5 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
252	Input 5 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
253	Input 5 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
254	Input 5 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
255	Input 5 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
256	Input 5 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
257	Input 5 - Scene	Output	L-KÜ	[18.1] DPT_SceneControl	1 byte
258	Input 5 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
260	Input 6 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
261	Input 6 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit

No.	Text	Function	Flags	DPT type	Size
262	Input 6 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
263	Input 6 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
264	Input 6 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
265	Input 6 - Temperature sensor	Output	L-KÜ	[9.4] DPT_Value_Temp	2 bytes
266	Input 6 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
267	Input 6 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
268	Input 6 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
449	Channel B - Local operation disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
649	Channel C - Local operation disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
849	Channel D - Local operation disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
120	Channel A - Current slat position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
196	Channel A - Short-term limitation	Input	LSK-	[1.1] DPT_Switch	1 bit
105	Channel A - Manual slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
112	Channel A - Control mode slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
321	Channel B - Status object	Output	L-KÜ	[1] 1.xxx	1 bit
319	Channel B - Current moving position	Output	L-KÜ	[1.1] DPT_Switch	1 bit
320	Channel B - Current slat position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
361	Channel B - Zero position reached	Output	LSK-	[1.1] DPT_Switch	1 bit
364	Channel B - Master zero position command	Input	L-KÜ	[1.1] DPT_Switch	1 bit
365	Channel B - Slave zero position status	Output	LSK-	[1.1] DPT_Switch	1 bit
366	Channel B - Master zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
367	Channel B - Master zero position command	Input	LSK-	[1.1] DPT_Switch	1 bit
363	Channel B - Master zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
368	Channel B - Slave zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
396	Channel B - Short-term limitation	Input	LSK-	[1.1] DPT_Switch	1 bit
317	Channel B - Change from manual to control mode	Input	LSK-	[1] 1.xxx	1 bit

No.	Text	Function	Flags	DPT type	Size
318	Summer compensation: Barrier (1 = disable)	Input	LSK-	[1.1] DPT_Switch	1 bit
371	Adjusting variable comparator 1: Input 1	Input	LSK-	[1.1] DPT_Switch	1 bit
372	Adjusting variable comparator 1: Input 2	Input	LSK-	[1.1] DPT_Switch	1 bit
374	Adjusting variable comparator 1: Input 3	Output	L-KÜ	[1.1] DPT_Switch	1 bit
373	Adjusting variable comparator 1: Input 4	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
375	Adjusting variable comparator 1: Input 5	Input	LSK-	[1.1] DPT_Switch	1 bit
376	Adjusting variable comparator 1: Output	Input	LSK-	[1.1] DPT_Switch	1 bit
377	Adjusting variable comparator 1: Barrier (1 : barriers)	Input	LSK-	[1.1] DPT_Switch	1 bit
379	Adjusting variable comparator 2: Input 1	Output	L-KÜ	[1.1] DPT_Switch	1 bit
378	Adjusting variable comparator 2: Input 2	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
380	Adjusting variable comparator 2: Input 3	Input	LSK-	[1.1] DPT_Switch	1 bit
381	Adjusting variable comparator 2: Input 4	Input	LSK-	[1.1] DPT_Switch	1 bit
382	Adjusting variable comparator 2: Input 5	Input	LSK-	[1.1] DPT_Switch	1 bit
384	Adjusting variable comparator 2: Output	Output	L-KÜ	[1.1] DPT_Switch	1 bit
383	Adjusting variable comparator 2: Barrier (1 : barriers)	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
385	Adjusting variable comparator 3: Input 1	Input	LSK-	[1.1] DPT_Switch	1 bit
386	Adjusting variable comparator 3: Input 2	Input	LSK-	[1.1] DPT_Switch	1 bit
387	Adjusting variable comparator 3: Input 3	Input	LSK-	[1.1] DPT_Switch	1 bit
389	Channel B - Barrier 4 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
388	Channel B - Barrier 4 - Wind barrier status	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
390	Channel B - Barrier 4 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
391	Channel B - Barrier 5 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
392	Channel B - Barrier 5 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
394	Channel B - Barrier 5 - Wind barrier status	Output	L-KÜ-	[1.1] DPT_Switch	1 bit
393	Channel B - Barrier 5 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
395	Channel B - Barrier 5 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
316	Channel B - Control mode position memory learning object	Input	LSK-	[1.1] DPT_Scaling	1 bit
315	Channel B - Control mode move to position memory	Input	LSK-	[1.1] DPT_Scaling	1 bit
308	Channel B - Control mode long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
309	Channel B - Control mode long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
310	Channel B - Control mode short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
311	Channel B - Control mode moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
312	Channel B - Control mode slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
313	Channel B - Control mode move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
314	Channel B - Control mode move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
323	Channel B - Outside temperature disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
325	Channel B - Outside temperature barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
324	Channel B - outside temperature barrier measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
326	Channel B - Dusk object	Input	LSK-	[1.1] DPT_Switch	1 bit
328	Channel B - Dusk status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
327	Channel B - Dusk measuring value	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
329	Channel B - Time control	Input	LSK-	[1.1] DPT_Switch	1 bit
330	Channel B - Inside temperature enable object	Output	L-KÜ	[1.1] DPT_Switch	1 bit
331	Channel B - Inside temperature enable measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
332	Channel B - Inside temperature enable set value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
334	Channel B - Shading object	Input	LSK-	[1.1] DPT_Switch	1 bit
339	Channel B - Shading limit value 1 = + | 0 = -	Input	LSK-	[1] 1.xxx	1 bit
340	Channel B - Shading limit value +	Input	LSK-	[1] 1.xxx	1 bit
341	Channel B - Shading limit value -	Output	LSK-	[1] 1.xxx	1 bit

No.	Text	Function	Flags	DPT type	Size
338	Channel B - Shading limit value	Input/output	LSKÜ	[9.4] DPT_Value_Lux	2 bytes
342	Channel B - Shading status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
335	Channel B - Shading brightness measuring value 1	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
336	Channel B - Shading brightness measuring value 2	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
337	Channel B - Shading brightness measuring value 3	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
344	Channel B - Azimuth	Input	LSK-	[9] 9.xxx	2 bytes
345	Channel B - Elevation	Input	LSK-	[9] 9.xxx	2 bytes
343	Channel B - Shading position learning object	Input	LSK-	[1] 1.xxx	1 bit
322	Channel B - Retrieval / storage of scenes	Input	LSK-	[18.1] DPT_Scene-Control	1 byte
452	Input 7 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
458	Input 7 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
450	Input 7 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
451	Input 7 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
453	Input 7 - Dimming relative	Input	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
454	Input 7 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
455	Input 7 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp.	2 bytes
456	Input 7 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
457	Input 7 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 bit
362	Channel B - Zero position sensor faulty	Output	L-KÜ	[1.1] DPT_Switch	1 bit
462	Input 8 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
468	Input 8 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
460	Input 8 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
461	Input 8 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
463	Input 8 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
464	Input 8 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
465	Input 8 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp.	2 bytes
466	Input 8 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes

No.	Text	Function	Flags	DPT type	Size
467	Input 8 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
300	Channel A - Control mode or manual status	Output	L-KÜ	[1] 1.xxx.	1 bit
301	Channel B - Manual long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
302	Channel B - Manual long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
303	Channel B - Manual short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
304	Channel B - Manual moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
305	Channel B - Manual slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
306	Channel B - Manual move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
307	Channel B - Manual move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
521	Channel C - Status object	Output	L-KÜ	[1] 1.xxx.	1 bit
519	Channel C - Current moving position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
520	Channel C - Current slat position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
561	Channel C - Zero position reached	Input	LSK-	[1.1] DPT_Switch	1 bit
564	Channel C - Master zero position command	Output	L-KÜ	[1.1] DPT_Switch	1 bit
565	Channel C - Slave zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
566	Channel C - Master zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
567	Channel C - Master zero position command	Input	LSK-	[1.1] DPT_Switch	1 bit
563	Channel C - Master zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
568	Channel C - Slave zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
596	Channel C - Short-term limitation	Input	LSK-	[1.1] DPT_Switch	1 bit
517	Channel C - Change from manual to control mode	Input	LSK-	[1] 1.xxx.	1 bit
518	Channel C - Control mode disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
571	Channel C - Barrier 1 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
572	Channel C - Barrier 1 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
574	Channel C - Barrier 1 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
573	Channel C - Barrier 1 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
575	Channel C - Barrier 1 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
576	Channel C - Barrier 2 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
577	Channel C - Barrier 2 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
579	Channel C - Barrier 2 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
578	Channel C - Barrier 2 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
580	Channel C - Barrier 2 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
581	Channel C - Barrier 3 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
582	Channel C - Barrier 3 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
584	Channel C - Barrier 3 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
583	Channel C - Barrier 3 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
585	Channel C - Barrier 3 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
586	Channel C - Barrier 4 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
587	Channel C - Barrier 4 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
589	Channel C - Barrier 4 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
588	Channel C - Barrier 4 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
590	Channel C - Barrier 4 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
591	Channel C - Barrier 5 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
592	Channel C - Barrier 5 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
594	Channel C - Barrier 5 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
593	Channel C - Barrier 5 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
595	Channel C - Barrier 5 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
516	Channel C - Control mode position memory learning object	Input	LSK-	[1.1] DPT_Switch	1 bit
515	Channel C - Control mode move to position memory	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
508	Channel C - Control mode long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
509	Channel C - Control mode long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
510	Channel C - Control mode short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
511	Channel C - Control mode moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
512	Channel C - Control mode slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
513	Channel C - Control mode move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
514	Channel C - Control mode move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
523	Channel C - Outside temperature disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
525	Channel C - Outside temperature barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
524	Channel C - Outside temperature barrier measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
526	Channel C - Dusk object	Input	LSK-	[1.1] DPT_Switch	1 bit
528	Channel C - Dusk status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
527	Channel C - Dusk measuring value	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
529	Channel C - Time control	Input	LSK-	[1.1] DPT_Switch	1 bit
530	Channel C - Inside temperature enable object	Input	LSK-	[1.1] DPT_Switch	1 bit
533	Channel C - Inside temperature enable status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
531	Channel C - Inside temperature enable measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
532	Channel C - Inside temperature enable set value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
534	Channel C - Shading object	Input	LSK-	[1.1] DPT_Switch	1 bit
539	Channel C - Shading limit value 1 = + | 0 = -	Input	LSK-	[1] 1.xxx	1 bit
540	Channel C - Shading limit value +	Input	LSK-	[1] 1.xxx	1 bit
541	Channel C - Shading limit value -	Input	LSK-	[1] 1.xxx	1 bit
538	Channel C - Shading limit value	Input/output	LSKÜ	[9.4] DPT_Value_Lux	2 bytes

No.	Text	Function	Flags	DPT type	Size
542	Channel C - Shading status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
535	Channel C - Shading brightness measuring value 1	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
536	Channel C - Shading brightness measuring value 2	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
537	Channel C - Shading brightness measuring value 3	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
544	Channel C - Azimuth	Input	LSK-	[9] 9.xxx	2 bytes
545	Channel C - Elevation	Input	LSK-	[9] 9.xxx	2 bytes
543	Channel C - Shading position learning object	Input	LSK-	[1] 1.xxx	1 bit
522	Channel C - Retrieval / storage of scenes	Input	LSK-	[18.1] DPT_Scene-Control	1 byte
650	Input 9 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
651	Input 9 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
653	Input 9 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	1 byte
654	Input 9 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
655	Input 9 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	1 bit
656	Input 9 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	1 bit
657	Input 9 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
562	Channel C - Zero position sensor faulty	Output	L-KÜ	[1.1] DPT_Switch	1 bit
662	Input 10 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
668	Input 10 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
660	Input 10 - Long-term	Input/output	L-KÜ	[1.8] DPT_UpDown	1 bit
661	Input 10 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
663	Input 10 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	1 byte
664	Input 10 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
665	Input 10 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	1 bit
666	Input 10 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	1 bit
667	Input 10 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
500	Channel C - Control mode or manual status	Output	L-KÜ	[1] 1.xxx	1 bit

No.	Text	Function	Flags	DPT type	Size
501	Channel C - Manual long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
502	Channel C - Manual long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
503	Channel C - Manual short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
504	Channel C - Manual moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
505	Channel C - Manual slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
506	Channel C - Manual move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
507	Channel C - Manual move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
721	Channel D - Status object	1 byte	L-KÜ	[1] 1.xxx	1 bit
719	Channel D - Current moving position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
720	Channel D - Current slat position	Output	L-KÜ	[5.1] DPT_Scaling	1 byte
761	Channel D - Zero position reached	Input	LSK-	[1.1] DPT_Switch	1 bit
764	Channel D - Master zero position command	Output	L-KÜ	[1.1] DPT_Switch	1 bit
765	Channel D - Slave zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
766	Channel D - Master zero position status	Input	LSK-	[1.1] DPT_Switch	1 bit
767	Channel D - Master zero position command	Input	LSK-	[1.1] DPT_Switch	1 bit
763	Channel D - Master zero position status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
768	Channel D - Slave zero position status	Output	L-KÜ	[1] 1.xxx	1 bit
796	Channel D - Short-term limitation	Input	LSK-	[1.1] DPT_Switch	1 bit
717	Channel D - Change from manual to control mode	Input	LSK-	[1.1] DPT_Switch	1 bit
718	Channel D - Control mode disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
771	Channel D - Barrier 1 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
772	Channel D - Barrier 1 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
774	Channel D - Barrier 1 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
773	Channel D - Barrier 1 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
775	Channel D - Barrier 1 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit

No.	Text	Function	Flags	DPT type	Size
776	Channel D - Barrier 2 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
777	Channel D - Barrier 2 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
779	Channel D - Barrier 2 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
778	Channel D - Barrier 2 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
780	Channel D - Barrier 2 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
781	Channel D - Barrier 3 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
782	Channel D - Barrier 3 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
784	Channel D - Barrier 3 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
783	Channel D - Barrier 3 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
785	Channel D - Barrier 3 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
786	Channel D - Barrier 4 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
787	Channel D - Barrier 4 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
789	Channel D - Barrier 4 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
788	Channel D - Barrier 4 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
790	Channel D - Barrier 4 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
791	Channel D - Barrier 5 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
792	Channel D - Barrier 5 - Wind disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
794	Channel D - Barrier 5 - Wind barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
793	Channel D - Barrier 5 - Wind barrier measuring value	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes
795	Channel D - Barrier 5 - Rain disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
716	Channel D - Control mode position memory learning object	Input	LSK-	[1.1] DPT_Switch	1 bit
715	Channel D - Control mode position memory learning object	Input	LSK-	[1.1] DPT_Switch	1 bit
708	Channel D - Control mode long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit
709	Channel D - Control mode long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
710	Channel D - Control mode short-term	Input	LSK-	[9.5] DPT_Value_Wsp	2 bytes

No.	Text	Function	Flags	DPT type	Size
711	Channel D - Control mode short-term	Input	LSK-	[5.1] DPT_Scaling	2 bytes
712	Channel D - Control mode moving position	Input	LSK-	[5.1] DPT_Scaling	2 bytes
713	Channel D - Control mode move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
714	Channel D - Control mode move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit
723	Channel D - Outside temperature disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
725	Channel D - Outside temperature barrier status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
724	Channel D - Outside temperature barrier measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
726	Channel D - Dusk object	Input	LSK-	[1.1] DPT_Switch	1 bit
728	Channel D - Dusk status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
727	Channel D - Dusk measuring value	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
729	Channel D - Time control	Input	LSK-	[1.1] DPT_Switch	1 bit
730	Channel D - Inside temperature enable object	Input	LSK-	[1.1] DPT_Switch	1 bit
733	Channel D - Inside temperature enable status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
731	Channel D - Inside temperature enable measuring value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
732	Channel D - Inside temperature enable set value	Input	LSK-	[9.1] DPT_Value_Temp	2 bytes
734	Channel D - Shading object	Input	LSK-	[1.1] DPT_Switch	1 bit
739	Channel D - Shading limit value 1 = + | 0 = -	Input	LSK-	[1] 1.xxx	1 bit
740	Channel D - Shading limit value +	Input	LSK-	[1] 1.xxx	1 bit
741	Channel D - Shading limit value -	Input	LSK-	[1] 1.xxx	1 bit
738	Channel D - Shading limit value	Input/output	LSKÜ	[9.4] DPT_Value_Lux	2 bytes
742	Channel D - Shading status	Output	L-KÜ	[1.1] DPT_Switch	1 bit
735	Channel D - Shading brightness measuring value 1	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
736	Channel D - Shading brightness measuring value 2	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes

No.	Text	Function	Flags	DPT type	Size
737	Channel D - Shading brightness measuring value 3	Input	LSK-	[9.4] DPT_Value_Lux	2 bytes
744	Channel D - Azimuth	Input	LSK-	[9] 9.xxx	2 bytes
745	Channel D - Elevation	Input	LSK-	[9] 9.xxx	2 bytes
743	Channel D - Shading position learning object	Input	LSK-	[1] 1.xxx	1 bit
722	Channel D - Retrieval / storage of scenes	Input	LSK-	[18.1] DPT_Scene-Control	1 byte
852	Input 11 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
858	Input 11 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
850	Input 11 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
851	Input 11 - Short-term	Input	L-KÜ	[1.8] DPT_UpDown	1 bit
853	Input 11 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
854	Input 11 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
855	Input 11 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
856	Input 11 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
857	Input 11 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
762	Channel D - Zero position sensor faulty	Output	L-KÜ	[1.1] DPT_Switch	1 bit
862	Input 12 - Switching	Input/output	LSKÜ	[1.1] DPT_Switch	1 bit
868	Input 12 - Disable object	Input	LSK-	[1.1] DPT_Switch	1 bit
860	Input 12 - Long-term	Input/output	LSKÜ	[1.8] DPT_UpDown	1 bit
861	Input 12 - Short-term	Output	L-KÜ	[1.8] DPT_UpDown	1 bit
863	Input 12 - Dimming relative	Input/output	LSKÜ	[3.7] DPT_Control_Dimming	4 bit
864	Input 12 - 8 bit sensor	Output	L-KÜ	[5] 5.xxx	1 byte
865	Input 12 - Temperature sensor	Output	L-KÜ	[9.1] DPT_Value_Temp	2 bytes
866	Input 12 - Brightness sensor	Output	L-KÜ	[9.4] DPT_Value_Lux	2 bytes
867	Input 12 - Scene	Output	L-KÜ	[18.1] DPT_Scene-Control	1 byte
700	Channel D - Control mode or manual status	Output	L-KÜ	[1] 1.xxx	1 bit
701	Channel D - Manual long-term shading position	Input	LSK-	[1.8] DPT_UpDown	1 bit

No.	Text	Function	Flags	DPT type	Size
702	Channel D - Manual long-term closed position	Input	LSK-	[1.8] DPT_UpDown	1 bit
703	Channel D - Manual short-term	Input	LSK-	[1.8] DPT_UpDown	1 bit
704	Channel D - Manual moving position	Input	LSK-	[5.1] DPT_Scaling	1 byte
705	Channel D - Manual slat position	Input	LSK-	[5.1] DPT_Scaling	1 byte
706	Channel D - Manual move to shading position	Input	LSK-	[1.1] DPT_Switch	1 bit
707	Channel D - Manual move to closed position	Input	LSK-	[1.1] DPT_Switch	1 bit

4 Adjustment of parameters

The factory settings in the actuator are underlined.

4.1 General settings

- First set the general parameters for the bus communication here (telegram rate, transmission delays). In addition, you can specify whether all or only the changed settings are transmitted onto the bus during the programming of scenes.

Maximum telegram rate	1•2•<u>5</u>•10•20•50 <u>telegrams per second</u>
Transmission delay of limit values After voltage recovery	<u>5s</u>...2 h
Transmission delay of switching and status outputs after voltage recovery	<u>5s</u>...2 h
During the use of scenes:	
Transfer the following during programming	<u>All parameters</u> • Only changed parameters

4.1.1 Local operation

The Up/Down push buttons on the device are permanently allocated to channels A-D. To disable the manual operation, disable objects can be set for the push button pairs (group objects "Channel X local operation disable object").

Local push button Channel A Use disable object	<u>No</u> • Yes
Local push button Channel B Use disable object	<u>No</u> • Yes
Local push button Channel C Use disable object	<u>No</u> • Yes
Local push button Channel D Use disable object	<u>No</u> • Yes

If monitoring time periods or movement range limits are used, no operation is possible via the local push buttons in case of bus power failure.

4.2 Inputs

- Set the parameters for inputs 1 to 4 here.
  The other inputs are provided as standard for operation of the devices at the outputs (Channels A-D) and are therefore parameterised directly during the adjustments to the output channels (see Chapter *4.3.1.6 auf Seite 49 or Chapter 5 auf Seite 51*).

Configuration possibilities for the individual inputs:

Input 1	Bus push button
Input 1	Bus push button
Input 3	Bus push button
Input 4	Bus push button
Input 5	Actuator push button for output channel A Bus push button for drives also zero position sensor
Input 6	Actuator push button for output channel A Bus push button
Input 7	Actuator push button for output channel B Bus push button for drives also zero position sensor
Input 8	Actuator push button for output channel B Bus push button
Input 9	Actuator push button for output channel C Bus push button for drives also zero position sensor
Input 10	Actuator push button for output channel C Bus push button
Input 11	Actuator push button for output channel D Bus push button for drives also zero position sensor
Input 12	Actuator push button for output channel D Bus push button

Use input 1	No • as bus push button
Use input 2	No • as bus push button
Use input 3	No • as bus push button
Use input 4	No • as bus push button
Use inputs 5 and 6	See parameterization channel A - push button inputs
Use inputs 7 and 8	See parameterization channel B - push button inputs
Use inputs 9 and 10	See parameterization channel C - push button inputs
Use inputs 11 and 12	See parameterization channel D - push button inputs

4.2.1 Input as bus button

If an input is used as a free bus push button, it transmits a previously set value to the bus on activation. Various parameters for frequently-required bus functions have been integrated into the actuator program file. In this way, the inputs can very easily be configured as switches, drive controls, dimmers and for the transmission of values and for scene recalls.

Bus function	► Switch ► Change-over switch ► Venetian blind ► Roller shutter ► Awning ► Window ► Dimmer ► 8 bit sensor ► Temperature sensor ► Brightness sensor ► Scenes

Input as switch

- If the input is allocated to a push button with switching function, select the "Switch" bus function and determine which value is transmitted when pressing/releasing the button and when it is transmitted.

Function	Switch
Command when pushing the button	► transmit ► transmit 1 ► Do not transmit telegram
Command when releasing the button	► transmit 0 ► transmit 1 ► Do not transmit telegram
Send value	► In case of change ► In case of change to 1 ► In case of change to 0 ► In case of change and cyclical ► In case of change to 1 and cyclical ► In case of change to 0 and cyclical
Send all values (in case of cyclical transmission)	5 s • 10 s • 30 s • 1 min • 2 min • 5 min • 10 min • 20 min • 30 min • 1 h • 2 h

The input can be disabled using a disable object.

- Set what is to be transmitted upon (de)activation of the disable on the bus. In case of active barrier, no cyclical transmission.

Function	Switch
Command when pushing the button	► Changeover ► Do not transmit telegram
Command when releasing the button	► Changeover ► Do not transmit telegram

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

Input for venetian blind, roller shutter, awning or window control

- If the input is used for the control of a drive via the bus, select the bus function "venetian blind", "awning" "roller shutter" or "window" and determine the push button function and the control mode.

Function	Venetian blind / roller shutter / awning / window
Command (push button function)	Up • Down (venetian blind) Up • Down • Up/Down (roller shutter) On • Off • On/Off (awning) Closed • Open • Closed/Open (window)
Control mode*	► Standard ► Standard inverted ► Comfort mode ► Dead man's switch

* You can find a detailed description of the adjustment possibilities for the individual control modes in Chapter 5.1 auf Seite 51.

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

Input as dimmer

- If the input is used as a dimmer, select the bus function "Dimmer" and determine the push button function, time intervals (switching/dimming) and, if required, the repeat intervals in case of long keystrokes.

Function	Dimmer
Command (push button function)	Brighter • darker • brighter/darker
Time between switching and dimming (in 0.1 s)	1...50; 5
Repetition of dimming command	No • Yes
Repetition of dimming command with long key stroke (if dimming command is repeated)	Every 0.1 s... • Every 2 s; every 0.5 s
Dimming by (if dimming command is repeated)	1.50% • 3% • 6 % • 12.50% • 25% • 50%

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

Input as 8 bit sensor

- If the input is to be used as an 8 bit sensor, select the bus function "8 bit sensor" and determine which value is transmitted.

Function	8 bit sensor
Value	0...255

Input as temperature sensor

- If the input is to be used as a temperature sensor, select the bus function "Temperature sensor" and determine which value between -30°C and +80°C is transmitted. By transmitting a temperature value, the set value of the temperature control can for example be changed.

Function	Temperature sensor
Temperature in 0.1°C	-300...800; 200

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

Input as brightness sensor

- If the input is to be used as a brightness sensor (for example is allocated as the limit value of a sun sensor), select "brightness sensor" and determine which value is transmitted.

Function	Brightness sensor
Brightness in kLux	0...100; 20

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

Input for scene control

- If scenes are retrieved and stored using the input, select the bus function "Scenes" and determine the storage, time difference (retrieval/storage) and the scene number.

Function	Scenarios
Push button activation	Without storage With storage
Time between retrieval and storage in 0.1 seconds (if "with storage" has been selected)	1...50; 20
Scene No.	0...127

The input can be disabled using a disable object. In case of active barrier, no bus communication.

Use disable object	No • Yes

4.3 Outputs

Adjustment possibilities for the individual outputs (channels A / B / C / D)

- ▶ General specifications for the connected drive (see Chapter Channel settings – Blinds, page 32)
- ▶ Control functions: Movement range limitations, barriers, type of control mode (see Chapter Control, page 33).
- ▶ Control functions: Control mode can be specified externally or internally (see Chapter Control mode - internal 39).
- ▶ Scenes: Moving positions (see Chapter Scenes, page 44).
- ▶ Push button inputs: Configuration as actuator push button, bus push button or for zero position sensor (see Chapter 4.3.1.6 auf Seite 49).
- ■ Enter the name which should be displayed on the menu page.

4.3.1 Channel settings - Blinds

- ■ First set the general specifications for the drive here.

Run time

The run time between the limit positions is the basis for moving to intermediate positions (for example for movement range limits and scenes). Enter the run time in numerals (in seconds).

Run time UP in s	0...320; 65
Run time DOWN in s	0...320; 60

Step adjustment of slats

The step time multiplied by the number of steps results in the tilting time of the slats.

Step time in 10 ms	1...100; 20
Step time slats	1...255; 6

If the short-term command (step command) should only be used to adjust the slats, but not to position the curtain, the following parameters are set to "Yes".

Only permit step commands for tilting	No • Yes

Interval time

The required interval times during the change in direction of the drive should be adjusted according to the motor manufacturer's specifications.

Interval time for change in direction in 0.1 s	5...100; 10

Status object and drive position

The status and current position can be transmitted on the bus. The status object shows through the transmission of 1 that the retracted or closed position has been left and is suitable for example for monitoring windows.
The exact drive position can be transmitted on the bus if required. The adjustable delay prevents too many data packages blocking the bus in case of longer travel. In addition, the position can be transmitted cyclically.

Use status object	No • Yes
Transmit drive position after change	No • Yes
Transmission delay of position after change in 0.1 s (only in case of feedback)	0...50; 10
Transmit drive position cyclically (only in case of feedback)	No • 5 s • 10 s • ... • 2 h

Scenarios
Here, the scene menu for this output channel is activated.

Use scene	No • Yes

See Chapter 4.3.1.5 auf Seite 49.

4.3.1.1 Control

Adjust the behaviour of the drive here.

Movement range limit

The movement range limit is used to avoid two devices colliding (for example an awning and an opening window).
Of the two drives, one receives priority and is parameterised as the master and the other as the slave. Through zero position sensors, both actuators know their current own status and that of the other sensor. This is either "in safe position" or "not in safe position". The safe position is reached when the drive is located in a range where no collision is possible (for an awning for example, this could be extended by between 0 to 30%). To report the safe position of the drive, a zero position sensor (for example a limit position switch or light barrier) can be connected to the actuator inputs, or the actuator receives the message from its zero position sensor via the bus (see graphics in Chapter 5.2 auf Seite 53).
Before the master actuator drive is moved, the slave actuator receives the command to move its drive into safe position. The slave drive then remains in safe position or moves back if it is not in the safe range.
Through the group object "Slave zero position status", the master actuator knows whether the drive connected to the slave actuator is already in safe position (in which case the master moves immediately) or not (in which case it waits). The master actuator does not move its drive out of its own safe position until it receives the message that the slave drive is in safe position.

Example

Ventilation via a window should take priority over shading through an awning. The window is therefore parameterised as master and the awning as slave. Both of these have a zero position sensor which reports whether the drive is in a safe position or not.
Then the awning is extended and the window should be opened. The window knows the awning status ("not safe position") and therefore forwards a master command to the awning, which is the signal for the awning to retract a short distance. When the awning reaches the safe position, an appropriate feedback is provided from the shading zero position sensor. Only then will the window open.

Master and slave regularly conduct exchanges regarding their position ("safe" or "not safe"). It is possible to use the monitoring time period to adjust how frequently the information is queried. The time selected here should be shorter than the time which the monitored drive requires to move from the limit of the safe range (last reported safe position) to a position where there is a risk of collisions.
In the event that a master/slave status or zero position object is not received, the drive moves into safe position; the same applies in case of bus voltage failure or a fault message from the zero position sensor (applies to the parameterisation as master and as slave).

Without movement range limitation

Use movement range limitation	No
Behaviour in case of bus power failure	► No action ► Stop ► UP command ► Down1 command ► Down2 command
Behaviour in case of bus voltage recovery and after programming	► No action ► Stop ► UP command ► Down1 command ► Down2 command

With movement range limitation

- Adjust whether the zero position sensor of the drive is directly connected to the actuator (input channel) or the zero position is received via the bus (group object).

Use movement range limitation	Yes
Zero position sensor connected as	► Group object ► Input channel
Actuator is	Master • Slave

Actuator as master

Actuator is	Master
If not received, move into safe position	Slave status or zero position object
Transmission repeat for master command in s	1 ... 255; 10
Monitoring time period for slave status (and zero position) object in s	1 ... 255; 10

Actuator as slave

Actuator is	Slave
If not received, move into safe position	Master status or zero position object
Monitoring time period for master status (and zero position) object in s	1 ... 255; 10
Moving position for slave in % if Input "Master zero position command“ = 1	0 ... 100

In case of bus power failure, the drive moves into safe position.
Calibration always takes place in the direction of the safe position.

Disable objects

The output channel can be disabled in case of rain, wind or other events. Manual operation is not possible. The barriers and monitoring are first configured here. For the adjustment of the individual barriers, separate menu items "Barrier X" then appear (see Chapter 4.3.1.2 auf Seite 40 ff).
The priorities of the disable objects accord with the listed sequence (barrier 1 has the highest priority and barrier 5 the lowest).

Use barrier 1 (high priority)	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Use barrier 2	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Use barrier 3	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Use barrier 3	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Use barrier 4	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Use barrier 5 (low priority)	► no ► yes, with disable object ► yes, as wind barrier ► yes, as rain barrier
Using monitoring of disable objects	No • Yes
Monitoring time period for disable objects (if disable objects monitoring is used)	5s... • 2 h; 5 min
Behaviour in case a disable object is not received (if disable objects monitoring is used)	► Stop ► UP command ► Down command

Short-term limitation (for venetian blinds)
In case of active short-term limitation, only short-term move commands are possible manually. If the function "Only permit step commands for slat adjustment" is simultaneously activated (channel settings - 4.3.1 auf Seite 35), only the slats can still be adjusted manually and no longer the moving position of the venetian blind.
The limitation is active for object value 1.

Use short-term limitation	No • Yes
Value of object prior to first communication and bus voltage recovery (if short-term limitation is used)	0 • 1

Control mode disable object
Using the disable object control mode , the control mode can be deactivated short-term (for example in the case of absence or during presentations in conference rooms).
Here, the channel mode after voltage recovery, for example after power failure, is also specified. The mode (manual or control mode) is sent to the bus as a status object.

Use disable object control mode	No • Yes
Control mode is disabled in case of (if the disable object control mode is used)	0 • 1
Value of disable object after voltage recovery (if the disable object control mode is used)	0 • 1
Operating mode after voltage recovery	► Control mode ► Manual
Status object transmits	► 1 for control mode | 0 for manual ► 0 for control mode | 1 for manual
Transmission delay of status output control mode or manual in 0.1 s	0 ... 50

Type of control mode
However, settings can also be configured internally. If "Internal control mode" is selected, then "Control mode" will appear in a separate menu item (see Chapter 4.3.1.4 auf Seite 44).

Type of control mode	External control mode • Internal control mode

4.3.1.2 Barriers

Disable objects

The menu item only appears if a barrier with disable object has been configured under "Control". This determines what happens in case of object values 1 and 0. Using the free disable objects, a fire alarm scenario can for example be configured (creating escape routes through retraction of shading, smoke extraction via window). A disable object can also prevent someone being locked out on the patio (opened window contact on the patio door disables the venetian blind in front of the door).
Always disable the disable objects in case of 1st

Designation	[Barrier 1 ... 5] Enter a designation here!
If disable object value = 1	► No action ► Stop ► UP command ► Down1 command ► Down2 command ► Move to intermediate position ► Move to slat position
Position in % (only if one position is moved to during disable)	0...100
Slat position in % (only if one position is moved to when venetian blinds are disabled)	0...100
If disable object value = 0	
During manual mode before and after disable	► No action ► Move to last position
In case of automatic operation after disable	Follow control mode
Value of object before first communication and bus voltage recovery	0...1

Wind barrier

The menu item only appears if a wind barrier has been configured. The input object "wind barrier" is interlinked with the output object of a wind sensor. The input can be both a 1 bit object (smaller or larger than a limit value) as well as a 16 bit object (measuring value).

Designation	[Wind barrier] Enter a designation here!
Mode	1 bit • 16 bit

1 bit input object:

Type of input object	1 bit
If disable object value = 1	► No action ► Stop ► UP command ► Down1 command ► Down2 command ► Move to intermediate position ► Move to slat position
Position in % (only if one position is moved to during disable)	0...100
Slat position in % (only if one position is moved to when venetian blinds are disabled)	0...100
Waiting time in safe position in min. after barrier	1...255; 5
Behaviour after waiting time	
During manual mode before and after disable	► No action ► Move to last position
In case of automatic operation after disable	Follow control mode

16 bit input object:

Type of input object	16 bit
Disable from wind speed in m/s	► No action ► Stop ► UP command ► Down1 command ► Down2 command ► Move to intermediate position ► Move to slat position
Waiting time in safe position in min. after barrier	1...255; 5
Behaviour after waiting time	
During manual mode before and after disable	► No action ► Move to last position
In case of automatic operation after disable	Follow control mode
Transmit current disable status	No • Yes

Rain barrier

The menu item only appears if a rain barrier has been configured under "Control" The input object "Rain barrier" is interlinked with the output object of a rain sensor.

Designation	[Rain barrier] Enter a designation here!
If disable object value = 1	► No action ► Stop ► UP command ► Down1 command ► Down2 command ► Move to intermediate position ► Move to slat position
Position in % (only if one position is moved to during disable)	0...100
Slat position in % (only if one position is moved to when venetian blinds are disabled)	0...100
Waiting time in safe position in min. after barrier	1...255; 5
Behaviour after waiting time	
During manual mode before and after disable	► No action ► Move to last position
In case of automatic operation after disable	Follow control mode

4.3.1.3 External control mode

The menu item "Control mode" appears when the external control mode is selected for "Control". In this case, the position memory for automatic movement can be activated. The position specified here can be overwritten at any time via a learning object. The saved position can be retrieved again at a later date. For adjustment possibilities, see Chapter 4.3.1.3 auf Seite 43.
In the case of venetian blinds, both moving and slat positions can be saved.

Use position memory	No • Yes

Use position memory	No • Yes
Position specification	
Moving position in % (only if an intermediate position is moved to during disable)	0...100
Slat position in % (only if a slat position is moved to during disable)	0...100
Use learning object for new position	No • Yes
Transfer the following during programming (if a learning object is used)	► All parameters ► Only changed parameters

Position specification:

Shading position	Opened limit position AB1
Closed position	Closed limit position AB2
Intermediate position	Individual adjustment of moving position in % (0% = completely open, 100% = completely closed)
Slat position	Individual adjustment of slat position in %

Use learning object for new shading position: the curtain position can be numerically stipulated or manually taught. For learning, "Use learning object: Yes" is set and the "Channel X shading position learning object" is used to save the position moved to. Storage takes place with value = 1 and can, for example, be realised via a push button interlinked with the learning object. Already-adjusted numerical specifications are overwritten by the learning object.

4.3.1.4 Internal control mode

The menu item "Internal control mode" appears when the internal control mode is selected for "Control". The internal control functions take into account the brightness/position of the sun, the outside temperature and the inside temperature and also facilitate the time and dawn/dusk control. A shading position can be specified or taught.
To fully exploit the internal shading control mode, information must be available to the bus system regarding brightness/dusk, the outside temperature and the inside temperature and the time and dawn/dusk control.

Outside temperature barrier

The input object "Outside temperature barrier" is interlinked with a temperature sensor output object. The input object can be both a 1 bit object (smaller or larger than a limit value) as well as a 16 bit object (measuring value).

Use disable object control mode	No • Yes
Type of temperature object	1 bit • 16 bit

1 bit input object:

Type of temperature object	1 bit

Shading is permitted when the bit is 0, and is disabled when the bit is 1.

16 bit input object:

Type of temperature object	16 bit
Limit value in 0.1°C	-300 ... 800; 50
Hysteresis in 0.1°C	1 ... 100; 20
Transmit current disable status	No • Yes

The shading is permitted if the measuring value is larger than limit value + hysteresis, and is disabled if the measuring value is less or the same as the limit value.

Dawn/dusk / time control

The time control takes place via a group object. The input object "Dawn/dusk control" is interlinked with the output object of a brightness sensor. For the dawn/dusk control, both a 1 bit object (smaller or larger than a limit value) as well as a 16 bit object (measuring value) can be used.

Use a dawn/dusk / time control	► No ► Only dawn/dusk control ► Only time control ► Both (OR operation)

Use a dawn/dusk / time control	Only dawn/dusk control / both
Type of dusk object	1 bit • 16 bit

16 bit input object:

Type of temperature object	16 bit
Dusk limit value in lux	1 ... 1000; 10
Switching delay	1 minute
Transmit current dusk status	No • Yes

Inside temperature release

The input object "Inside temperature release" is interlinked with the output object of a temperature sensor. The input object can be both a 1 bit object (smaller or larger than a limit value) as well as a 16 bit object (measuring value or set and actual value).

Use inside temperature release	No • Yes

Type of input object	1 bit • 16 bit • 16 bit target/actual temperature

1 bit input object:

Type of temperature object	1 bit

Shading is permitted when the bit is 0, and is disabled when the bit is 1.

16 bit input object:

Type of temperature object	16 bit set/actual temperature
Limit value in 0.1°C	Limit value in 0.1°C
Hysteresis in 0.1°C	1 ... 100; 20
Transmit current disable status	No • Yes

16 bit input object (set/actual temperature):

Using this function, the set value and actual value (measuring value) are read from the 16 bit object and evaluated.

Type of temperature object	16 bit set/actual temperature
Set value (SW) - actual value (MW) Difference in 0.1°C	1 ... 100; 20
Hysteresis in 0.1°C	1 ... 100; 20
Transmit current disable status	No • Yes

The shading is permitted if the measuring value is larger than or the same as set value + difference, and is disabled if the measuring value is less than set value + difference - hysteresis.

Shading control mode

The shading control mode evaluates the input objects "Brightness" and "Position of the sun" from a weather station. The moving position for the automatic shading is also determined here.

Use shading control mode	No • Yes

Brightness:

For the brightness control, both a 1 bit object (smaller or larger than a limit value) as well as one, two or three 16 bit objects (measuring values, for example east, south and west sun) can be used.

Type of shading input	1 x 1 bit • 1 x 16 bit • 2 x 16 bit • 3 x 16 bit

Shading is permitted when the bit is 0, and is disabled when the bit is 1.

1 x 1 bit input object:

Adjust the delay times for the shading (prevents constant up and down movements in case of quickly-changing light conditions).

Type of shading input	1 x 1 bit
Upward movement delay in min	0 ... 255; 12
Downward movement delay in min	0 ... 30; 1

1 x 16 bit, 2 x 16 bit or 3 x 16 bit as input object:

The brightness limit value can be specified via parameter or group object. In case of several brightness measuring values (2 x 16 bit or 3 x 16 bit), only the maximum brightness value is compared with the limit value.

Type of shading input	1 x 16 bit • 2 x 16 bit • 3 x 16 bit
Shading limit value specification via	Parameter • Group object

Limit value via parameter:

Set the limit value and the delay times for the shading (prevents constant up and down movements in case of quickly-changing light conditions).

Shading limit value specification via	Parameter
Shading limit value in klux	0 ... 100; 30
Upward movement delay in min	0 ... 255; 12
Downward movement delay in min	0 ... 30; 1
Transmit current shading status	No • Yes

Limit value via group object:

The limit value is received via group object and can be additionally changed (for example, push button for "more sensitive" and "less sensitive"). Set the delay times for the shading here, too (prevents constant up and down movements in case of quickly-changing light conditions).

Shading limit value specification via	Group object
The last communicated value should be retained	► Not ► After voltage recovery ► After voltage recovery and programming
Start limit value in klux valid up to 1st communication	0 ... 100; 30
Type of limit value change	Absolute value with a 16 bit com. object ► Lifting/lowering with a com. object ► Lifting/lowering with two com. objects
Step width in klux (only in case of "Lifting/lowering with com. object")	1 ... 5; 2
Upward movement delay in min	0 ... 255; 12
Downward movement delay in min	0 ... 30; 1
Transmit current shading status	No • Yes

► Position of the sun

Evaluate the position of the sun	No • Yes

Evaluate the position of the sun	Yes
The position of the sun is defined via	► the discreet value of azimuth and elevation ► Compass directions (with regard to azimuth and elevation)

Definition of the position of the sun via values:

Enter the range (direction and height) within which the sun must be located to activate the shading.

The position of the sun is defined via	the discreet value of azimuth and elevation
Azimuth from	0 ... 360
Azimuth to	0 ... 360
Elevation from	0 ... 90
Elevation to	0 ... 90

Definition of the position of the sun via compass directions:

Enter the compass direction in which the sun has to be positioned to activate the shading.

The position of the sun is defined via	Compass directions (with regard to azimuth and elevation)
Compass direction	► East (Azimuth: 0° ... 180°) ► South-east (Azimuth: 45° ... 225°) ► South (Azimuth: 90° ... 270°) ► South-west (Azimuth: 135° ... 315°) ► West (Azimuth: 180° ... 360°)

Position for the internal control mode:

Position specification	► Shading position ► Closed position ► Intermediate position ► Slat position
Moving position in % (only for intermediate position)	0 ... 100; 75
Slat position in % (only for slat position)	0 ... 100; 75
Use learning object for new shading position	No • Yes

Position specification:

Shading position	Opened limit position AB1
Closed position	Closed limit position AB2
Intermediate position	Individual adjustment of moving position in % (0% = completely open, 100% = completely closed)
Slat position	Individual adjustment of slat position in %

Use learning object for new shading position: the curtain position can be numerically stipulated or manually taught. For learning, "Use learning object: Yes" is set and the "Channel X shading position learning object" is used to save the position moved to. Storage takes place with value = 1 and can, for example, be realised via a push button interlinked with the learning object. Already-adjusted numerical specifications are overwritten by the learning object.

4.3.1.5 Scenarios

The menu item "Scenes" only appears if "Use scenes: Yes" is selected for the settings of the drive channel.
You can save different moving positions as scenes for each drive and recall them via the bus. 16 scenes are available per drive.

Use scenes	No • Yes

You can allocate an individual scene number for any activated scene independent of the internal number of actuators.

Scenario number	0 ... 63
Position specification	► Shading position (AB1) ► Closed position ► Intermediate position ► Slat position
Moving position in % (only for intermediate position)	0 ... 100; 50
Slat position in % (only for slat position)	0 ... 100; 50

4.3.1.6 Push button inputs

The inputs 5 to 12 are provided on the outputs as the standard for operation of the external venetian blinds, and are therefore directly parameterised during the output channel settings. These can be used as actuator push buttons or bus push buttons; the inputs 5, 7, 9 and 11 can alternatively be used for zero position sensors.

Operating mode	
Use input 5 / 7 / 9 / 11	► No ► As bus push button ► As actuator push button ► As zero position sensor
Use input 6 / 8 / 10 / 12	► No ► As bus push button ► As actuator push button

Input as bus button

The settings correspond to inputs 1 to 4 (see Chapter 4.2.1 auf Seite 32).

Input as actuator push button

If the input is used to control the drive on this channel, then you must determine the push button function and the control mode.

Push button function	Up • Down
Control mode*	► Standard ► Standard inverted ► Comfort mode ► Dead man's switch

* You can find a detailed description of the adjustment possibilities for the individual control modes in Chapter 5.1 auf Seite 51.

The input can be disabled using a disable object. In case of an active barrier, no operation is possible.

Use disable object	No • Yes

If monitoring time periods or movement range limits are used, no operation is possible via the local push buttons in case of bus power failure.

Input as zero position sensor

The zero position sensor is used for the movement range limitation of the respective drive (see 4.3.1 auf Seite 35). If a zero position sensor is defective, a fault message can be transmitted to the bus.

Transmit fault message in case of defective zero position sensor	No • Yes

5 General section

5.1 Control modes for drive control

If inputs are used as push buttons for the operation of shading or windows, different control modes can be set.

Control mode	► Standard ► Standard inverted ► Comfort mode ► Dead man's switch

Standard

If pressed briefly, the drive moves stepwise or stops. If pressed for a longer time, the drive moves to limit position. The time difference between "short" and "long" is adjusted individually.

Control mode	Standard
Behaviour in case of push button activation: short = stop/step long = up/down	
Time between short and long in 0.1 seconds	0 ... 50; 10

Standard inverted

If pressed briefly, the drive moves into motor limit position. If pressed for a longer time, the drive moves in steps or stops. The time difference between "short" and "long" and the repeat interval is adjusted individually.

Control mode	Standard inverted
Behaviour in case of push button activation: Short = up/down | long = stop/step	
Time between short and long in 0.1 seconds	0 ... 50; 10
Repetition of step command when button pressed for a longer time	Every 0.1 s... • Every 2 s; every 0.5 s

Comfort mode

In comfort mode, short, slightly longer and long pressing of the push button trigger different reactions from the drive. The time intervals are adjusted individually.
By pressing the push button briefly (shorter than the adjustable time 1), the drive is positioned stepwise (or stopped).
If the drive has to be moved a little, then press for a slightly longer time (longer than time 1 but shorter than times 1+2). The drive stops immediately when the push button is released.
If the drive should is supposed to move independently into its limit position, the push button is not released until after the expiry of times 1 and 2. The movement can be stopped by pressing the push button briefly.

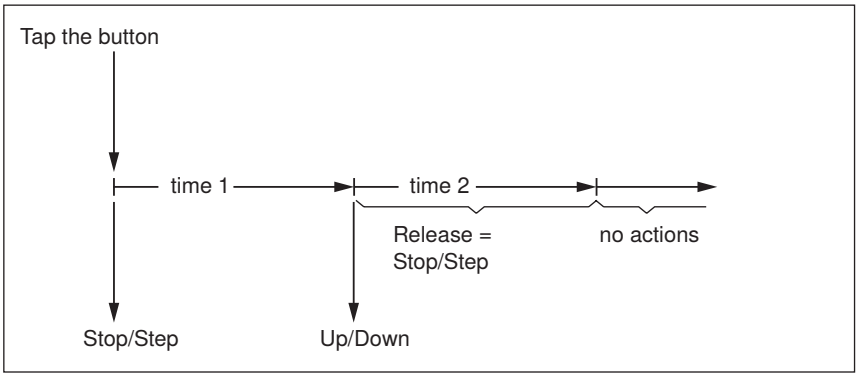

Fig. 4 Diagram showing time intervals comfort mode

Time 0	A stop/step command is transmitted
Release prior to expiry of time 1	Only the "stop/step" command is executed.
Time 1	If the push button is pressed for longer than time 1, an up/down (move command) command is transmitted
Release after expiry of time 1 but before expiry of time 2	If the push button is pressed for longer than time 1 but shorter than times 1+2, a stop/step command is transmitted
Release after expiry of times 1 + 2	Move to limit position

Control mode	Comfort mode
Time 1	0 s ... 5 s; 0.4 s
Time 2	0 s ... 5 s; 2 s

Dead man's switch

The drive moves as soon as the push button is pressed and stops when the push button is released.

Control mode	Dead man's switch
Behaviour in case of push button activation: Press push button =UP or down command Release push button = Stop command	

5.2 Connection possibilities for zero position sensors

See also the Movement range limit section in Chapter *4.3.1.1 auf Seite 36*. The examples and group object numbers refer to the mutual master-slave interlocking of drives on the output channels A and B.

Drive channel A is the master, zero position sensor at input 5 of the actuator, Drive channel B is the slave, zero position sensor at input 7 of the actuator:

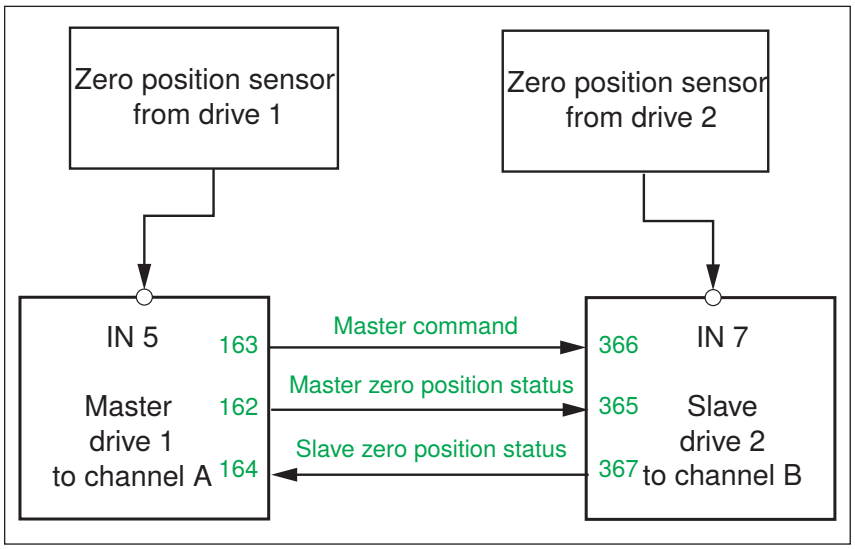

Fig. 5 Master-slave locking device Example 1

Drive channel A is the master, zero position sensor at input 5 of the actuator, Drive channel B is slave, zero position sensor via bus:

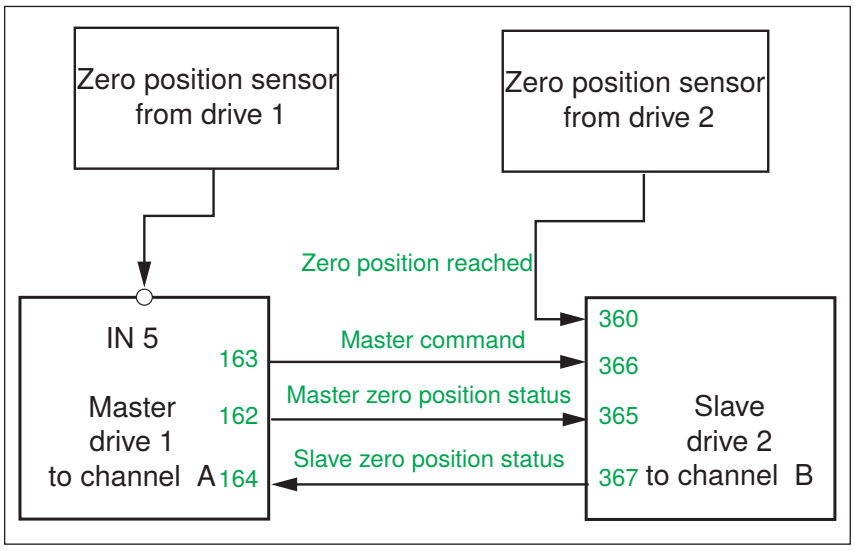

Fig. 6 Master-slave locking device Example 2

Drive channel A is the master, zero position sensor via bus,
Drive channel B is the slave, zero position sensor at input 7 of the actuator:

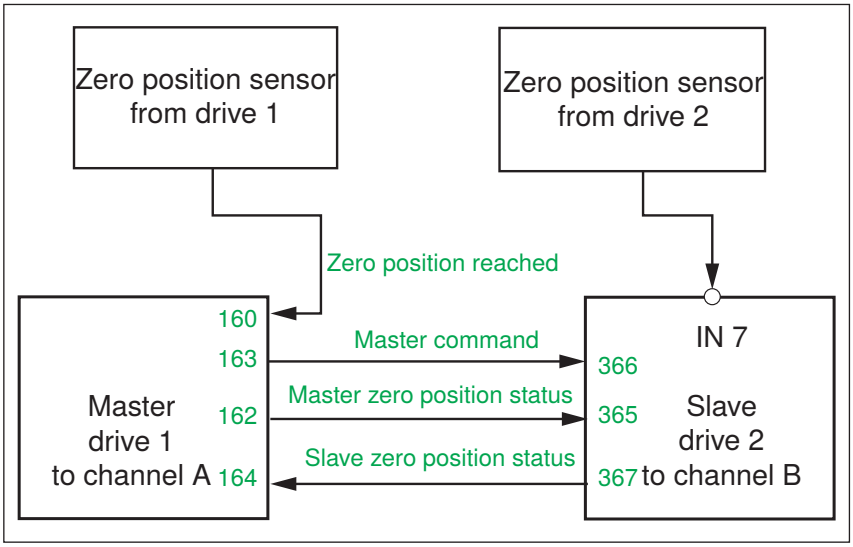

Fig. 7 Master-slave locking device Example 3

Drive channel A is the master, zero position sensor via bus,
Drive channel B is slave, zero position sensor via bus:

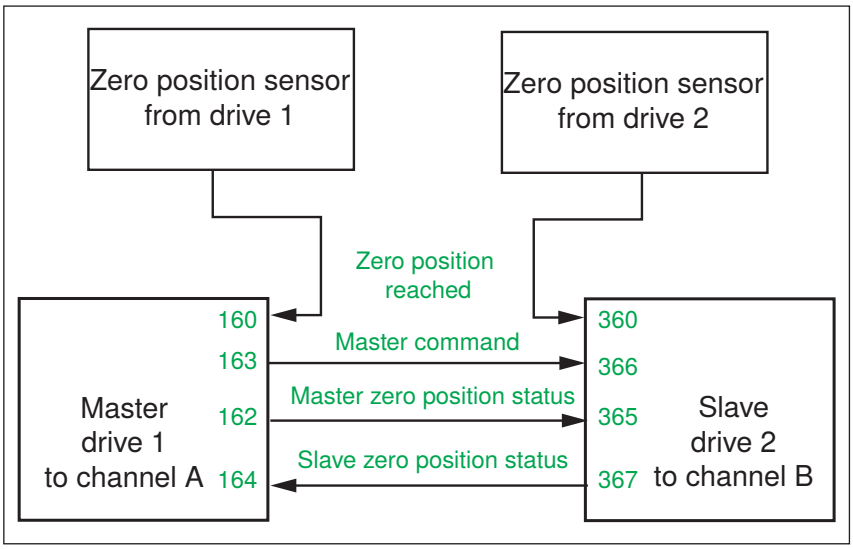

Fig. 8 Master-slave locking device Example 4

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