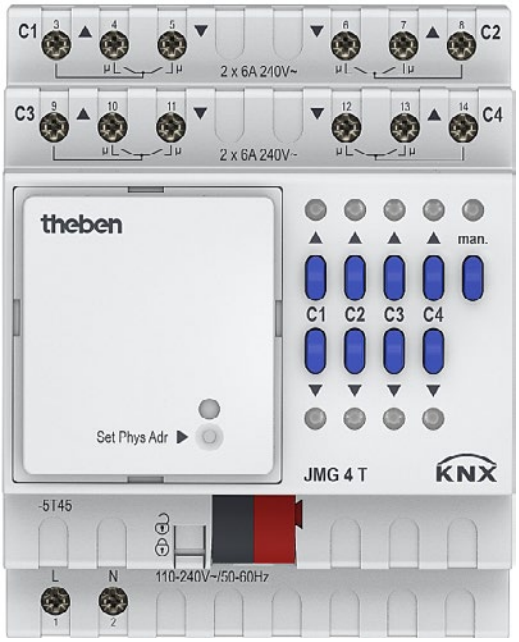
MIX2 series actuators
JMG 4 T / JME 4 T
JMG 4 T 24V / JME 4 T 24V
FIX1 JM 4 T / JM 4 T 24V
FIX2 JM 8 T / JM 8 T 24V



JMG 4 T	4930250
JME 4 T	4930255
JMG 4 T 24V	4930260
JME 4 T 24V	4930265
JM 4 T	4940250
JM 4 T24V	4940260
JM 8 T	4940255
JM 8 T24V	4940265

Contents

1 Functional characteristics

- 4-way blinds actuator MIX2
- MIX2 basic module
- Can be upgraded to a maximum of 12 channels.
- Up to 2 MIX or MIX2 extension modules can be connected to a basic module.
- Device and KNX bus module can be swapped independently of each other.
- Removable KNX bus module enables devices to be changed without reprogramming.
- Manual start-up and use of the actuators is possible even without the KNX bus module.
- LED direction of movement display for every channel.
- Manual operation on device (even without bus connection).
- Configurable features: e.g. type of motor, reaction when power is cut then returns...
- Participation in central commands such as up/down and save/call up scene.
- 8 individual, configurable positions that can, for example, be called up via scenes.
- 5 safety objects: 3x wind, rain and frost.
- Correction of improper drive connection via parameters
- Start-up mode for electronic motors
- Changing runtime possible

2 MIX2 and FIX1/FIX2 Devices

This manual describes the MIX2 devices and can also be used with devices from the FIX2 Series.

A FIX1 device behaves like a MIX2 basic module.
A FIX2 device behaves like a MIX2 basic module and an extension module of the same type (e.g. blinds actuator) in a common housing.

Devices in the FIX Series (Order No. 494..):

- Cannot be extended
- Cannot be combined

The remaining functions are identical to those in the MIX2 Series.

3 MIX and MIX2 devices

The MIX2 series consists of the basic devices RMG 4 I, RMG 8 S, RMG 8 T, DMG 2 T, JMG 4 T, JMG 4 T 24V, HMG 6 T + upgrades RME 4 I, RME 8 S, RME 8 T, DME 2 T, JME 4 T, JME 4 T 24V, HMG 6 T (04.2014).

Different MiX and MIX2 extension modules can be connected to one MIX2 basic device.

Table 1

Appliance type	Order No.	Designation	Can be used with basic device.	
			in the MIX series	in the MIX2 series
MIX2 basic devices	493…	RMG 4 I, RMG 8 S, RMG 8 T, DMG 2 T, JMG 4 T, JMG 4 T 24V, HMG 6 T.	-	-
MIX2 upgrades	493…	RME 4 I, RME 8 S, RME 8 T, DME 2 T, JME 4 T, JME 4 T 24V, HME 6 T.	No	Yes
MIX basic devices	491…	BMG 6, DMG 2 S, HMG 4, JMG 4 S, RMG 4 S, RMG 4 C-Last, SMG 2 S	-	-
MIX upgrades	491…	BME 6, DME 2 S, HME 4, JME 4 S, RME 4 S, RME 4 C-load, SME 2 S	Yes	Yes*

* Adjusted parameter display and object numbering.

3.1 Operation

Every channel can be moved by the push buttons on the device (if unlocked).
A status LED shows the current direction of movement.

All bus telegrams are ignored with manual operation switched on (manual button) and the channels are exclusively operated via the buttons.

Mains voltage is required for the functioning of the buttons and LEDs, bus voltage or bus module are not required.

4 Technical data

KNX operating voltage	Bus voltage, < 4 mA
Operating voltage	110 – 240 V AC
Standby	0,3 W / 0,5W[1]
Frequency	50 – 60 Hz
Number of channels	4 / 8[1]
Width	4 module / 8 module[1]
Installation type	DIN rail
Connection type	KNX bus terminal
Max. cable cross-section	Solid: 0.5 mm² (Ø 0.8) to 4 mm² | strand with wire end sleeve: 0.5 mm² to 2.5 mm²
Type of contact	6 A, NO contact
Switch output	Floating
Suitable for SELV	Yes, if all channels switch SELV
Ambient temperature	-5 °C … +45 °C
Protection rating	IP 20
Protection class	II in accordance with EN 60 730-1

[1] JM 8 T

5 The application program "MIX2 V1.A"

5.1 Selection in the product database

Manufacturer	THEBEN AG
Product family	Output
Product type	JMG 4 T
Program name	MIX2 V1.A

The ETS database can be found on our downloads page: www.theben.de/downloads.

Table 2

Number of communication objects:	254
Number of group addresses:	254
Number of associations:	255

5.2 Communication Objects

The objects are divided into channel-related and common objects

5.2.1 Channel-related objects:

Table 3:

No.	Object name	Function	Type DPT	C	R	W	T
0	*JMG 4 T channel C1*	*UP / DOWN*	1 bit 1.008	C	R	W	-
1	*JMG 4 T channel C1*	*Step / stop*	1 bit 1.010	C	R	W	-
2	*JMG 4 T channel C1*	*% Height*	1 byte 5.001	C	R	W	-
3	*JMG 4 T channel C1*	*% Lamella*	1 byte 5.001	C	R	W	-
4	*JMG 4 T channel C1*	*Lock comfort/automatic*	1 bit 1.003	C	R	W	-
5	*JMG 4 T channel C1*	*1 = Lock* *1 = Release*	1 bit 1.003	C	R	W	-
6	*JMG 4 T channel C1*	*Call up/save scenes*	1 byte 18.001	C	R	W	-
7	*JMG 4 T channel C1*	*Enable scenes = 1* *Lock scenes = 1*	1 bit 1.003	C	R	W	-
8	*JMG 4 T channel C1*	*Priority on safety*	2 bit 2.003	C	R	W	-
9	*JMG 4 T channel C1*	*Position A*	1 bit 1.003	C	R	W	-
		Presence	1 bit 1.018	C	R	W	-
10	*JMG 4 T channel C1*	*Position B*	1 bit 1.003	C	R	W	-
		Heating support	1 bit 1.003	C	R	W	-
11	*JMG 4 T channel C1*	*Position C*	1 bit 1.003	C	R	W	-
		Cooling support	1 bit 1.003	C	R	W	-
12	*JMG 4 T channel C1*	*Room temperature*	2 byte 9.001	C	R	W	-
13	*JMG 4 T channel C1*	*Height feedback %* *Height feedback 1 bit*	1 byte 5.001 1 bit 1.009	C C	R R	- -	T T

Continuation:

No.	Object name	Function	Type DPT	C	R	W	T
14	*JMG 4 T channel C1*	*Lamella feedback %*	1 byte 5.001	C	R	-	T
15	*not used*						
16	*JMG 4 T channel C1*	*Start-up mode*	1 bit 1.003	C	R	W	-
17	*JMG 4 T channel C1*	*Receive runtime*	2 byte 7.005	C	R	W	-
		Send runtime	2 byte 7.005	C	R	-	T
18-237	*Channels C2 .. C4 and extension modules: See next table.*						

Table 4: Overview of channel-related objects

BASIC MODULE: JMG 4 T							
C1		C2		C3		C4	
0	9	20	29	40	49	60	69
1	10	21	30	41	50	61	70
2	11	22	31	42	51	62	71
3	12	23	32	43	52	63	72
4	13	24	33	44	53	64	73
5	14	25	34	45	54	65	74
6		26		46		66	
7	16	27	36	47	56	67	76
8	17	28	37	48	57	68	77
1st UPGRADING: JME 4 T							
C1		C2		C3		C4	
80	89	100	109	120	129	140	149
81	90	101	110	121	130	141	150
82	91	102	111	122	131	142	151
83	92	103	112	123	132	143	152
84	93	104	113	124	133	144	153
85	94	105	114	125	134	145	154
86		106		126		146	
87	96	107	116	127	136	147	156
88	97	108	117	128	137	148	157
2nd UPGRADING: JME 4 T							
C1		C2		C3		C4	
160	169	180	189	200	209	220	229
161	170	181	190	201	210	221	230
162	171	182	191	202	211	222	231
163	172	183	192	203	212	223	232
164	173	184	193	204	213	224	233
165	174	185	194	205	214	225	234
166		186		206		226	
167	176	187	196	207	216	227	236
168	177	188	197	208	217	228	237

5.2.2 Common objects:

These objects are partly used by the basic device and the two extension modules.

No.	Object name	Function	Type DPT	Flags			
78	*JMG 4 T*	*Manual*	1 bit 1.003	C	R	W	T
158	*EM1 JME 4 T*						
238	*EM2 JME 4 T*						
79, 159. 239	*not used*						
240	*Central continuous ON*	*For RMG 8S, DME 2 S, SME 2 S*	1 bit 1.001	C	R	W	T
241	*Central continuous OFF*	*For RMG 8S, DME 2S, SME 2S*	1 bit 1.001	C	R	W	T
242	*Central switching*	*For RMG8S, DME 2S, SME 2S*	1 bit 1.001	C	R	W	T
243	*Call up/save central scenes*	*RMG4I/8S,DMG/E2x, JMG/E4x,SME2S*	1 byte 18.001	C	R	W	T
244	*Central safety 1*	*For JMG 4 T (Wind), JME 4 S*	1 bit 1.002	C	R	W	-
245	*Central safety 2*	*For JMG 4 T (Wind), JME 4 S*	1 bit 1.002	C	R	W	-
246	*Central safety 3*	*For JMG 4 T (Wind), JME 4 S*	1 bit 1.002	C	R	W	-
247	*Central up/down*	*For JMG 4 T, JME 4 S*	1 bit 1.008	C	R	W	-
248	*Central safety rain*	*For JMG 4 T*	1 bit 1.002	C	R	W	-
249	*Central safety frost*	*For JMG 4 T*	1 bit 1.002	C	R	W	-
250	*Version of bus coupling unit*	*transmit*	14 byte 16.001	C	R	-	T
251	*Version of basic device*	*transmit*	14 byte 16.001	C	R	-	T
252	*Version of first extension module*	*transmit*	14 byte 16.001	C	R	-	T
253	*Version of second extension module*	*transmit*	14 byte 16.001	C	R	-	T

5.2.3 Description of objects

- **Object 0** "*UP/DOWN*"

Raise the shutter / blinds with “0” and lower with “1”.

- **Object 1** "*Step/Stop*"

If the drive moves it is stopped when a Step/Stop telegram is received.
If the drive is stationary at this point then a short lamella turn (step) is performed on blinds.
With the other drive types the current position is adjusted up or down depending on the specified step direction.

The direction of the step is determined from whether a "0" or "1" is sent to the object.
No step is performed if the configured number of steps for a complete turn has already been reached.

- **Object 2** "*% Height*"

This raises/lowers the shutter/blind to a certain height.
The set point value is expressed in %.
0% ... 3% = upper end position
100% = lower end position
This function can be disabled by the comfort automatic object (see below).

- **Object 3** "*% Lamella*"

Specification of a particular lamella turn in %.
This function can be disabled by the comfort automatic object (see below).

- **Object 4** "*Lock Comfort/Automatic*"

A "1" on this object blocks the functions Drive 1 Height and Drive 1 Lamella.
This function is used to prevent the blind from being adjusted due to external influences, and to thus maintain a preferred blind lamella position.
The Up/Down function (obj. 0) is maintained.

- **Object 5** "*Lock / Release*"

Locks the channel function.
Responses to setting and cancelling the lock can be configured if the lock function has been activated (Function selection parameter page).

- **Object 6** "*Call up/save scenes*"

Only available if the scene function has been activated (Function selection parameter page).
This object can be used to save and subsequently call up scenes.
Saving stores the channel status.
It does not matter how this status is produced (whether via switching commands, central objects or the push buttons on the device). The saved status is re-established when it is called up.
All scene numbers from 1 to 63 are supported.
Each channel can participate in up to 8 scenes.

The scene that has just been active can be ended with the value 63 (= scene 64).
See appendix: The scenes

- **Object 7** "*Lock scenes / Release scenes* "

Locks the scene function with a 1 or a 0 depending on the configuration.
As long as it is locked, scenes cannot be saved or called up

- **Object 8** "*Safety with priority*"

Safety with priority will be used when the shutters or sun protection devices must remain stationary in an end position for a certain time, e.g. for window cleaning.

This operating mode has the highest priority level.
While safety with priority is active, all movement commands (*UP/DOWN, % Height, Step/Stop, Lamella %*), the other safety objects and the manual operation will be ignored.

Value obj. 8	Priority on safety
0	inactive
1	
2	OPEN
3	AB

Safety with priority is ended with a 1 or a 0.

- **Object 9 "***Position A***" or** *"Presence"*

The function of the object depends on whether or not the sun protection counter function has been activated (Function selection parameter page).

Activate sun protection mode	Function	Use
No	*Position A*	With a 1, the drive is brought to the predefined position A (preset or final position). See parameter page *Positions via 1 bit.*
Yes	*Presence*	Presence status for the heating or cooling support. See parameter page *Sun protection.*

- **Object 10 "***Position B***" or** *"Heat support"*

The function of the object depends on whether or not the sun protection counter function has been activated (Function selection parameter page).

Activate sun protection mode	Function	Use
No	*Position B*	With a 1, the drive is brought to the predefined position B (preset or final position). See parameter page *Positions via 1 bit.*
Yes	*Heating support*	Activate heating support See parameter page *Sun protection.*

- **Object 11 "***Position C***",** *"Cooling support"*

The function of the object depends on whether or not the sun protection counter function has been activated (Function selection parameter page).

Activate sun protection mode	Function	Use
No	*Position C*	With a 1, the drive is brought to the predefined position C (preset or final position). See parameter page *Positions via 1 bit.*
Yes	*Cooling support*	Activate cooling support See parameter page *Sun protection.*

- **Object 12 "***Room temperature"*

Receives the current room temperature in °C for the sun protection function.

- **Object 13** *"Height feedback %", "Height feedback 1 bit"*

Current drive height feedback in %.
For devices manufactured as of August 2016: Parameters can also be set as a 1-bit telegram DPT1.009. *See parameter: Format of height feedback.*

- **Object 14 "***Lamella feedback"*

Current lamella position feedback in %.

- **Object 15**

Not used.

- **Object 16 "***Start-up mode"*

0 = Normal mode (no start-up)
1 = Activate start-up mode

- **Object 17** *"Send runtime", "Receive runtime"*

The function of the object is dependent on the selected *Drive runtime setting*:

Setting the drive runtime	Function	Use
Teach in in start-up mode (send)	Only in start-up mode: Sends the runtime that is determined for the channel to all channels that are also in start-up mode.	With the first down command after selection of the start-up mode (obj. 16), the teaching-in of the runtime begins by measuring the time to the next Stop command. As soon as the Stop command takes place, the measured runtime will be saved, the value sent and start-up ended.
via object in start-up mode (receive)	Only in start-up mode: Receives the runtime of the sending channel that has been calculated	Runtime will be received, saved, and start-up ended.
via ETS	not used.	

- **Objects 78, 158, 238 "***Manual***"**

Only available for devices in the MIX2 series (order number 493…)
Puts the relevant module in manual mode or sends the status of the manual operation.

Telegram	Meaning	Explanation
0	Auto	All channels can be operated via the bus as well as via the buttons.
1	Manual	The channels can only be operated via the buttons on the device. Bus telegrams (except Safety) will not work.

The duration of manual mode, i.e. the *function of the manual button* can be configured on the parameter page *General*.

- **Object 240 "***Central permanent ON***"**

Not used.

- **Object 241 "***Central permanent OFF***"**

Not used.

- **Object 242 "***Central switching***"**

Not used.

- **Object 243 "***Call up/save central scenes***"**

Central object for using scenes.
This object can be used to save and subsequently call up "scenes".

Works on the following devices:
RMG 4 I / RME 4 I, RMG 8 S / RME 8 S, RMG 8 T / RME 8 T, DMG 2 T / DME 2 T, JMG 4 T / JME 4 T, RME 4 S / C-Last, DME 2 S, SME 2 S, JME 4 S.

See appendix: The scenes

- **Objects 244, 245, 246 "***Central safety 1, 2, 3***"**

The safety objects allow a specific response of the drives to a particular situation with a high priority. These objects can, for example, be linked with 3 differently placed wind sensors (weather stations).

Example:
A safety object is linked to a wind sensor.
A drive to which a textile sun protection device is connected is configured to react to this safety object.
The operating condition is normal as long as a “0” is present.
In the event of a storm, the wind sensor sends a "1" to the safety object and the sun protection is immediately moved to the configured safety position.

Notes:
1. A safety object must only be actuated by one device, as otherwise conflicting commands could cancel each other out.
2. With a request for safety objects e.g. via the ETS function "Read value":
   If the "Safety on" status arises through cyclical monitoring, the object value remains at 0.
3. The safety statuses must be reinstalled after download.

Works on the following devices: JMG 4 T, JME 4 T, JME 4 S, RMG 8 T, RME 8 T.

- **Object 247 "***Central Up/Down***"**

This object can be used to centrally control all drives which are configured for it.
For example, all of the shutters on one facade can be raised or lowered at the same time at the push of a button.
0 = raise
1 = lower

Works on the following devices: JMG 4 T, JME 4 T, JME 4 S, RMG 8 T, RME 8 T.

- **Object 248** *"Central safety rain"*

This object can be used to move all drives which are configured for it into a defined position when there is a central rain alarm.
Works on the following devices: JMG 4 T, JME 4 T, RMG 8 T, RME 8 T.

- **Object 249** *"Central safety frost"*

This object can be used to move all drives which are configured for it into a defined position when there is a central frost alarm.
Works on the following devices: JMG 4 T, JME 4 T, RMG 8 T, RME 8 T.

- **Object 250 "***Version of bus coupling unit***"**

For diagnostic purposes only.

Sends the bus coupling unit software version after reset or download.
Can also be read out via the ETS.

Format: **A**xx **H**yy **V**zzz

Code	Meaning
xx	00 .. FF = Version of application without dividing point (10 = V1.0, 11 = V1.1, etc.).
yy	Hardware version 00..99
zzz	Firmware version 000..999

EXAMPLE: A14 H03 V014
- ETS Application Version 1.4
- Hardware version $03
- Firmware version $14

- **Object 251** "*Version of basic device*"

For diagnostic purposes only.
Only for basic devices in the MIX2 series (order number 493…).

Sends the software version (firmware) of the basic device after reset or download.
Can also be read out via the ETS.

The version is issued as an ASCII character string.
Format: **M**xx **H**yy **V**zzz

Code	Meaning
xx	01 .. FF = Module code (hexadecimal).
yy	Hardware version 00..99
zzz	Firmware version 000..999

EXAMPLE: M14 **H**25 **V**025
- Module $14 = JMG 4 T
- Hardware version V25
- Firmware version V25

Possible module codes (04.2014)

Module	Code
Module or mains voltage are unavailable.	$00
RMG 8 S	$11
RMG 4 I	$12
DMG 2 T	$13
JMG 4 T/JMG 4 T 24V	$14
HMG 6 T	$15
RMG 8 T	$17

- **Object 252** "*Version of first extension module*"

Telegram format: See above, object 251

Possible module codes (04.2014)

Module	Code
Module or mains voltage are unavailable.	$00
RME 8 S	$11
RME 4 I	$12
DME 2 T	$13
JME 4 T/JME 4 T 24V	$14
HME 6 T	$15
RME 8 T	$17

- **Object 253 "***Version of second extension module***"**

See above, object 252

5.3 Parameter

5.3.1 Parameter pages

Table 5

Function	Description
General	Selection of module and central parameters.
BASIC MODULE: JMG 4 T	General parameters for the basic device: Relay switching delay
JMG 4 T channel Cx Function selection	Characteristics of channel and activation of additional functions (scenes, sun protection, lock, etc.).
Drive settings	Direction of movement, runtimes, etc.
Sun protection	Heating and cooling support settings.
Locking function	Type of lock telegram and response to locking.
Safety wind / rain / frost	Priority and participation in the safety objects for wind, rain and frost.
Presets	8 preset heights and lamella positions that can be called up via scenes or 1-bit objects
Scenes	Selection of scene numbers relevant to the channel.
Positions over 1 bit	Behaviour when calling up or leaving the 1-bit positions
Loss of power and restoration	Behaviour during failure and restoration of bus and mains power.

5.3.2 Parameter description

Settings that lead to the display of other pages or functions are identified by ...
Example: *Pulse function*

5.3.2.1 The "*General*" parameter page

Designation	Values	Description
Type of basic module	***Select device.*** *RMG 8 S..* *RMG 8 T..* *RMG 4 I..* *DMG 2 T..* *JMG 4 T/JMG 4 T 24V..* *HMG 6 T..*	Selection of available basic device (MIX2 series only)
Type of first extension module	***not available/inactive*** *RME 8 S..* *RME 8 T..* *RME 4 I..* *DME 2 T..* *JME 4 T/JME 4 T 24V..* *HME 6 T..* *RME 4 S or RME 4 C-load..* *DME 2 or SME 2..* *BME 6..* *JME 4 S..* *HME 4..*	Selection of first extension module, if available. (MIX or MIX2 series)
Type of second extension module	***not available/inactive*** *RME 8 S..* *RME 8 T..* *RME 4 I..* *DME 2 T..* *JME 4 T/JME 4 T 24V..* *HME 6 T..* *RME 4 S or RME 4 C-load..* *DME 2 or SME 2..* *BME 6..* *JME 4 S..* *HME 4..*	Selection of second extension module, if available. (MIX or MIX2 series)
Time for cyclical sending of feedback object (MIX series, order no. 491...)	*2 minutes, 3 minutes,* *5 minutes, 10 minutes,* ***15 minutes,** 20 minutes* *30 minutes, 45 minutes* *60 minutes*	This parameter is used exclusively for MIX series extension modules. (DME 2 S, SME 2, JME 4 S, BME 6 RME 4 S / C-Load, and HME 4)

Continuation:

Designation	Values	Description
Function of manual button (MIX2 series, order no. 493...)	*applies for 24 hours or until reset via object* *disabled* ***applies until reset via object*** *applies for 30 minutes or until reset via object* *applies for 1 hour or until reset via object* *applies for 2 hours or until reset via object* *applies for 4 hours or until reset via object* *applies for 8 hours or until reset via object* *applies for 12 hours or until reset via object*	Determines how long the device works manually and how this is ended. In manual mode, the channels can only be switched on and off via the push buttons on the device. See also: Object 78 This parameter is used exclusively for MIX2 series devices.
Manual operation of channels (MIX2 series, order no. 493...)	***enabled*** *disabled*	The channels can be operated via the buttons on the device. No manual operation, the buttons on the device are locked.

5.3.2.2 The parameter page "*Basic device JMG 4 T*"

Designation	Values	Description
Relay switching delay		This parameter sets the minimum delay between switching on two relays if several are activated at the same time. The shortest delay is achieved by using the central ON/OFF object (Obj. 247). When switching via individual telegrams (1 telegram per channel), the bus running time and the sequential processing of commands causes an additional delay. This can help avoid high current peaks when devices are switched on simultaneously
	None	There is no added delay.
	60 ms *100 ms* *200 ms*	When a relay has switched on, the next one (within the module) can only switch on after the set delay is completed. The switch-on delay between the first and last relay is calculated according to the following formula: (Number of channels – 1) x delay **Example:** JMG 4 T and 60 ms: = (4 channels – 1) * 60 ms = 180 ms → Channel C4 switches 180 ms after C1. The same applies for the first or second extension module.

5.3.2.3 The parameter page "*JMG 4 T channel Cx: function selection*"

Table 6

Designation	Values	Description
Copy main parameters from channel C1		For channels C2..C4 only. The copy function simplifies the configuration of identical channels by many settings only having to be entered on the first channel.
	Yes	The following parameter settings are taken directly from channel C1: - Type of motor - Type of curtain - Safety wind / rain / frost - Loss of power and restoration
	No	No settings are taken from C1.
Type of motor	***electromechanical***	For standard drives without electronic control
	electronic	Only use motors with fitted control electronics: In this setting in support mode the buttons for both directions can be pressed at the same time (configure or reset drive). See appendix: Support mode for the commissioning of electronic motors
Type of curtain	***Blinds*** *Shutter / awning / general drive...*	The type of curtain which is to be actuated
Setting the drive runtime	***via ETS***	Runtime is set on the parameter page *Drive settings*.
	Teach in in start-up mode (send)	In Start-up mode this channel should send the taught-in runtime to the other channels.
	via object in start-up mode (receive)	In Start-up mode this channel should receive and apply the taught-in runtime from another channel.

Continuation:

Designation	Values	Description
Response after download		Not available with *Drive runtime setting = via ETS.*
	Maintain runtime	Download has no influence on the taught-in runtime
	Delete runtime	Taught-in runtime is deleted during download.
Activate sun protection mode	*Yes*	Activate sun protection function with heating or cooling support. In this setting, the function *Positions via 1 Bit* is not available
	No	Page with *Positions via 1-bit* is available.
Activate lock function	*Yes..* ***no***	Should the lock function be used?
Activate scenes	*Yes..* ***no***	Should scenes be used?
Direction of drive run	*normal*	Standard setting: Curtain moves from top to bottom.
	inverted	For special applications or quick fix for wrongly wired devices (up/down directions mixed up).
Additional functions for devices manufactured as of August 2016		
Comfort/Auto locked on UP/DOWN/STOP command *(for devices as of August 2016)*		Suppression of the Comfort/Auto function by manual positioning via On, Off or Stop telegrams.
	no, only via object Comfort/Automatic	No suppression (as prior to August 2016): *Comfort/Auto* remains active after manual positioning.
	yes, and via object Comfort/Automatic OFF	*Comfort/Auto* can be ended both by manual positioning and via the object *Comfort/Automatic*.
	yes, and after 0.5hrs OFF *yes, and after 1hr OFF* … *yes, and after 2hrs OFF* … *yes, and after 48hrs OFF*	The *Comfort/Auto* function is locked for the set time via manual positioning. Once this time has lapsed, Comfort/Auto is active once again and the drive reacts to height telegrams. The block can be ended at any time via the object *Comfort / Automatic* (=0).
Format of height feedback *(for devices as of August 2016)*	*%*	Standard (as prior to August 2016).
	1 bit	New: The location is sent as a 1-bit telegram (DPT1.009). 0%, open = 0 > 0%, closed = 1

5.3.2.4 The "*Drive settings*" parameter page

Table 7

Designation	Values	Description
Complete runtime Down (s)	Manual input 5 .. 500	Only available when *Drive runtime setting = via ETS*. Enter the measured runtime for descending (in seconds).
Runtime adjustment for ascent (s)	Manual input -15 .. +15	Enter difference between runtime when ascending and runtime (in seconds) when descending. Adjustment value = $t_{Up} - t_{Down}$
Step duration of Step/Stop object	*No steps* *250 ms* *500 ms* ***1 s*** *2 s* *3 s* *4 s* *5 s* *6 s* *7 s* *10 s*	Only for *shutters / awnings / general drive.* This specifies whether or not it should be possible to adjust the drive in small steps, and it also specifies the duration of a single step.
Complete turn of lamella 4 ... 250 [x100ms]	*4 .. 250*	Enter the measured turn time of the lamella in increments of 100ms. 10 = 10 x 100ms = 1s
No. of steps for a complete turn	*3 Steps* *4 Steps* ***7 Steps*** … *12 Steps*	This specifies the number of individual steps a complete lamella turn is to be divided into (3 to 12).
On receipt of a step/stop command	***Process immediately (recommended)*** *Wait 0.3 s to see if an UP/DOWN command follows* *Wait 0.4 s to see if an UP/DOWN command follows* *Wait 0.5 s to see if an UP/DOWN command follows*	Every received step command is carried out immediately Step commands are only executed if no run command is received within the set time. These settings apply to buttons which, when pressed and held, first send a step command and then a run command.

Continuation:

Designation	Values	Description
Tighten fabric (awnings)	*Yes*	Only for *shutters / awnings / general drive.* At values above 70%, the curtain, awning or shutters will be retightened afterwards by moving back briefly. On a shutter it is guaranteed that the vent slots will remain open.
	No	No tensioning.
Pause time before reversal of direction	***0.5 s*** *1 s* *2 s* *3 s*	Pause introduced to protect the drive motor against conflicting commands (e.g. if a descend command is received while ascending). This setting depends on the information supplied by the manufacturer of the drive.
Automatic execution of the lamella object value [%] after the height object [%]	***Yes*** *No*	Selection whether or not the lamella position (according to the lamella object *% Lamella*) is to be resumed after the height adjustment via the height object *% Height*.
Assignment of the 0% position to the lamella objects [%]	***0% corresponds to lamella position on lowering*** *0% corresponds to lamella position on ascending*	Input of the starting position for the calculations of the lamella turn.
Participation in central Up/Down object	***Yes*** *No*	Should the drive respond to the central object?
Transmission of feedback	***only at change*** *cyclically and at change*	When should feedback (Obj. *Lamella feedback* and *Height feedback*) be sent?
Time for cyclical transmission of feedback	*2 minutes, 3 minutes, 5 minutes, 10 minutes,* ***15 minutes****, 20 minutes, 30 minutes, 45 minutes 60 minutes*	If cyclically, at what interval?

5.3.2.5 The parameter page "*Sun protection*"

This page can be activated on the Function selection parameter page.

Table 8

Designation	Values	Description
Desired room temperature during sun protection mode	*15 °C, 16 °C, 17 °C, 18 °C* *19 °C, 20 °C, 21 °C, 22 °C* *23 °C, 24 °C, 25 °C, 26 °C* *27 °C, 28 °C, 29 °C, 30 °C*	Set point value for the Heating or cooling support (see below).
Response to presence in sun protection mode (presence object = 1)	*Preset 1, Preset 2* *Preset 3, Preset 4* *Preset 5, Preset 6* *Preset 7, Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position *Lower end position*	Approach an end position.
	no reaction, unchanged	Do not react.
	Update (height / lamella)	Approach the last received position.
Response to heating support		If the conditions for heating support are fulfilled, i.e.: - Obj. 10 = 1 (heating support) - Obj. 9 = 0 (room not occupied) - Room temperature < *Desired room temperature during sun protection mode* Then heating by solar radiation should be **favoured** with the following setting.
	Preset 1, Preset 2 *Preset 3, Preset 4* *Preset 5, Preset 6* *Preset 7, Preset 8*	Approach a preset position. Recommended for blinds as the height and the lamella inclination can be set. See parameter page Presets.
	Top end position	**Recommended.**
	Lower end position	only for special applications.

Continuation:

Designation	Values	Description
Response when heating support is no longer needed	*Preset 1, Preset 2* *Preset 3, Preset 4* *Preset 5, Preset 6* *Preset 7, Preset 8* *Top end position* *Lower end position* ***no reaction, unchanged*** *Update (height / lamella)*	Approach a preset position. See parameter page Presets. Approach an end position. Do not react. Approach the last received position.
Response to cooling support		The conditions for cooling support are fulfilled when, i.e.: - Obj. 11 = 1 (cooling support) - Room temperature > *Desired room temperature during sun protection mode* Then heating by solar radiation should be **prevented** with the following setting.
	Preset 1, Preset 2 *Preset 3, Preset 4* *Preset 5, Preset 6* *Preset 7, Preset 8* *Top end position* ***Lower end position***	Approach a preset position. Recommended for blinds as the height and the lamella inclination can be set. See parameter page Presets. only for special applications. Recommended for shutters and textile sun protection.
Response when cooling support is no longer needed	*Preset 1, Preset 2* *Preset 3, Preset 4* *Preset 5, Preset 6* *Preset 7, Preset 8* *Top end position* *Lower end position* ***no reaction, unchanged*** *Update (height / lamella)*	Approach a preset position. See parameter page Presets. Approach an end position. Do not react. Approach the last received position.

5.3.2.6 The "*Lock function*" parameter page

This page can be activated on the Function selection parameter page.

Table 9

Designation	Values	Description
Lock telegram	***lock with ON telegram***	0 = Enable 1 = Lock
	lock with OFF telegram	0 = Lock 1 = Enable **Note:** The lock is always deactivated after reset.
Response when setting the lock	*Preset 1* *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position *Lower end position*	Approach an end position.
	unchanged (stop upon command)	Do not react. The drive should stop when a lock command is received during a movement.
Response when cancelling the lock	*Preset 1* *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position *Lower end position*	Approach an end position.
	unchanged (stop upon command)	Do not react. The drive should stop when a lock command is received during a movement.
	Update (height / lamella)	Approach last received position.

5.3.2.7 The parameter page "*Safety Wind / Rain / Frost*"

Table 10

Designation	Values	Description
Priority of safety objects	***1. Wind 2. Rain, 3. Frost*** *1. Wind, 2. Frost, 3. Rain* *1. Rain, 2. Wind, 3. Frost* *1. Rain, 2. Frost, 3. Wind* *1. Frost, 2. Wind, 3. Rain* *1. Frost, 2. Rain, 3. Wind*	If wind, rain and frost alarm occur together, the parameters of the object with the highest priority will be implemented. Example: 1. Rain, 2. Frost, 3. Wind The parameters with priority 1 apply, i.e. *Start* and *End* of *Safety rain.* If the rain alarm (Priority 1) is cancelled, the parameters for the object with priority 2 apply, here *Frost - Start*. If the object with priority 2 is also cancelled, the one with priority 3 applies.
Monitor safety objects cyclically	***No*** *every 10 min* *every 20 min* *every 60 min*	No monitoring. After power failure the safety object will be reset to 0. Safety objects that do not receive any telegrams within the time set here will be handled as if they had received an ON telegram and trigger an alarm (e.g. WIND, etc.). The sender of the safety telegrams (e.g. weather station) must transmit them cyclically. *Max. cycle time = Monitoring time/2* Example: Monitoring time = every 20 minutes, cyclical transmission time = 10 min or less.

Continuation:

Designation	Values	Description
Participation in safety WIND	*Yes* ***No***	Should channel react to wind alarm?
Source(s)	*Safety object 1 wind* *Safety object 2 wind* *Safety object 3 wind* *Safety object 1 + 2 (OR linked)* *Safety object 1 + 3 (OR linked)* *Safety object 2 + 3 (OR linked)* ***Safety object 1 + 2 + 3 (OR linked)***	Which safety objects are used for wind alarm?
Start		Start on wind alarm:
	Preset 1 *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position	Approach an end position.
	Lower end position	
	unchanged (stopped upon command)	Do not react. The drive should stop upon safety start during a movement.
end		End on wind alarm:
	same as before safety	move back to the previous position.
	Preset 1 *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position	Approach an end position.
	Lower end position	
	Update (height / lamella)	Approach last received position.
	No reaction	Do not react.

Continuation:

Designation	Values	Description
Participation in safety RAIN	*Yes* ***No***	Should channel react to rain alarm?
Start		Start on rain alarm:
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	unchanged (stopped upon command)	Do not react. The drive should stop upon safety start during a movement.
end		End on rain alarm:
	same as before safety	move back to the previous position.
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	Update (height / lamella)	Approach last received position.
	No reaction	Do not react.
Participation in safety FROST	*Yes* ***No***	Should channel react to frost alarm?
Start		Start on frost alarm:
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	unchanged (stopped upon command)	Do not react. The drive should stop upon safety start during a movement.

Continuation:

Designation	Values	Description
end		End on frost alarm:
	same as before safety	move back to the previous position.
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	Update (height / lamella)	Approach last received position.
	No reaction	Do not react.
Response after priority on safety		Safety with priority will be used when the shutters or sun protection devices must remain stationary in an end position for a certain time, e.g. for window cleaning. See Object 8 This operating mode has the highest priority level.
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	no reaction, unchanged	Do not react.
	Update (height / lamella)	Approach last received position.

5.3.2.8 The parameter page "*Presets*"

The user can freely configure the presets for drive height and lamella position.
These can, for example, be called up with *Safety* with *Set or cancel the lock* or when a scene is cancelled.

Table 11

Designation	Values	Description
Preset 1		
Position	*0 %, 10 %, 20 % 30 %, 40 %, 50 % 60 %, 70 %, 80 % 90 %, 100 %, no change*	Desired drive height and lamella position for preset 1
Lamella	*0 %, 10 %, 20 % 30 %, 40 %, 50 % 60 %, 70 %, 80 % 90 %, 100 %, no change*	
Preset 2		
Position	*See above*	Desired drive height and lamella position for preset 2
Lamella	*See above*	
Preset 3		
Position	*See above*	Desired drive height and lamella position for preset 3
Lamella	*See above*	
Preset 4		
Position	*See above*	Desired drive height and lamella position for preset 4
Lamella	*See above*	
Preset 5		
Position	*See above*	Desired drive height and lamella position for preset 5
Lamella	*See above*	
Preset 6		
Position	*See above*	Desired drive height and lamella position for preset 6
Lamella	*See above*	
Preset7		
Position	*See above*	Desired drive height and lamella position for preset 7
Lamella	*See above*	
Preset 8		
Position	*See above*	Desired drive height and lamella position for preset 8
Lamella	*See above*	

5.3.2.9 The "*Scenes*" parameter page

This page appears when the *Scenes* are activated on the *Function selection* parameter page.
Each channel can participate in up to 8 scenes.
Each of these 8 scenes reacts to a specific, freely configurable scene number.
When the associated number is called up, the taught-in position will be approached.

Each of the 8 scenes is preconfigured with a position from the preset page.
When a scene number that has not been taught in is received, this preset position will be called up.

Table 12

Designation	Values	Description
Lock telegram for scenes	***Lock with ON telegram***	0 = Enable 1 = Lock
	lock with OFF telegram	0 = Lock 1 = Enable **Note:** With this setting the scenes are always locked immediately after reset or download.
All channel scene statuses	***Overwrite on download***	A download deletes all scene memories in a channel, i.e. all previously taught scenes. When a scene number is called, the channel assumes the configured *Status after download* (see below). See appendix: Teach-in scenes without telegrams
	Unchanged after download	All previously taught-in scenes are saved. However, the scene numbers the channel should react to can be changed (see below: *Channel reacts to*).
Participation in central scene object	***No*** *Yes*	Should the device react to the central scene object?

Continuation:

Designation	Values	Description
Response when unlocking the scene (with scene value 63)		Behaviour when object 6 receives the value 63 ($3F) and thus the current scene is cancelled.
	Preset 1 *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8*	Approach a preset position. See parameter page Presets.
	Top end position *Lower end position*	Approach an end position.
	No reaction	Do not react.
	Update (height / lamella)	Approach last received position.
1st scene - Preallocated preset 1		
Channel reacts to	*No scene number* ***Scene number 1 (value = 0)*** … *Scene number 63 (value = 62)*	First of the 8 possible scene numbers the channel is to react to.
Comment for this scene number	*(Enter name)*	Description or comment for this scene number.
Lock comfort/automatic during this scene	***No***	During this scene the channel continues to react to height and lamella telegrams.
	Yes	During this scene the channel no longer reacts to height and lamella telegrams. The Up/Down function is maintained.
Permit teach-in	*No*	Scenes can only be called up.
	Yes	The user can both call up and teach-in or amend scenes.
2nd scene - Preallocated preset 2		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* ***Scene number 2 (value = 1)*** … *Scene number 63 (value = 62)*	Second of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.

Continuation:

Designation	Values	Description
3rd scene - Preallocated preset 3		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 3 (value = 2)*** … *Scene number 63 (value = 62)*	Third of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.
4th scene - Preallocated preset 4		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 4 (value = 3)*** … *Scene number 63 (value = 62)*	Fourth of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.
5th scene - Preallocated preset 5		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 5 (value = 4)*** … *Scene number 63 (value = 62)*	Fifth of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.
6th scene - Preallocated preset 6		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 6 (value = 5)*** … *Scene number 63 (value = 62)*	Sixth of the 8 possible scene numbers

Continuation:

Designation	Values	Description
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.
7th scene - Preallocated preset 7		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 7 (value = 6)*** … *Scene number 63 (value = 62)*	Seventh of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.
8th scene - Preallocated preset 8		
Channel reacts to	*No scene number* *Scene number 1 (value = 0)* … ***Scene number 8 (value = 7)*** … *Scene number 63 (value = 62)*	Last of the 8 possible scene numbers
Comment for this scene number	*(Enter name)*	See above.
Lock comfort/automatic during this scene	***No*** *Yes*	See above.
Permit teach-in	*No* ***Yes***	See above.

5.3.2.10 The parameter page "*Positions via 1 bit*"

This page will only be shown when the *Sun protection* function is **not** activated on the *Function selection* parameter page.
3 individual preallocated positions can be called up using 1-bit objects (Obj. 9, 10, 11).

Table 13

Designation	Values	Description
Position A		
Response when receiving a 1	*Preset 1* *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8* ***Top end position*** *Lower end position*	Approach a preset position. See parameter page Presets. Approach an end position.
Response when receiving a 0	*Preset 1* *Preset 2* *Preset 3* *Preset 4* *Preset 5* *Preset 6* *Preset 7* *Preset 8* *Top end position* *Lower end position* ***No reaction*** *Update (height / lamella)*	Approach a preset position. See parameter page Presets. Approach an end position. Do not react. Approach last received position.
Position B		
Response when receiving a 1	*See above*	Desired drive height or lamella position for position B
Response when receiving a 0	*See above*	
Position C		
Response when receiving a 1	*See above*	Desired drive height or lamella position for position C
Response when receiving a 0	*See above*	

5.3.2.11 The "*Power loss and restoration*" parameter page

Table 14

Designation	Values	Description
Response in the event of download and bus failure		After download or with loss of bus voltage...
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	No reaction	Do not react.
Behaviour after restoration of the mains supply or bus supply		After return of mains or bus supply...
	Preset 1	Approach a preset position.
	Preset 2	See parameter page Presets.
	Preset 3	
	Preset 4	
	Preset 5	
	Preset 6	
	Preset 7	
	Preset 8	
	Top end position	Approach an end position.
	Lower end position	
	No reaction	Do not react.

6 Typical applications

These typical applications are designed to aid planning and are not to be considered an exhaustive list.
It can be extended and updated as required.

6.1 Basic switching, simple blind control

The push button interface TA 4 controls the blinds actuator JMG 4 T.
1 single push button is connected to the push button interface TA 4 for each set of blinds (single-surface operation).
Depending on whether the push buttons are pressed for a short or long time, the push button interface sends an up/down or step/stop telegram.
The blinds should be raised in the evenings and remain open at night.
For this purpose the timer TR 648 top2 RC is programmed in such a way that channel 1 sends an Off telegram (astro-pulse) to the central UP/DOWN object.

6.1.1 Devices:

- JMG 4 T (order. no. 4930250)
- TA 4 (order no. 4969204)
- TR 648 top2 RC-DFC or RC (6489210/6489212)

6.1.2 Overview

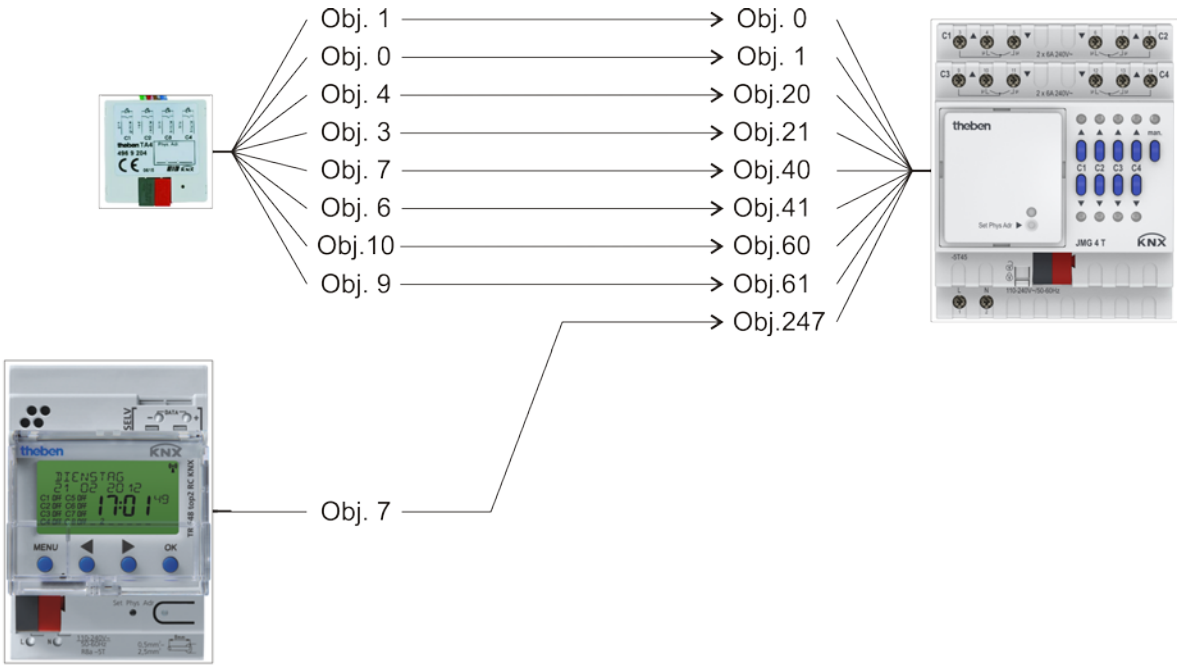


Figure 1

From top to bottom:

- The push button interface: operation by the user (up/down, step/stop).
- The time switch: sends an OFF telegram at sunset as an OFF command for all blinds.

6.1.3 Objects and links

Table 15

No.	TA 4 Object name	No.	JMG 4 T Object name	Comment
1	*Blind channel 1* *Up / Down*	0	*JMG 4 T C1* *Up / Down*	Long push button press for Up / down run commands. Short press of push-button for Step / stop commands.
0	*Blinds channel 1* *Step / stop*	1	*JMG 4 T C1* *Step / stop*	
4	*Blinds channel 2* *Up / Down*	20	*JMG 4 T C2* *Up / Down*	
3	*Blinds channel 2* *Step / stop*	21	*JMG 4 T C2* *Step / stop*	
7	*Blinds channel 3* *Up / Down*	40	*JMG 4 T C3* *Up / Down*	
6	*Blinds channel 3* *Step / stop*	41	*JMG 4 T C3* *Step / stop*	
10	*Blinds channel 4* *Up / Down*	60	*JMG 4 T C4* *Up / Down*	
9	*Blinds channel 4* *Step / stop*	61	*JMG 4 T C4* *Step / stop*	

Table 16

No.	TR 648 top2 Object name	No.	JMG 4 T Object name	Comment
7	*C1.1 Switching channel - switching*	247	*Central up/down*	Timer sends an OFF telegram at sunset. All drives are run up.

6.1.4 Important parameter settings

The standard parameter settings apply for unlisted parameters or user's own parameter settings.

Table 17: TA 4

Parameter page	Parameter	Setting
Channel 1.. Channel 4	*Channel function*	*Blinds*
	Operation	*Single-surface operation*

Table 18: JMG 4 T

Parameter page	Parameter	Setting
JMG 4 T	*Type of curtain*	*Blinds*

Table 19: TR 648 top2 KNX

Parameter page	Parameter	Setting
General	*Activate time switch channel C1*	*Yes*
Switching channel C1	*Telegram type C1.1**	*Switching command*
	With clock → ON	*no telegram*
	With clock → OFF	*send following telegram once*
	Telegram	*OFF*

* Channel C1 of the TR 648 top2 timer is programmed as an Astro-channel.
This channel should generate a 1 s long astro-pulse at sunset.
An OFF telegram will be sent when the pulse is switched off.

6.2 Blinds control with sun position tracking and frost alarm

In this example, for simplicity, the focus is on the sun position tracking.
For this reason, all other comfort functions such as
heating/cooling support, etc. are deliberately not listed here.

The weather station Meteodata 140 controls the lamella tilt in accordance with the sun position.
This helps achieve optimal light incidence without direct solar radiation.
The blinds should be raised when there is a danger of frost. The object *Central safety frost* is involved in this.

6.2.1 Devices:

- JMG 4 T (order. no. 4930250)
- Meteodata 140 (order no. 1409200)
- TA 4 (order no. 4969204)

6.2.2 Overview

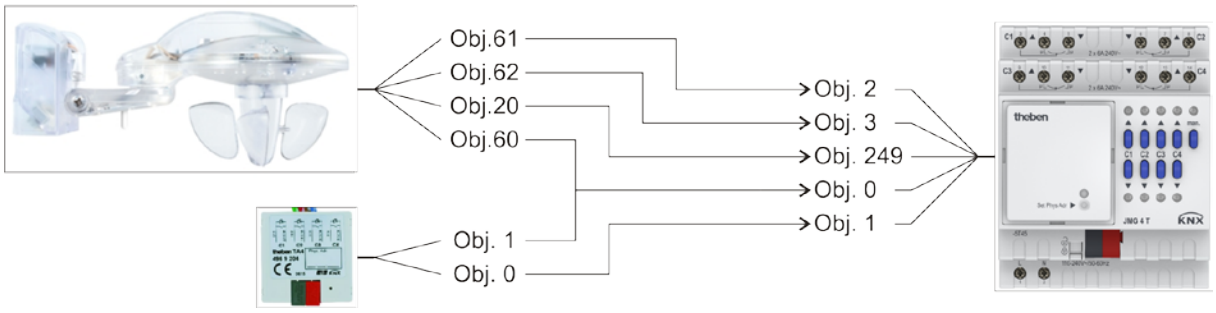


Figure 2

From top to bottom:

- The weather station: sends the telegrams for positioning of the blinds according to the position of the sun.
  If no shading is required, the blinds will be raised (obj. 60).
- The push button interface: operation by the user (up/down, step/stop).

6.2.3 Objects and links

Table 20

No.	Meteodata 140 Object name	No.	JMG 4 T Object name	Comment
20	*C1.1 Switching*	249	*Central safety frost*	The safety telegram is sent by Meteodata (*C1.1 Universal channel*).
60	*C11 up/down*	0	*JMG 4 T C1 Up / Down*	-
61	*C11 Blinds height*	2	*% Height*	-
62	*C11 Lamella position*	3	*% Lamella*	-

Table 21

No.	TA 4 Object name	No.	JMG 4 T Object name	Comment
0	*Blind channel 1 Step / stop*	1	*JMG 4 T C1 Step / stop*	Long keystroke for Up / down run commands. Short press of push-button for Step / stop commands.
1	*Blind channel 1 Up / Down*	0	*JMG 4 T C1 Up / Down*	

6.2.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

Table 22: Meteodata 140

Parameter page	Parameter	Setting
General	*Activate universal channel C1*	*Yes*
	Activate sun protection channel C11	*Yes*
Universal channel C1: Function	*Channel function*	*Temperature sensor*
	Temperature threshold	*below 4 °C*
	Temperature hysteresis	*1.0 K*
Sun protection channel C11	*Channel controls*	*Blinds*
	Sun position adjustment	*yes..*
	Drive height when brightness threshold is exceeded	*100 %*
Sun control	*Activation of sun control*	*Via dawn/dusk threshold*
Sun position adjustment	The individual location and user-dependent settings apply here.	

Table 23: JMG 4 T

Parameter page	Parameter	Setting
JMG 4 T channel C1: Function selection	*Type of curtain*	*Blinds*
Safety wind / rain / frost	*Participation in safety wind*	*No*
	Participation in safety rain	*No*
	Participation in safety frost	*Yes*
	Start	*Top end position*
	end	*Update (Height / Lamella)*

7 Appendix

7.1 Manual mode

This mode can be set or reset with the manual button or via object 78 (manual).
The object can be locked on the general parameter page.
Whether manual mode should be ended after the expiry of a set time can also be defined.

The positions of the curtains will be frozen.
All non-safety related bus telegrams are disabled, i.e. only the safety commands (objects 8, 244, 245, 246, 248, 249) can still be executed.

Any current run commands will be terminated when the specified position or the end position is reached. The condition will be reported to the associated object.

After cancelling manual mode, the bus telegrams work again. Bus events already received will not be obtained later.
Manual mode will be reset after power returns.

7.2 The start-up mode

The start-up mode enables runtime to be determined automatically.

The runtime of the drives can be defined in 3 ways, of which the start-up mode only concerns 1 and 2.

1. *Teach in in start-up mode* (through movement commands).
2. *via object in start-up mode* (runtime received via an object).
3. Manual *input of the runtime via ETS.* (no start-up mode

Remarks:
After being set once, the runtime is saved and is preserved even after a reset.
If the runtime has still not been determined, a replacement runtime of 50 s will be assumed.

7.2.1 *Teach in in start-up mode*:

The runtime of a drive will be determined by a manual movement, saved and sent to all other channels.
A rapid and effective teaching-in method for facades with identical drives (i.e. identical runtimes).

Initially a (reference) channel is selected with which the runtime should be determined (Parameter: *Setting of the runtime of the drives = Teaching in in start-up mode*).
All other channels (channels to be taught in) will be set to "*via object in start-up mode*" and thus receive the runtime of the reference channel.

7.2.1.1 Sequence

For all channels, i.e. reference channel and channels to be taught in, the following applies:

- All start-up mode objects (obj. 16 etc.) receive a common group address (e.g. 1/1/1).
- All runtime objects (*Send runtime + receive runtime*) also receive a common group address (e.g. 1/1/2).

All *start-up mode* objects (obj. 16, etc.) will be set to 1 via bus command.
Then both reference channel LEDs flash briefly every second.

With the first DOWN command after selection of the start-up mode, the teaching-in of the runtime begins by measuring the time to the next Stop command.

The channel reacts to Up/Down, Step Stop and to the Up/Down buttons on the device.
During a movement, the corresponding LED lights up permanently. The other LED continues to flash.

If the device received UP commands, or Stop commands, they will be carried out.
So, for example, if it has not yet been done, the curtain can be brought into the end position.

As soon as the stop command is given:

- the measured runtime is saved
- the value is sent
- the start-up is ended

After 10 minutes without operation, the start-up mode is ended automatically.
No start-up is possible during safety or safety with priority.

7.3 Sun protection with heating and cooling support

If the sun protection function is active, the parameter page "*Positions via 1-bit*" is shown.

The heating or cooling support enables a reduction in energy costs through the targeted use or avoidance of solar radiation in unoccupied rooms.

For this purpose the sun protection function uses the information of the input objects:

- Presence
- Ambient room temperature
- Heating support
- Cooling support

The *cooling support* and *heating support* information is generated in either the Meteodata 139 weather data receiver or in a weather station.

The Meteodata 139 weather receiver already contains all objects and parameters required for optimal heating and cooling support.

In a weather station, the following data will be involved:

- The sun shines (high lux value)
- The external temperature has a specific value (cooling support).

The behaviour of the curtain, when someone is present during sun protection, can be configured.
"*During sun protection*" means that heating or cooling support is active.

In manual mode the objects for sun protection are received and analysed, however only implemented after the return to automatic mode.

7.3.1 Heating support

7.3.1.1 Principle

In the cool season, solar radiation through the window can make a significant contribution to heating up a room.
The goal of the heating support is the optimal use of this additional energy source in unoccupied rooms.
This is accomplished by always moving up sun protection equipment fully automatically when conditions are favourable.
However it is possible to individually select the position of the sun protection device when there is heating support.

7.3.1.2 Conditions

The conditions for heating support are fulfilled when:

- A room is not occupied. (Presence = 0*) **and**
- The room temperature falls below the configured *Desired room temperature during sun protection* **and**
- Heating support is requested via the corresponding object (obj. 10).

If all conditions are fulfilled, the position configured for this purpose will be approached.

The heating support is no longer needed

- The room temperature is above the configured temperature +2K **or**
- The heating support is cancelled (Obj. 10 = 0).

If the heating support is no longer needed, the position configured for this case will be approached.

* The presence detector delay should be selected in such a way that the room is not notified as clear straightaway when it has only been left for a short time, as otherwise sun protection equipment will be moved up and down unnecessarily.

7.3.2 Cooling support

7.3.2.1 Principle

In the warm season, the situation is reversed and additional heating of the room by solar radiation must be avoided.
This is achieved by completely closing the sun protection devices automatically when there is strong solar radiation in empty rooms.
However it is possible to individually select the position of the sun protection device when there is cooling support.

7.3.2.2 Conditions

The conditions for cooling support are fulfilled when:

- A room is not occupied (presence = 0*) **and**
- The room temperature exceeds a configured value **and**
- cooling support is requested via the corresponding object (obj. 11).

If all conditions are fulfilled, the position configured for this purpose will be approached.

The cooling support is no longer needed when

- The room temperature falls below the configured *Desired room temperature during sun protection* by 2 K **or**
- The cooling support is cancelled (obj. 11 = 0).

If the cooling support is no longer needed, the position configured for this case will be approached.

* The presence detector delay should be selected in such a way that the room is not notified as clear straightaway when it has only been left for a short time, as otherwise sun protection equipment will be moved up and down unnecessarily.

7.4 Support mode for the commissioning of electronic motors

For start-up or reset, electronic drives must be actuated in both directions (Up + Down) at the same time.
This function is possible with the JMG 4 T, but should **only** be carried out with an electronic drive.*

1. Activate manual mode via manual button or obj. 78.
2. Manual LED lights up.
3. Press and hold the channel's UP and DOWN buttons at the same time.
4. Continue to hold UP and DOWN buttons, press manual button and keep holding for 2 s.
5. Manual LED flashes quickly (5 Hz)
6. Buttons can be released (The **support mode** is active for this channel.)
7. Now the drive can be configured
8. Every button press (up/down buttons on the device) leads to the activation of the relay and both can be activated at the same time.
9. The support mode is **ended** if no button is pressed for 2 minutes long or the manual button is pressed again.
10. The manual LED expires.

This procedure always applies only for one channel and must be repeated for every additional channel with electronic drive.

*With a conventional motor (electromechanical) this action leads to a short circuit.

7.5 The scenes

7.5.1 Principle

The current status of a channel, or a complete MIX system
can be stored and retrieved as required at a later point via the scene function.

That applies to switching, blinds and dimming channels.
Each channel can participate simultaneously in up to 8 scenes.

This requires permission to access scenes for the relevant channel via parameter.
See parameter Activate scenes and parameter page Scenes.

The current status is allocated to the appropriate scene number when a scene is saved.
The previously saved status is restored when a scene number is called up.

This allows a MIX system to be easily associated with each chosen user scene.

Table 24: Permitted scene numbers

Series	Device	Supported scene numbers
MIX (order no. 4910xxx)	DME 2 S	1 .. 8
	JME 4 S	
MIX2 (order no. 4930xxx)	RMG / RME 8 S	1 .. 63
	RMG / RME 4 I	
	DMG / DME 2 T	
	JMG / JME 4 T	

The scenes are permanently stored and remain intact even after the application has been downloaded again.
See parameter All channel scene statuses on the parameter page Scenes.

7.5.2 Select and save settings:

To call up or store a scene the relevant code is sent to the scene object (obj. 6, 243).

Table 25

Scene	Select		Save	
	Hex.	Dec.	Hex.	Dec.
1	$00	0	$80	128
2	$01	1	$81	129
3	$02	2	$82	130
4	$03	3	$83	131
5	$04	4	$84	132
6	$05	5	$85	133
7	$06	6	$86	134
8	$07	7	$87	135
9	$08	8	$88	136
10	$09	9	$89	137
11	$0A	10	$8A	138
12	$0B	11	$8B	139
13	$0C	12	$8C	140
14	$0D	13	$8D	141
15	$0E	14	$8E	142
16	$0F	15	$8F	143
17	$10	16	$90	144
18	$11	17	$91	145
19	$12	18	$92	146
20	$13	19	$93	147
21	$14	20	$94	148
22	$15	21	$95	149
23	$16	22	$96	150
24	$17	23	$97	151
25	$18	24	$98	152
26	$19	25	$99	153
27	$1A	26	$9A	154
28	$1B	27	$9B	155
29	$1C	28	$9C	156
30	$1D	29	$9D	157
31	$1E	30	$9E	158
32	$1F	31	$9F	159

Continuation:

Scene	Select		Save	
	Hex	Dec.	Hex	Dec.
33	$20	32	$A0	160
34	$21	33	$A1	161
35	$22	34	$A2	162
36	$23	35	$A3	163
37	$24	36	$A4	164
38	$25	37	$A5	165
39	$26	38	$A6	166
40	$27	39	$A7	167
41	$28	40	$A8	168
42	$29	41	$A9	169
43	$2A	42	$AA	170
44	$2B	43	$AB	171
45	$2C	44	$AC	172
46	$2D	45	$AD	173
47	$2E	46	$AE	174
48	$2F	47	$AF	175
49	$30	48	$B0	176
50	$31	49	$B1	177
51	$32	50	$B2	178
52	$33	51	$B3	179
53	$34	52	$B4	180
54	$35	53	$B5	181
55	$36	54	$B6	182
56	$37	55	$B7	183
57	$38	56	$B8	184
58	$39	57	$B9	185
59	$3A	58	$BA	186
60	$3B	59	$BB	187
61	$3C	60	$BC	188
62	$3D	61	$BD	189
63	$3E	62	$BE	190

Examples (central or channel-related)**:**

Select status of scene 5:
→ Send $04 to the relevant scene object.

Save current status with scene 5:
→ Send $84 to the relevant scene object.

The scene that has just been active can be ended with the value 63 ($3F).
See parameter *Response when cancelling the scene (with scene value 63)* on the parameter page Scenes.

7.5.3 Teach-in scenes without telegrams (MIX2 ONLY)

Instead of defining scenes individually by telegram, this can be done in advance in the ETS. This merely requires the setting of the *All channel scene statuses* parameter (*Scenes*) parameter page to *Overwrite at download*.

Accordingly, the required status can be selected for each of the 8 possible scene numbers in a channel (= *Status after download* parameter).
The scenes are programmed into the device after the download has been completed.

Later changes via teach-in telegrams are possible if required and they can be permitted or blocked via a parameter.

7.6 Conversion of percentages to hexadecimal and decimal values

percentage value	**0 %**	**10 %**	**20 %**	**30 %**	**40 %**	**50 %**	**60 %**	**70 %**	**80 %**	**90 %**	**100 %**
Hexadecimal	00	1a	33	4D	66	80	99	B3	CC	E6	FF
Decimal	00	26	51	77	102	128	153	179	204	230	255

All values from 00 to FF hex. (0 to 255 dec.) are valid.

8 Operating instructions

theben 310456

MIX2 series blinds actuator KNX

JMG 4 T KNX (basic module)	4930250
JME 4 T KNX (extension module)	4930255

1. Proper use

The 4-fold blinds actuators of the MIX2 series switch electrically-driven blinds, roller blinds, awnings or similar hangings as well as ventilation flaps for 230 V AC power supplies.

The MIX2 series is a series of devices, consisting of base modules and extension modules. Up to 2 MIX or MIX2 extension modules can be connected to a base module of this series.

The ETS (engineering tool) enables application programs to be selected, specific parameters and addresses to be assigned and transferred to the device.
The device is designed for installation on DIN mounting rails (in accordance with EN 60715) and conforms with EN 60669-2-1.
Only to be used in closed, dry rooms.

2. Safety information

⚠ WARNING

Danger of death through electric shock or fire!

➢ Installation should only be performed by an electrician!

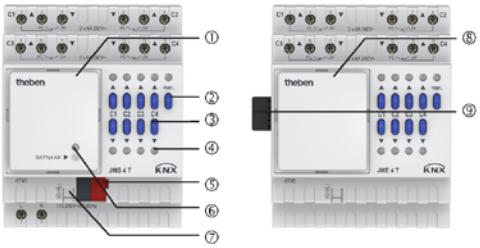
Please note the provisions of EN 50428 for switches or similar installation material for use in building systems technology with regard to the correct installation of bus lines and device start-up procedure.
Tampering with, or making modifications to, the device will invalidate the guarantee.

➢ If several motors will be switched in parallel on one output, note manufacturer's information and use cut-off relay if necessary. Motors may be destroyed.
➢ Only use blinds motors with mechanical or electronic end position switches. Check the end position switch is correctly adjusted. Device may be damaged.
➢ Do not connect AC motors.
➢ During installation, ensure there is adequate insulation between power supply and bus!

3. Description

JMG 4 T KNX
(basic module)

JME 4 T KNX
(extension module, extendable to up to 12 channels)



① Bus module KNX
② Manual push button **man.**
③ Channel button **C1–C4**
④ Status LEDs
⑤ Bus connection: note polarity!
⑥ Programming button and LED for physical addresses
⑦ Slider for locking the KNX ① bus module or the cover ⑧
⑧ Cover
⑨ Movable connector between extension module and base module

Manual operation with hangings

Manual operation allows the outputs to be controlled directly by the push buttons.

Move hanging up and down manually, stop and adjust step-by-step with the channel push buttons C1–C4

1. Roller blinds

➢ Press channel button x 1: Roller blinds move up/down (the associated LED lights up)
➢ Press channel button again: the roller blinds stop

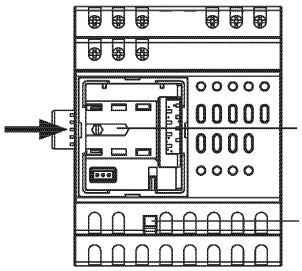
2. Blinds

➢ Press channel button x 1: Blinds move 1 slat turn
➢ Press and hold channel button x 1: Blinds move up/down (the associated LED lights up)
➢ Press channel button x 1 during the movement: the blinds stop

4. Installation

Basic module/extension module

- Click base module on to the distributor rail.
- Release slider ⑦ and remove cover ⑧ on the extension module.
- Click extension module on to the distributor rails.
- Connect and **fix** both modules together.

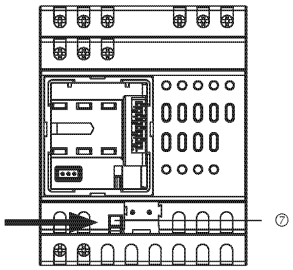


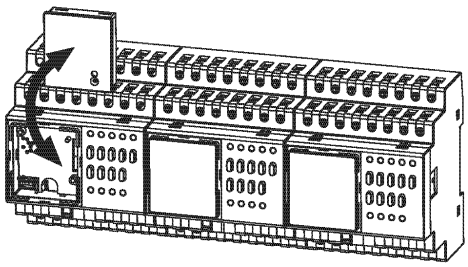
- Slide slider ⑨ to the left.
- Put cover back on.
- Lock cover with slider ⑦ again.

KNX bus module

Basic module and KNX module can be separated mechanically. The blinds actuators can be started and operated manually without the KNX ① bus module.

- Unlock KNX ① bus module on the base module with slider ⑦ and remove or put on again and lock.





Manual operation
(must be enabled via the ETS)

- Press button **man.** ② (LED lights up; the manual function is on). The drives do not move over the bus.
- Press channel ③ buttons.

Terminate manual operation

- Press push button **man.** ②.

Support mode for starting electronic motors

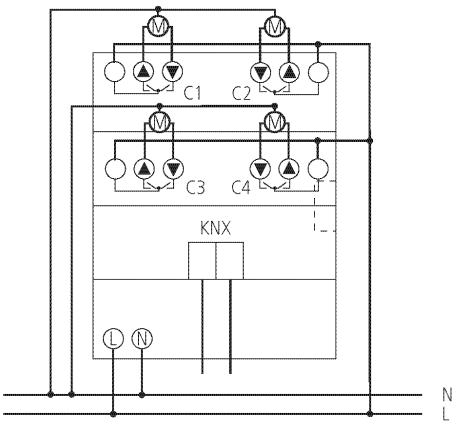
- Activate support mode only with connection for electronic motors (the parameter in the ETS of a channel must be set to "electronic motor").
- Press button **man.** ②.
- Press and hold both channel buttons simultaneously.
- For this push button **man.** for 3 s (LED man. flashes). The support mode is active.

Terminate support mode

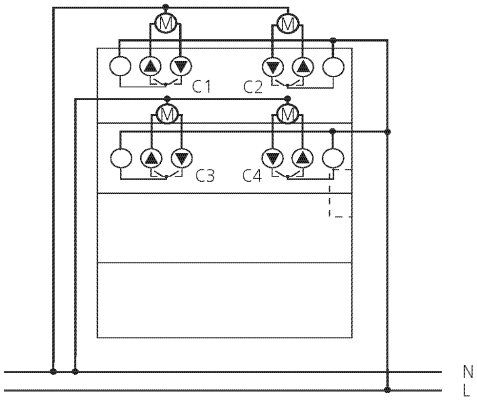
- Press push button **man.**

5. Electrical connection

JMG 4 T KNX



JME 4 T KNX



6. Technical data

JMG 4 T KNX / JME 4 T KNX

- Operating voltage: 110–240 V AC +10 % –15 %
- Frequency: 50–60 Hz
- Standby: 0.3 W (JMG 4 T KNX)
- Switching capacity: 6 A/240 V AC at cos φ = 1
- Type of contact: µ-contact, NO contact; the switching of any external conductors is permitted
- Permissible ambient temperature: –5 °C to +45 °C
- Protection class: II when properly installed
- Protection rating: IP 20 in accordance with EN 60529

- Operating voltage: Bus voltage KNX
  Power input KNX bus: ≤ 9 mA
  (JMG 4 T KNX)

- Pollution level: 2
- Rated impulse voltage: 4 kV

The ETS database can be found at **www.theben.de.**
Please refer to the KNX manual for detailed functional descriptions.

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