KNX manual
MIX 2 series actuators
RMG 8 S / RME 8 S and
FIX1 RM 8 S
FIX2 RM 16 S

RMG 8 S	4930220
RME 8 S	4930225
RM 8 S	4940220
RM 16 S	4940225

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1 Functional characteristics

- MIX2 8-way switch actuator
- MIX2 basic module
- Can be upgraded to a maximum of 24 channels
- Up to 2 MIX or MIX2 upgrade 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 set-up and use of switch actuators is possible without KNX bus module
- LED switching status indicator for each channel
- Manual operation on device (even without bus connection)
- Adjustable characteristics: e.g. switching, delayed switching, pulse function
- Links, type of contact (NC contact/NO contact) and participation in central commands such s permanent On, permanent Off, central switching and save/call up scene
- Switching functions: e.g. On/Off, pulse, On/Off delay, staircase light with warning
- Logical links: e.g. lock, AND, release, OR
- Activation of the channel function via 1-bit telegram or 8-bit threshold value.

2 MIX2 and FIX1/FIX2 devices

This manual describes the MIX2 devices and can also be used with devices from the FIX 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 almost identical to those in the MIX2 series.

3 MIX and MIX2 devices

The MIX2 series consists of the basic devices RMG 4 I, RMG 4 U, RMG 8 S, RMG 8 T, DMG 2 T, JMG 4 T, JMG 4 T 24V, HMG 6 T, BMG 6 T + RME 4 I, RME 4 U, RME 8 S, RME 8 T, DME 2 T, JME 4 T, JME 4 T 24V, HMG 6 T, BME 6 T upgrades (10.2015)

Any MiX and MIX2 upgrade devices can be connected to a MIX2 basic device.

Table 1

Device type	Order no.	Designation	Can be used with basic device	
			of the MIX series	of the MIX2 series
MIX2 basic devices	493…	RMG 4 I, RMG 4 U, RMG 8 S, RMG 8 T, DMG 2 T, JMG 4 T, HMG 6 T, JMG 4 T 24V, BMG 6 T	-	-
MIX2 upgrades	493…	RME 4 I, RME 4 U, RME 8 S, RME 8 T, DME 2 T, JME 4 T, HME 6 T, JME 4 T 24V, BME 6 T.	No	Yes
MIX basic devices	491…	BMG 6, DMG 2 S, HMG 4, JMG 4 S, RMG 4 S, RMG 4 C-load, 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 objects numbering.

3.1 Operation

Each channel can be switched on and off independently of all parameters using the buttons on the device. A status LED displays the current switching status.

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

Operating voltage KNX	Bus voltage, ≤ 4 mA
Operating voltage	110 – 240 V AC
Frequency	50 – 60 Hz
Standby consumption	0,3 W / 0,5W[1]
Installation type	DIN-rail
Width	4 module / 8 module[1]
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
Number of channels	8 or 16[1]
Type of contact	16 A, 3 A NO contact
Opening width	< 3 mm
Resistive load	3680 W
Incandescent / halogen lamp load	2000 W
Fluorescent lamp load (conventional) parallel-corrected	1300W (140 µF)
Fluorescent lamp load (conventional) not corrected	2000 VA
Fluorescent lamp (EB - Electronic ballast)	1200 W
Energy saving lamps	300 W
LED lamps	< 2 W = 55 W > 2 W = 600 W
Voltage output	0..250 V AC
Switch output	Floating
Connecting different phases	Possible
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] RM 16 S

Legacy values, valid **until** serial number 1325XXXXX:

Incandescent / halogen lamp load	1000 W
Fluorescent lamp load (conventional) parallel-corrected	2 x 58 W (7 µF), 3 x 36 W (4,5 µF), max. 120 W (14 µF)
Fluorescent lamp load (conventional) not corrected	14 x 58 W, 20 x 36 W, max. 1000 VA
Fluorescent lamp (EB - Electronic ballast)	3 x 36 W, 2 x 58 W, max. 120 W
Energy saving lamps	6 x 7 W, 4 x 11 W, 2 x 15 W, 2 x 20 W, 2 x 23 W
LED lamps	< 2 W: 5 W | > 2 W < 8 W: 15 W

5 MIX2 V1.8 application program

5.1 Selection in the product database

Manufacturer	THEBEN AG
Product family	Output
Product type	RMG 8 S
Program name	MIX2 V1.8

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	Flags			
				C	R	S	T
0	*RMG 8 S channel C1*	*Switching object*	1 bit 1.001	✓	✓	✓	
		Threshold value as percent	1 byte 5.001	✓	✓	✓	
		Threshold value 0..255	1 byte 5.010	✓	✓	✓	
		Threshold value EIS 5 (DPT 9.xxx)	2 byte 9.xxx	✓	✓	✓	
		Threshold value 0.0.65535	2 byte 7.001	✓	✓	✓	
1	*RMG 8 S channel C1*	*Logic input in AND gate*	1 bit 1.001	✓	✓	✓	
		Logic input in OR gate	1 bit 1.001	✓	✓	✓	
		Logic input in XOR gate	1 bit 1.001	✓	✓	✓	
2	*RMG 8 S channel C1*	*Lock*	1 bit 1.003	✓	✓	✓	
3	*RMG 8 S channel C1*	*Call up/save scenes*	1 byte 18.001	✓	✓	✓	✓
4	*RMG 8 S channel C1*	*Lock scenes = 1* *Enable scenes = 1*	1 bit 1.003	✓	✓	✓	
5	*RMG 8 S channel C1*	*Feedback On/Off*	1 bit 1.001	✓	✓		✓
6	*RMG 8 S channel C1*	*Time to next service*	2 byte 7.001	✓	✓		✓
		Operating hours feedback	2 byte 7.001	✓	✓	✓	✓
7	*RMG 8 S channel C1*	*Service required*	1 bit 1.001	✓	✓		✓
				C	R	S	T

Continuation:

No.	Object name	Function	Type DPT	Flags			
				C	R	S	T
8	*RMG 8 S channel C1*	*Switching with priority*	2 bit 2.001	✓	✓	✓	
		Reset service	1 bit 1.001	✓	✓	✓	
		Reset operating hours	1 bit 1.001	✓	✓	✓	
9	*Not used*						
10.. 237	*Channels C2 .. C8 and upgrade module: See next table.*						

Table 4: Overview of channel-related objects

BASIC MODULE: RMG 8 S							
C1	C2	C3	C4	C5	C6	C7	C8
0	10	20	30	40	50	60	69
1	11	21	31	41	51	61	70
2	12	22	32	42	52	62	71
3	13	23	33	43	53	63	72
4	14	24	34	44	54	64	73
5	15	25	35	45	55	65	74
6	16	26	36	46	56	66	75
7	17	27	37	47	57	67	76
8	18	28	38	48	58	68	77
FIRST UPGRADE: RME 8 S							
C1	C2	C3	C4	C5	C6	C7	C8
80	90	100	110	120	130	140	149
81	91	101	111	121	131	141	150
82	92	102	112	122	132	142	151
83	93	103	113	123	133	143	152
84	94	104	114	124	134	144	153
85	95	105	115	125	135	145	154
86	96	106	116	126	136	146	155
87	97	107	117	127	137	147	156
88	98	108	118	128	138	148	157
SECOND UPGRADE: RME 8 S							
C1	C2	C3	C4	C5	C6	C7	C8
160	170	180	190	200	210	220	229
161	171	181	191	201	211	221	230
162	172	182	192	202	212	222	231
163	173	183	193	203	213	223	232
164	174	184	194	204	214	224	233
165	175	185	195	205	215	225	234
166	176	186	196	206	216	226	235
167	177	187	197	207	217	227	236
168	178	188	198	208	218	228	237

5.2.2 Common objects:

These objects are partly used by the basic device and the two upgrade devices.

Table 5:

No.	Object name	Function	Type DPT	Flags			
				C	R	S	T
78	*RMG 8 S*	*Manual*	1 bit 1.001	✓	✓	✓	✓
158	*EM1 RME 8 S*						
238	*EM2 RME 8 S*						
79	*RMG 8 S*	*Collective feedback*	1 byte 5.010	✓	✓		✓
159	*EM1 RME 8 S*						
239	*EM2 RME 8 S*						
240	*Central permanent ON*	*For RMG 8S, DME 2 S, SME 2 S*	1 bit 1.001	✓	✓	✓	✓
241	*Central permanent OFF*	*For RMG 8S, DME 2S, SME 2S*	1 bit 1.001	✓	✓	✓	✓
242	*Central switching*	*For RMG8S, DME 2S, SME 2S*	1 bit 1.001	✓	✓	✓	✓
243	*Call up/save central scenes*	*RMG8S, DME2S, JME4S, SME2S*	1 byte 18.001	✓	✓	✓	✓
244	*Central safety 1*	*For JME 4 S*	1 bit 1.001	✓	✓	✓	
245	*Central safety 2*	*For JME 4 S*	1 bit 1.001	✓	✓	✓	
246	*Central safety 3*	*For JME 4 S*	1 bit 1.001	✓	✓	✓	
247	*Central up/down*	*For JME 4 S*	1 bit 1.008	✓	✓	✓	
248	*Not used*						
249	*Not used*						
250	*Version of bus coupling unit*	*Send*	14 byte 16.001	✓	✓		✓
251	*Version of basic device*	*Send*	14 byte 16.001	✓	✓		✓
252	*Version of first upgrade device*	*Send*	14 byte 16.001	✓	✓		✓
253	*Version of second upgrade device*	*Send*	14 byte 16.001	✓	✓		✓
				C	R	S	T

5.2.3 Description of objects

- **Object 0** "*Switching object, threshold value as per cent, threshold value 0..255, threshold value EIS 5 (DPT 9.xxx), threshold value 0..65535* "

This object activates the set channel function (see parameter: *Channel function*).

The set channel function can either be activated via 1-bit telegram or by exceeding a threshold (8- or 16-bit telegram).

Table 6:

Parameters		Activation of channel function via
Activation of function via	*Type of threshold value object*	
Switching object		1-bit telegram
Exceeding the threshold value	*Object type: Per cent (DPT5.001)*	Exceeding per cent value
	Object type: Counter value 0..255 (DPT 5.010)	Any value in given numerical range
	Object type: Counter value 0..65535 (DPT 7.001)	
	Object type: EIS5 e.g. CO2, brightness (DPT 9.xxx)	2 byte floating-point number

- **Object 1** "*Logic input in AND gate, in OR gate, in XOR gate*"

Only available if *Link* is activated (*Function selection* parameter page).
Forms a logical link together with object 0 to activate the channel function.

- **Objekt 2** "*Lock*"

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 3** "*Call up/save scene*"

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 buttons on the device).
The saved status is re-established when it is called up.

All scene numbers from 1 to 64 are supported.
Each channel can participate in up to 8 scenes.

See appendix: The scenes

- **Object 4** "*Lock scenes = 1, Enable scenes = 1*"

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 5** "*On/Off feedback*"

Reports the current channel status.
The status can also be inverted depending on configuration.

- **Object 6** "*Time to next service, operating hours feedback* "

Only available if the operating hours counter function has been activated (*Function selection* parameter page).
Reports, depending on selected *Type of operating hours counter* (*Operating hours counter and service*parameter page), either the remaining period to the next service or the current status of the operating hours counter.

- **Object 7** "*Service required*"

Only available if the operating hours counter function has been activated (*Function selecction*parameter page) and *Type of operating hours counter = Counter for time to next service*.

Reports if the next service is due.
0 = not due
1 = service is due.

- **Object 8** "*Switching with priority, reset service, reset operating hours*"

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

<table>
<tr><th>Activate operating hours counter</th><th>Function</th><th>Use</th></tr>
<tr><td rowspan="2">Yes</td><td>Reset service*</td><td>Reset service interval counter.</td></tr>
<tr><td>Reset operating hours*</td><td>Reset operating hours counter</td></tr>
<tr><td>No</td><td>Switching with priority</td><td>Priority control:
<table>
<tr><th>Status of object 8</th><th>Channel status</th></tr>
<tr><td>0</td><td rowspan="2">as set by object 0</td></tr>
<tr><td>1</td></tr>
<tr><td>2</td><td>OFF</td></tr>
<tr><td>3</td><td>ON</td></tr>
</table></td></tr>
</table>

* Depending on configuration.

- **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	Application	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 will not work.

The duration of the manual mode, i.e. the *Function of the manual button* is set on the *General* parameter page.

- **Objects 79, 159, 239** "*RMG 8 S, EM1 RME 8 S, EM2 RME 8 S collective feedback*"

Sends the current switching status of the channels in a module as an 8-bit bit pattern.

Bit pattern for feedback (1 byte)							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
C8	C7	C6	C5	C4	C3	C2	C1

See appendix: Collective feedback

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

Central switch-on function
Enables simultaneous switch-on of all channels (basic and upgrade modules) with a single telegram.
0 = no function
1 = permanent ON

Participation in this object can be set individually for each channel
(*Function selection* parameter page).

IMPORTANT:
This object takes top priority.
As long as it is set, the other switching commands will not work on the participating channels.

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

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

Central switch-off function.
Enables simultaneous switch-off of all channels (basic and upgrade modules) with a single telegram.
0 = no function
1 = permanently OFF

Participation in this object can be set individually for each channel
(*Function selection parameter page)*.

IMPORTANT: This object has the second hoghest priority after *Central permanent ON*. As long as it is set, the other switching commands will not work on the participating channels.

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

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

Central switching function.

Enables simultaneous switch-on or off of all channels (basic and upgrade modules) with a single telegram.
0 = OFF
1 = ON
Participation in this object can be set individually for each channel (*Function selectionparameter page)*.
With this object, every participating channel responds exactly as if its first object (i.e. obj.0, 10, 20 etc) were receiving a switching command.

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

- **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**

Not used.

- **Object 247**

Not used.

- **Object 248**

Not used.

- **Object 249**

Not used.

- **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 (14 = V1.4, 15 = V1.5 etc.).
yy	Hardware version 00..99
zzz	Firmware version 000..999

EXAMPLE: A15 H03 V014
- ETS Application Version 1.5
- Hardware version $03
- Firmware version $14

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

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

Sends the software version (firmware) of the basic module 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

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

EXAMPLE: M15 **H**25 **V**025
- Module $15 = HMG 6 T
- Hardware version V25
- Firmware version V25

- **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 Parameters

5.3.1 Parameter pages

Table 7

Function	Description
General	Selection of module and central parameters.
BASIC DEVICE: RMG 8 S	General parameters for the basic device: Collective feedback and switching delay of relay.
RMG 8 S channel Cx Function selection	Characteristics of channel and activation of additional functions (scenes, links etc.).
Contact characteristics	Type of contact and status after download, bus failure etc.
Threshold value	Settings for triggering channel function through exceeding threshold value.
Locking function	Type of lock telegram and response to locking.
Scenes	Selection of scene numbers relevant to the channel.
Feedback	Status of feedback object etc.
Operating hours counter and service	Type of operating hours counter and, if required, service interval etc.
Link	Selection of logical link.

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 upgrade 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 / RME 4 C-Last..* *DME 2 / SME 2..* *BME 6..* *JME 4 S..* *HME 4..*	Selection of first upgrade device, if available. (MIX or MIX2 series)
Type of second upgrade 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 / RME 4 C-Last..* *DME 2 / SME 2..* *BME 6..* *JME 4 S..* *HME 4..*	Selection of second upgrade device, 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 upgrade devices. (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* *locked* ***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 buttons on the device. See: Object_78 This parameter is used exclusively for MIX2 series devices.
Manual operation of channels (MIX2 series, order no. 493...)	***Enabled*** *locked*	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 "*RMG 8 S basic device* parameter page "

Designation	Values	Description
Sending collective feedback	*No*	No collective feedback, object is unavailable (obj. 78, 158, 238).
	report as inactive	Object value cannot be requested.
	only at change	Sends whenever a channel status changes.
	cyclically and at change	Sends cyclically and with status changes See appendix: Collective feedback
Relay switching delay		This paramter 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 switching object (object 242). When switching on 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 (e.g. with a number of lighting strips).
	None	There is no added delay.
	60 ms *100 ms* *200 ms*	When a relay switches on, the next one 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:** RMG 8 S and 60 ms: = (8 channels – 1) * 60 ms = 420 ms → Channel C8 switches on 420 ms after C1.

5.3.2.3 The "*RMG 8 S channel Cx: function selection*" parameter page

Table 8

Designation	Values	Description
Copy main parameter of channel C1		For channels C2..C8 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: - Channel function - Adjust lock function - Participation in central objects - Adjust feedback
	No	No settings are taken from C1.
Channel function	***Switching On/Off..*** *On/Off delay..* *Pulse function..* *Staircase light time switch with warning function..* *Flashing..*	Determines the basic functionality of the channel.
Activation of function via	***Switching object***	The channel is operated via a 1-bit object.
	Exceeding the threshold value	The channel is operated through exceeding a 1 or 2-byte threshold value. See below: The "threshold value" parameter page
Adjust lock function	*Yes..*	The locking function can be individually adjusted. The relevant parameter page is shown.
	No	The locking function works with the standard parameters: *- Lock with ON telegram* *- When setting the lock: Unchanged* *- When cancelling: Update.*
Activate scenes	*Yes* ***/ no***	Should scenes be supported?

Continuation:

Designation	Values	Description
Participation in central objects	***No***	Central objects are not taken into account.
	at Central switching, Permanent On, Permanent OFF *only in central permanent ON* *only in central permanent OFF* *only in central switching* *only in central switching and permanent ON* *only in central switching and permanent OFF* *only in central permanent on and permanent OFF*	Which central objects are to be taken into account? Central objects enable the simultaneous switching on and off of several channels with one single object.
Adjust feedback	*Yes.*.	The feedback function can be individually adjusted. The relevant parameter page is shown.
	No	The *Feedback* function works with the standard parameters: - *not inverted* - *do not send cyclically*
Activate operating hours counter	*Yes* ***/ no***	Is the *operating hours counter/ service interval* function to be used?
Activate link	*Yes* ***/ no***	Are logical links to be used with the channel object?

5.3.2.4 The "*Contact characteristics*" parameter page

Table 9

Designation	Values	Description
Type of contact	***NO contact***	Standard: The relay contact is closed when a switch-on command is issued.
	NC contact	Inverted: The relay contact is opened when a switch-on command is issued.
Status with download and bus failure		After download or with loss of bus voltage...
	OFF	..the relay remains switched off.
	ON	..the relay switches on.
	Unchanged	…the relay remains in the same state as before.
Status after restoration of the mains supply or bus supply		After return of mains or bus supply...
	OFF	..the relay remains switched off.
	ON	..the relay switches on.
	Same as before failure	…the relay remains in the same state as before.

5.3.2.5 The "*On/Off delay*" parameter page

This parameter page appears if *On/Off delay* is chosen as the *Channel function* .

Table 10

Designation	Values	Description
Switch-on delay		
hours (0..3)	***0**..3*	Input of desired switch-on delay in hours.
minutes (0..60)	***0**..60*	Input of desired switch-on delay in minutes.
seconds (0.2255)	***0**..255*	Input of desired switch-on delay in seconds.
Switch-off delay		
hours (0..3)	***0**..3*	Input of desired switch-off delay in hours.
minutes (0..60)	***0**..60*	Input of desired switch-off delay in minutes.
seconds (0.2255)	***0**..255*	Input of desired switch-off delay in seconds.

5.3.2.6 The "*Pulse function*" parameter page

This parameter page appears if *Pulse function* is chosen as the *Channel function* .

Table 11

Designation	Values	Description
hours (0..3)	***0**..3*	Input of desired pulse duration in hours.
minutes (0..60)	***0**..60*	Input of desired pulse duration in minutes.
seconds (0.2255)	***0**..255*	Input of desired pulse duration in seconds.
Pulse can be retriggered (with 1 on switching object)	*Yes* ***No***	The pulse can be extended as often as possible via a 1-telegram The pulse cannot be extended.
Pulse can be reset (with 1 on switching object)	*Yes* ***No***	The pulse can be ended early at anytime via a 0-telegram The pulse cannot be ended early.

5.3.2.7 The "*Staircase light with warning function ..*" parameter page

This parameter page appears if *Staircase light with warning function* is chosen as the *Channel function* .
The user can, at anytime, press a push button again to extend the staircase light time.

Table 12

Designation	Values	Description
Staircase light time (min. 1 s)		
hours (0..3)	***0**..3*	Input of desired staircase light time in hours.
minutes (0..60)	***0**..60*	Input of desired staircase light time in minutes.
seconds (0.2255)	*0..255* Default value = ***1***	Input of desired staircase light time in seconds.
The maximum sum of pulses 1..40	*1..40*	determines how often the staircase light can be extended (restarted) by pressing the button again.
Duration of first warninhg in s (0..60)	*0* *1..60* Default value = *10*	The light switches off immediately once the staircase light time is completed. Once the staircase light time is completed, the light should briefly flash and then stay on for the duration of the warning
Duration of second warning in s (0..60)	0 *1..60* Default value = *10*	No second warning. The light switches off at the end of the first warning. Second warning: Once the first warning is completed, the light should flash briefly and then stay on for the duration of the second warning The light switches off when this time is completed.

Example of warning function:

Staircase light time	Flashing	1. warning	Flashing	2. warning	OFF

5.3.2.8 The "*Flashing*" parameter page

This parameter page appears if *Flashing* is chosen as the *Channel function* .

Table 13

Designation	Values	Description
ON phase of flash pulse.		
hours (0..3)	***0**..3*	Input of desired pulse time (t_i) in hours.
minutes (0..60)	***0**..60*	Input of desired pulse time in minutes.
seconds (0.2255)	***0**..255*	Input of desired pulse time in seconds.
OFF phase of flash pulse.		
hours (0..3)	***0**..3*	Input of desired length of break (t_p) in hours.
minutes (0..60)	***0**..60*	Input of desired length of break in minutes.
seconds (0.2255)	***0**..255*	Input of desired length of break in seconds.
How often should it flash	*Until it switches off* *1 x* *2 x* ***3 x*** *4 x* *5 x* *7 x* *10 x* *15 x* *20 x* *30 x* *50 x*	The channel flashes until a switch-off telegram is received. The channel flashes as often as set here.

5.3.2.9 The "*Threshold value*" parameter page

This side is shown if the *Activation of the function by* parameter is set to *Exceeding threshold value*.

Table 14

Designation	Values	Description
Type of threshold value object	***Object type: Per cent (DPT5.001)*** *Object type: Counter value 0..255 (DPT 5.010)* *Object type: Counter value 0..65535 (DPT 7.001)* *Object type: EIS5 e.g. CO2, brightness etc (DPT 9.xxx)*	Value type for threshold.
Response on exceeding the threshold		Should the channel switch on or off on exceeding the threshold? The set *type of contact* must be taken into account here.
	As switching object = 0	*NO contact*: the relay switches **off** if threshold is exceeded. *NC contact:* The relay switches **on** if threshold is exceeded.
	As switching object = 1	*NO contact*: The relay switches **on** if threshold is exceeded. *NC contact:* The relay switches **off** if threshold is exceeded.
Parameter for *Percent* threshold object		
Threshold value	*1..99 %* *Default value = **50 %***	Desired threshold value. Example of *NO contact* with response *as switching object = 1* : Switches on when: Object value > threshold value Switches off when: Object value < threshold value - hysteresis
Hysteresis (as %)	*1..99 %* *Default value = **10 %***	The hysteresis prevents frequent switching after small fluctuations in readings.

Continuation:

Designation	Values	Description
Parameter for threshold value object *Counter value 0..255*		
Lower threshold value	*1..254* *Default value = **127***	Desired threshold value. Example of *NO contact* with response *as switching object = 1* : Switches on when: Object value > threshold value Switches off when: Object value < threshold value - hysteresis
Hysteresis	*1..254* *Default value = **5***	The hysteresis prevents frequent switching after small fluctuations in readings.
Parameter for threshold value object *Counter value 0.0.65535*		
Lower threshold value	*1..65534* *Default value = **1000***	Desired threshold value. Example of *NO contact* with response *as switching object = 1* : Switches on when: Object value > threshold value Switches off when: Object value < threshold value - hysteresis
Hysteresis	*1..65534* *Default value = **5***	
Parameter for threshold value object *EIS5 (e.g. CO_2, brightness…)*		
Lower threshold value *Format (-)0.00..99999*	*0,00..99999* *Default value = **20***	Desired threshold value. Example of *NO contact* with response *as switching object = 1* : Switches on when: Object value > threshold value Switches off when: Object value < threshold value - hysteresis
Hysteresis *0,00..9999*	*0,00..9999* *Default value = **1***	The hysteresis prevents frequent switching after small fluctuations in readings.

5.3.2.10 The "*Lock function*" parameter page

This page appears when *Adjust lock function* is selected on the *Function selection* parameter page.

Table 15

Designation	Values	Description
Lock telegram	***Lock with ON telegram***	0 = Enable 1 = lock
	Lock with OFF telegram	0 = lock 1 = Enable **Caution:** The lock is always deactivated after reset.
Behaviour when setting the lock	*OFF*	Switch off
	ON	Switch on
	Unchanged	No response
Behaviour when cancelling the lock	*OFF*	Switch off
	ON	Switch on
	Unchanged	No response
	update	Restore normal operation and switch relay accordingly.

5.3.2.11 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.

Table 16

Designation	Values	Description
Lock telegram for scenes	***Lock with ON telegram***	0 = Enable 1 = lock
	Lock with OFF telegram	0 = lock 1 = Enable **Caution:** 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 can 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?
Channel reacts to	*No scene number* ***Scene number 1*** *Scene number 63*	First of the 8 possible scene numbers the channel is to react to.
Status after download	***Off*** *On*	New switching status that the selected scene number is to be allocated to. Only possible if the scene statuses are to be overwritten after download.
Permit teach-in	***No*** ***Yes***	Scenes can only be called up. The user can both call up and teach-in or amend scenes.

Continuation:

Designation	Values	Description
Channel reacts to	*No scene number* *Scene number1* ***Scene number 2*** … *Scene number 63*	Second of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 3*** … *Scene number 63*	Third of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 4*** … *Scene number 63*	Fourth of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 5*** … *Scene number 63*	Fifth of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 6*** … *Scene number 63*	Sixth of the 8 possible scene numbers

Continuation:

Designation	Values	Description
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 7*** … *Scene number 63*	Seventh of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 8*** … *Scene number 63*	Last of the 8 possible scene numbers
Status after download	***Off*** *On*	See above.
Permit teach-in	*No* ***Yes***	See above.

5.3.2.12 The "*Feedback*" parameter page

This page appears when *Adjust feedback* is selected on the *Function selection* parameter page.

Table 17

Designation	Values	Description
Reported status	***Not inverted***	Channel switched on: Feedback object sends a 1
	inverted	Channel switched on: Feedback object sends a 0
Send feedback cyclically	***No***	Send at regular intervals?
	Yes	
Time for cyclical transmission of feedback	*2 minutes, 3 minutes, 5 minutes, 10 minutes,* ***15 minutes****, 20 minutes, 30 minutes, 45 minutes 60 minutes*	At what interval?

5.3.2.13 The "*Operating hours counter and service* parameter page"

This page appears when *Activate operating hours counter* is selected on the *Function selection* parameter page.

Table 18

Designation	Values	Description
Type of operating hours counter	***Operating hours counter*** *Counter for time period before next service*	Forward counter for channel power-on time. Backward counter for channel power-on time.
Operating hours counter		
Reporting of changes to operating hours (0..100 h, 0 = no report)	*0..100* *Default value = **10***	At what interval is the current counter status to be sent? Example: 10 = Send each time the counter status increases by another 10 hours.
Report operating hours cyclically	***No*** *yes*	Send at regular intervals?
Time for cyclical transmission	*2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes* ***60 minutes***	At what interval?
Counter for time period before next service		
Service interval (0..2000, x10 h)	*0..2000* *Default value = 100*	Desired timescale between two services. Example: 10 = 10 x 10 h = 100 hours
Reporting of changes to time to service (0..100 h, 0 = no report)	*0..100* *Default value = 10*	At what interval is the current counter status to be sent? Example: 10 = Send each time the counter status decreases by another 10 hours.
Report time to service cyclically	***No*** *Yes*	Send **remaining** time to next service at regular intervals? → Object *Time to next service*.
Report service cyclically	***No*** *Yes*	Send **expiry** of time to next service at regular intervals? → Object *Service required*".
Tine for cyclical transmission (time to service and service	*2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes* ***60 minutes***	At what interval?

5.3.2.14 The "*Link*" parameter page

This page appears when *Activate link* is selected on the *Function selection* parameter page.

An additional object appears, which forma a logical link in combination with the channel's switching/threshold object.
The channel only switches if the link requirement has been met.

Table 19

Designation	Values	Description
Activate link		Selection of logical link with the channel object
	AND link	The *Logic input in AND gate* object appears (e.g. object 1).
	OR link (override)	The *Logic input in OR gate* object appears (e.g. object 1).
	XOR link	The *Logic input in XOR gate* object appears (e.g. object 1).
Disable object affects link object	***No***	The disable object only affects the channel object (e.g. object 0). If required, the link object can activate the channel function despite lock (with OR and XOR link).
	Yes	The disable object affects the channel and link objects. The channel function is completely blocked if the lock is active.

6 Typical applications:

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

6.1 2x switching with push button interface

2 push buttons are connected to a TA 2 push button interface and they control 2 channels on the RMG 8 S.

6.1.1 Devices:

- RMG 8 S (4930220)
- TA 2 (4969202)

6.1.2 Overview

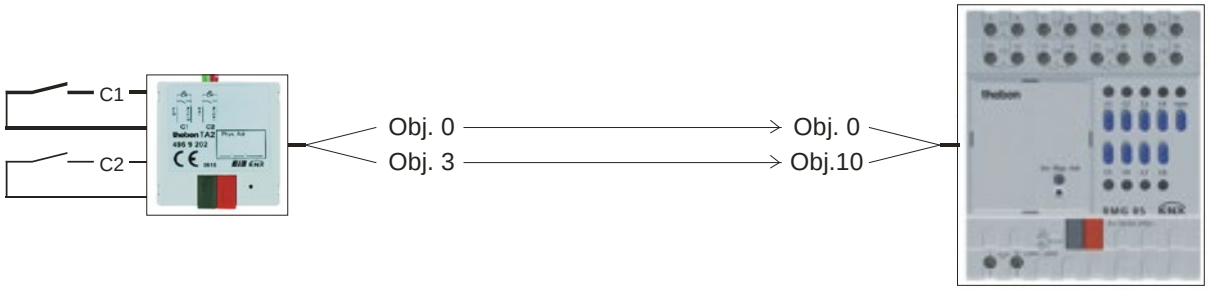

Figure 1

6.1.3 Objects and links

Table 20

No.	TA 2 Object name	No.	RMG 8 S Object name	Comments
0	*Channel 1 switching*	0	*RMG 8 S channel C1 Switching object*	-
3	*Channel 2 switching*	10	*RMG 8 S channel C2 switching object*	-

6.1.4 Important parameter settings

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

Table 21: TA 2

Parameter page	Parameters	Setting
Channel 1	*Channel function*	*Switch/push button*
	Object type	*Switching (1-bit)*
	Response to rising edge	*BY*
	Response to falling edge	*none*
Channel 2	*See channel 1*	

Table 22: RMG 8 S

Parameter page	Parameters	Setting
RMG 8 S channel C1: Function selection	*Channel function*	*Switching ON/OFF*
	Activation of function via	*Switching object*
Contact characteristics	*Type of contact*	*NO contact*
RMG 8 S channel C2	*See channel C1*	

6.2 Operate light with service counter and display

A flourescent light strip in a hall is controlled by channel C1.
The lights have to be replaced after 20,000 hours (= service).
The time period to the service and the service status are shown on the VARIA 826 display.

6.2.1 Devices

- RMG 8 S (4930220)
- VARIA 824 / 826 (8249200 / 8269200)

6.2.2 Overview

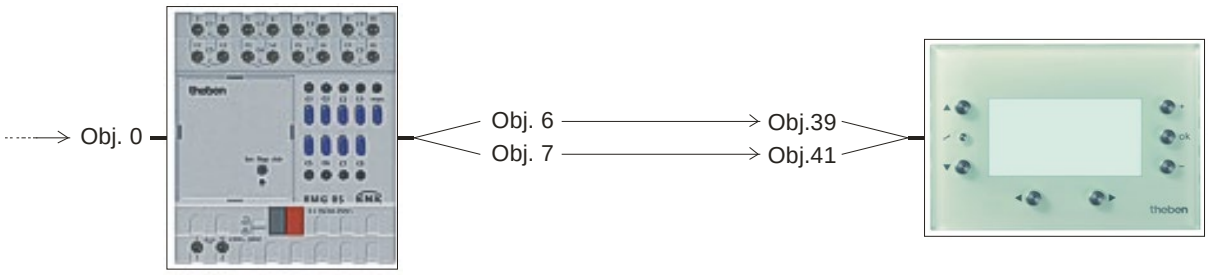

Figure 2

6.2.3 Objects and links

Table 23

No.	KNX sensor Object name	No.	RMG 8 S Object name	Comments
-	*(Switching object)*	0	*Switching object*	Any KNX sensor: Push button, timer, twilight switch etc sends the switch command to RMG 8 S

Table 24:

No.	RMG 8 S Object name	No.	VARIA Object name	Comments
6	*Time to next service*	39	*Counter value 0 ..65535*	Time in hours
7	*Service required*	41	*Switching ON/OFF*	1 = Time has elapsed

6.2.4 Important parameter settings

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

Table 25: RMG 8 S

Parameter page	Parameters	Setting
General	*Type of basic module*	*RMG 8 S*
RMG 8 S channel C1 function selection	*Channel function*	*Switching ON/OFF*
	Activate operating hours counter	*Yes..*
Contact characteristics	*Type of contact*	*NO contact*
Operating hours counter and service	*Type of operating hours counter*	*Counter for time period before next service*
	Service interval (0..2000 x 10 h)	*200*
	Reporting of changes to time to service (0..100 h, 0 = no report)	*100*
	Report service cyclically	*Yes*

Table 26: VARIA 824/826

Parameter page	Parameters	Setting
Select screens	*Show page 1 for display objects*	*Yes*
Display objects page 1	*Fade in operating instructions on page 1*	*No*
	Page heading	*Lamp maintenance**
Page 1, line 1	*Line format*	*16 bit counted measurement object type*
	Text for line 1	*Service in**
	Unit for display object	*h*
	Value range	*Negative and positive numbers*
	Display before receipt of value	*Read from object via bus*
Page 1, line 2	*Line format*	*Switch on object type*
	Text for line 1	*Lamp status**
	Text for object value = 0	*OK**
	Text for object value = 1	*Service**
	Display before receipt of value	*Read from object via bus*

*Suggested text

6.3 Simple alarm function with flashing light

A monitoring device, e.g. flood alarm is connected to a TA 2 push button interface and it controls a channel on the RMG 8 S.
A lamp flashes in the event of an alarm (channel 1 relay output).

6.3.1 Devices:

- RMG 8 S (4930220)
- TA 2 (4969202)

6.3.2 Overview

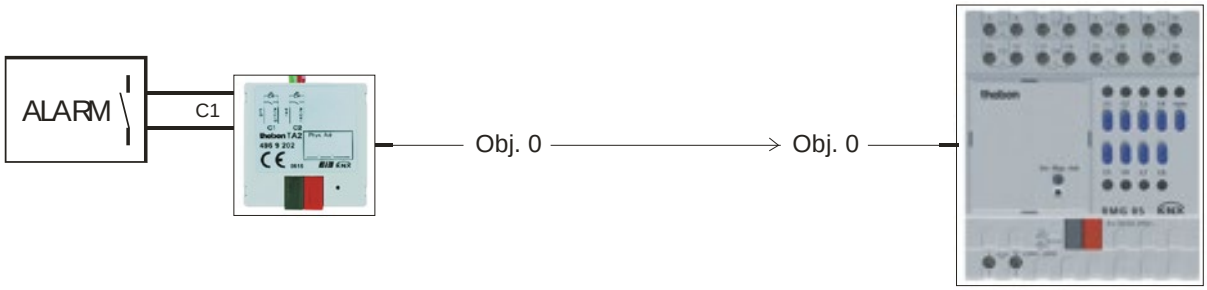

Figure 3

6.3.3 Objects and links

Table 27

No.	TA 2 Object name	No.	RMG 8 S Object name	Comments
0	*Channel 1 switching*	0	*RMG 8 S channel C1 Switching object*	-

6.3.4 Important parameter settings

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

Table 28: TA 2

Parameter page	Parameters	Setting
Channel 1	*Channel function*	*Switch/push button*
	Object type	*Switching (1-bit)*
	Response to rising edge	*On*
	Response to falling edge	*Off*

Table 29: RMG 8 S

Parameter page	Parameters	Setting
General	*Type of basic module*	*RMG 8 S*
RMG 8 S channel C1 function selection	*Channel function*	*Flashing*
	Activation of function via	*Switching object*
Contact characteristics	*Type of contact*	*NO contact*
Flashing	*ON phase:*	
	Hours	*0*
	Minutes	*0*
	Seconds	*1*
	OFF phase:	
	Hours	*0*
	Minutes	*0*
	Seconds	*1*
	How often should it flash	*Until it switches off*

7 Appendix

7.1 The scenes

7.1.1 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 Activate scenes parameter and Scenes parameter page.

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 30: 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 .. 64
	RMG / RME 4 I	

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

7.1.2 Select and save settings:

The relevant code is sent to the scene object (object 243) to select and save a scene.

Table 31

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
64	$3F	63	$BF	191

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.

7.1.3 Teach-in scenes without telegrams

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.

7.2 Collective feedback (RMG 8 S / RME 8 S)

The collective feedback objects send the current switching status of the channels in a module as a 1-bit bit pattern.
With the RMG 8 S each bit corresponds to a channel. The lowest bit (right) stands for channel C1 and the highest for channel C8 (left).

See Example at the end of the chapter.

Table 32: Evaluation of the feedback telegrams

Telegram		Channel statuses								Telegram		Channel statuses							
Dec	**Hex**	**C8**	**C7**	**C6**	**C5**	**C4**	**C3**	**C2**	**C1**	**Dec**	**Hex**	**C8**	**C7**	**C6**	**C5**	**C4**	**C3**	**C2**	**C1**
0	$00	0	0	0	0	0	0	0	0	**25**	$19	0	0	0	**1**	**1**	0	0	**1**
1	$01	0	0	0	0	0	0	0	**1**	**26**	$1A	0	0	0	**1**	**1**	0	**1**	0
2	$02	0	0	0	0	0	0	**1**	0	**27**	$1B	0	0	0	**1**	**1**	0	**1**	**1**
3	$03	0	0	0	0	0	0	**1**	**1**	**28**	$1C	0	0	0	**1**	**1**	**1**	0	0
4	$04	0	0	0	0	0	**1**	0	0	**29**	$1D	0	0	0	**1**	**1**	**1**	0	**1**
5	$05	0	0	0	0	0	**1**	0	**1**	**30**	$1E	0	0	0	**1**	**1**	**1**	**1**	0
6	$06	0	0	0	0	0	**1**	**1**	0	**31**	$1F	0	0	0	**1**	**1**	**1**	**1**	**1**
7	$07	0	0	0	0	0	**1**	**1**	**1**	**32**	$20	0	0	**1**	0	0	0	0	0
8	$08	0	0	0	0	**1**	0	0	0	**33**	$21	0	0	**1**	0	0	0	0	**1**
9	$09	0	0	0	0	**1**	0	0	**1**	**34**	$22	0	0	**1**	0	0	0	**1**	0
10	$0A	0	0	0	0	**1**	0	**1**	0	**35**	$23	0	0	**1**	0	0	0	**1**	**1**
11	$0B	0	0	0	0	**1**	0	**1**	**1**	**36**	$24	0	0	**1**	0	0	**1**	0	0
12	$0C	0	0	0	0	**1**	**1**	0	0	**37**	$25	0	0	**1**	0	0	**1**	0	**1**
13	$0D	0	0	0	0	**1**	**1**	0	**1**	**38**	$26	0	0	**1**	0	0	**1**	**1**	0
14	$0E	0	0	0	0	**1**	**1**	**1**	0	**39**	$27	0	0	**1**	0	0	**1**	**1**	**1**
15	$0F	0	0	0	0	**1**	**1**	**1**	**1**	**40**	$28	0	0	**1**	0	**1**	0	0	0
16	$10	0	0	0	**1**	0	0	0	0	**41**	$29	0	0	**1**	0	**1**	0	0	**1**
17	$11	0	0	0	**1**	0	0	0	**1**	**42**	$2A	0	0	**1**	0	**1**	0	**1**	0
18	$12	0	0	0	**1**	0	0	**1**	0	**43**	$2B	0	0	**1**	0	**1**	0	**1**	**1**
19	$13	0	0	0	**1**	0	0	**1**	**1**	**44**	$2C	0	0	**1**	0	**1**	**1**	0	0
20	$14	0	0	0	**1**	0	**1**	0	0	**45**	$2D	0	0	**1**	0	**1**	**1**	0	**1**
21	$15	0	0	0	**1**	0	**1**	0	**1**	**46**	$2E	0	0	**1**	0	**1**	**1**	**1**	0
22	$16	0	0	0	**1**	0	**1**	**1**	0	**47**	$2F	0	0	**1**	0	**1**	**1**	**1**	**1**
23	$17	0	0	0	**1**	0	**1**	**1**	**1**	**48**	$30	0	0	**1**	**1**	0	0	0	0
24	$18	0	0	0	**1**	**1**	0	0	0	**49**	$31	0	0	**1**	**1**	0	0	0	**1**

Continuation:

Telegram		Channel statuses								Telegram		Channel statuses							
Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1	Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1
50	$32	0	0	1	1	0	0	1	0	92	$5C	0	1	0	1	1	1	0	0
51	$33	0	0	1	1	0	0	1	1	93	$5D	0	1	0	1	1	1	0	1
52	$34	0	0	1	1	0	1	0	0	94	$5E	0	1	0	1	1	1	1	0
53	$35	0	0	1	1	0	1	0	1	95	$5F	0	1	0	1	1	1	1	1
54	$36	0	0	1	1	0	1	1	0	96	$60	0	1	1	0	0	0	0	0
55	$37	0	0	1	1	0	1	1	1	97	$61	0	1	1	0	0	0	0	1
56	$38	0	0	1	1	1	0	0	0	98	$62	0	1	1	0	0	0	1	0
57	$39	0	0	1	1	1	0	0	1	99	$63	0	1	1	0	0	0	1	1
58	$3A	0	0	1	1	1	0	1	0	100	$64	0	1	1	0	0	1	0	0
59	$3B	0	0	1	1	1	0	1	1	101	$65	0	1	1	0	0	1	0	1
60	$3C	0	0	1	1	1	1	0	0	102	$66	0	1	1	0	0	1	1	0
61	$3D	0	0	1	1	1	1	0	1	103	$67	0	1	1	0	0	1	1	1
62	$3E	0	0	1	1	1	1	1	0	104	$68	0	1	1	0	1	0	0	0
63	$3F	0	0	1	1	1	1	1	1	105	$69	0	1	1	0	1	0	0	1
64	$40	0	1	0	0	0	0	0	0	106	$6A	0	1	1	0	1	0	1	0
65	$41	0	1	0	0	0	0	0	1	107	$6B	0	1	1	0	1	0	1	1
66	$42	0	1	0	0	0	0	1	0	108	$6C	0	1	1	0	1	1	0	0
67	$43	0	1	0	0	0	0	1	1	109	$6D	0	1	1	0	1	1	0	1
68	$44	0	1	0	0	0	1	0	0	110	$6E	0	1	1	0	1	1	1	0
69	$45	0	1	0	0	0	1	0	1	111	$6F	0	1	1	0	1	1	1	1
70	$46	0	1	0	0	0	1	1	0	112	$70	0	1	1	1	0	0	0	0
71	$47	0	1	0	0	0	1	1	1	113	$71	0	1	1	1	0	0	0	1
72	$48	0	1	0	0	1	0	0	0	114	$72	0	1	1	1	0	0	1	0
73	$49	0	1	0	0	1	0	0	1	115	$73	0	1	1	1	0	0	1	1
74	$4A	0	1	0	0	1	0	1	0	116	$74	0	1	1	1	0	1	0	0
75	$4B	0	1	0	0	1	0	1	1	117	$75	0	1	1	1	0	1	0	1
76	$4C	0	1	0	0	1	1	0	0	118	$76	0	1	1	1	0	1	1	0
77	$4D	0	1	0	0	1	1	0	1	119	$77	0	1	1	1	0	1	1	1
78	$4E	0	1	0	0	1	1	1	0	120	$78	0	1	1	1	1	0	0	0
79	$4F	0	1	0	0	1	1	1	1	121	$79	0	1	1	1	1	0	0	1
80	$50	0	1	0	1	0	0	0	0	122	$7A	0	1	1	1	1	0	1	0
81	$51	0	1	0	1	0	0	0	1	123	$7B	0	1	1	1	1	0	1	1
82	$52	0	1	0	1	0	0	1	0	124	$7C	0	1	1	1	1	1	0	0
83	$53	0	1	0	1	0	0	1	1	125	$7D	0	1	1	1	1	1	0	1
84	$54	0	1	0	1	0	1	0	0	126	$7E	0	1	1	1	1	1	1	0
85	$55	0	1	0	1	0	1	0	1	127	$7F	0	1	1	1	1	1	1	1
86	$56	0	1	0	1	0	1	1	0	128	$80	1	0	0	0	0	0	0	0
87	$57	0	1	0	1	0	1	1	1	129	$81	1	0	0	0	0	0	0	1
88	$58	0	1	0	1	1	0	0	0	130	$82	1	0	0	0	0	0	1	0
89	$59	0	1	0	1	1	0	0	1	131	$83	1	0	0	0	0	0	1	1
90	$5A	0	1	0	1	1	0	1	0	132	$84	1	0	0	0	0	1	0	0
91	$5B	0	1	0	1	1	0	1	1	133	$85	1	0	0	0	0	1	0	1

Continuation:

Telegram		Channel statuses								Telegram		Channel statuses							
Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1	Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1
134	$86	1	0	0	0	0	1	1	0	176	$B0	1	0	1	1	0	0	0	0
135	$87	1	0	0	0	0	1	1	1	177	$B1	1	0	1	1	0	0	0	1
136	$88	1	0	0	0	1	0	0	0	178	$B2	1	0	1	1	0	0	1	0
137	$89	1	0	0	0	1	0	0	1	179	$B3	1	0	1	1	0	0	1	1
138	$8A	1	0	0	0	1	0	1	0	180	$B4	1	0	1	1	0	1	0	0
139	$8B	1	0	0	0	1	0	1	1	181	$B5	1	0	1	1	0	1	0	1
140	$8C	1	0	0	0	1	1	0	0	182	$B6	1	0	1	1	0	1	1	0
141	$8D	1	0	0	0	1	1	0	1	183	$B7	1	0	1	1	0	1	1	1
142	$8E	1	0	0	0	1	1	1	0	184	$B8	1	0	1	1	1	0	0	0
143	$8F	1	0	0	0	1	1	1	1	185	$B9	1	0	1	1	1	0	0	1
144	$90	1	0	0	1	0	0	0	0	186	$BA	1	0	1	1	1	0	1	0
145	$91	1	0	0	1	0	0	0	1	187	$BB	1	0	1	1	1	0	1	1
146	$92	1	0	0	1	0	0	1	0	188	$BC	1	0	1	1	1	1	0	0
147	$93	1	0	0	1	0	0	1	1	189	$BD	1	0	1	1	1	1	0	1
148	$94	1	0	0	1	0	1	0	0	190	$BE	1	0	1	1	1	1	1	0
149	$95	1	0	0	1	0	1	0	1	191	$BF	1	0	1	1	1	1	1	1
150	$96	1	0	0	1	0	1	1	0	192	$C0	1	1	0	0	0	0	0	0
151	$97	1	0	0	1	0	1	1	1	193	$C1	1	1	0	0	0	0	0	1
152	$98	1	0	0	1	1	0	0	0	194	$C2	1	1	0	0	0	0	1	0
153	$99	1	0	0	1	1	0	0	1	195	$C3	1	1	0	0	0	0	1	1
154	$9A	1	0	0	1	1	0	1	0	196	$C4	1	1	0	0	0	1	0	0
155	$9B	1	0	0	1	1	0	1	1	197	$C5	1	1	0	0	0	1	0	1
156	$9C	1	0	0	1	1	1	0	0	198	$C6	1	1	0	0	0	1	1	0
157	$9D	1	0	0	1	1	1	0	1	199	$C7	1	1	0	0	0	1	1	1
158	$9E	1	0	0	1	1	1	1	0	200	$C8	1	1	0	0	1	0	0	0
159	$9F	1	0	0	1	1	1	1	1	201	$C9	1	1	0	0	1	0	0	1
160	$A0	1	0	1	0	0	0	0	0	202	$CA	1	1	0	0	1	0	1	0
161	$A1	1	0	1	0	0	0	0	1	203	$CB	1	1	0	0	1	0	1	1
162	$A2	1	0	1	0	0	0	1	0	204	$CC	1	1	0	0	1	1	0	0
163	$A3	1	0	1	0	0	0	1	1	205	$CD	1	1	0	0	1	1	0	1
164	$A4	1	0	1	0	0	1	0	0	206	$CE	1	1	0	0	1	1	1	0
165	$A5	1	0	1	0	0	1	0	1	207	$CF	1	1	0	0	1	1	1	1
166	$A6	1	0	1	0	0	1	1	0	208	$D0	1	1	0	1	0	0	0	0
167	$A7	1	0	1	0	0	1	1	1	209	$D1	1	1	0	1	0	0	0	1
168	$A8	1	0	1	0	1	0	0	0	210	$D2	1	1	0	1	0	0	1	0
169	$A9	1	0	1	0	1	0	0	1	211	$D3	1	1	0	1	0	0	1	1
170	$AA	1	0	1	0	1	0	1	0	212	$D4	1	1	0	1	0	1	0	0
171	$AB	1	0	1	0	1	0	1	1	213	$D5	1	1	0	1	0	1	0	1
172	$AC	1	0	1	0	1	1	0	0	214	$D6	1	1	0	1	0	1	1	0
173	$AD	1	0	1	0	1	1	0	1	215	$D7	1	1	0	1	0	1	1	1
174	$AE	1	0	1	0	1	1	1	0	216	$D8	1	1	0	1	1	0	0	0
175	$AF	1	0	1	0	1	1	1	1	217	$D9	1	1	0	1	1	0	0	1

Continuation:

Telegram		Channel statuses								Telegram		Channel statuses							
Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1	Dec	Hex	C8	C7	C6	C5	C4	C3	C2	C1
218	$DA	1	1	0	1	1	0	1	0	237	$ED	1	1	1	0	1	1	0	1
219	$DB	1	1	0	1	1	0	1	1	238	$EE	1	1	1	0	1	1	1	0
220	$DC	1	1	0	1	1	1	0	0	239	$EF	1	1	1	0	1	1	1	1
221	$DD	1	1	0	1	1	1	0	1	240	$F0	1	1	1	1	0	0	0	0
222	$DE	1	1	0	1	1	1	1	0	241	$F1	1	1	1	1	0	0	0	1
223	$DF	1	1	0	1	1	1	1	1	242	$F2	1	1	1	1	0	0	1	0
224	$E0	1	1	1	0	0	0	0	0	243	$F3	1	1	1	1	0	0	1	1
225	$E1	1	1	1	0	0	0	0	1	244	$F4	1	1	1	1	0	1	0	0
226	$E2	1	1	1	0	0	0	1	0	245	$F5	1	1	1	1	0	1	0	1
227	$E3	1	1	1	0	0	0	1	1	246	$F6	1	1	1	1	0	1	1	0
228	$E4	1	1	1	0	0	1	0	0	247	$F7	1	1	1	1	0	1	1	1
229	$E5	1	1	1	0	0	1	0	1	248	$F8	1	1	1	1	1	0	0	0
230	$E6	1	1	1	0	0	1	1	0	249	$F9	1	1	1	1	1	0	0	1
231	$E7	1	1	1	0	0	1	1	1	250	$FA	1	1	1	1	1	0	1	0
232	$E8	1	1	1	0	1	0	0	0	251	$FB	1	1	1	1	1	0	1	1
233	$E9	1	1	1	0	1	0	0	1	252	$FC	1	1	1	1	1	1	0	0
234	$EA	1	1	1	0	1	0	1	0	253	$FD	1	1	1	1	1	1	0	1
235	$EB	1	1	1	0	1	0	1	1	254	$FE	1	1	1	1	1	1	1	0
236	$EC	1	1	1	0	1	1	0	0	255	$FF	1	1	1	1	1	1	1	1

EXAMPLE:
Object 79, RMG 8 S basic device, reports value of **198** (hexadecimal C6).

The following bit pattern for this value is shown in the table:

1	**1**	0	0	0	**1**	**1**	0

Table 33: Format of bit pattern

C8	C7	C6	C5	C4	C3	C2	C1

EVALUATION:
The following channels are reported as switched **on**: C2, C3, C7, C8.
The following channels are reported as switched **off**: C1, C4, C5, C6.

7.3 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.