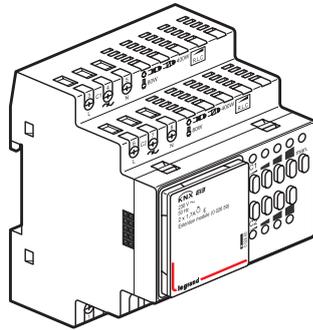


0 026 59



0 026 60

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1. USE

0 026 59

The DIN controller KNX Cat.No 0 026 59 allows 2 circuits dimming control. By adding the reference 0 026 60, it can control up to 6 circuits. It is compatible with incandescent, halogen low and high voltage and dimmable LED. Power variation of each channel is 400 W.

When two channels are paralleled that power is increased to 800 W.

The identification of associated loads is automatic (loads types R, L or C). This controller also allows the control of fans.

To verify the conformity of wiring, the control of each channel can be locally done on the controller, via push buttons and LEDs located on the front of the device.

Through KNX programming: ON / OFF, manual dimming or automatic dimming via a sensor, scene control and many others functions can be performed. The slope dimming can be modified.

A minimum/maximum variation threshold can also be set to ensure consistent dimming.

0 026 60

The DIN controller KNX Cat.No 0 026 60 is a 2 channels complementary extension of Cat.No 0 026 59.

2. TECHNICAL FEATURES

2.1 Permissible loads - 230 V~

C1/C2	2 x 400 W	2 x 1,7 A	2 x 80 W	2 x 0,3 A	2 x 80 W	2 x 0,3 A	2 x 80 W	2 x 0,3 A	2 x 60 W	2 x 0,3 A
C1//C2*	800 W	1 x 3,4 A	140 W	1 x 0,6 A	140 W	1 x 0,6 A	140 W	1 x 0,6 A	120 W	1 x 0,6 A

* parallel wiring

2.2 Climatic features

• Environmental operating temperature: -5 to +45°C

2.3 Electrical features

• BUS

• KNX/BUS power supply: 29 V_{DC}
• KNX/BUS absorption: 10 mA

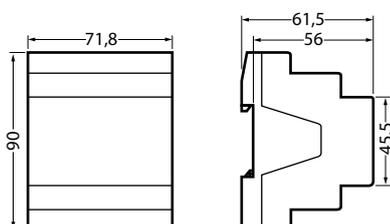
• Power

• Voltage: 230 V~
• Frequency: 50 Hz
• Power supply (standby): 0.9 W

2.4 Mechanical features

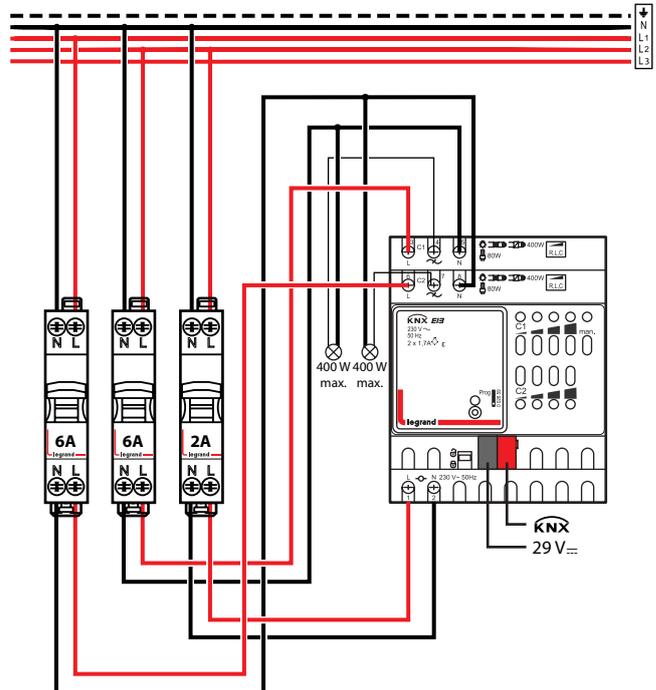
• Protection class: II
• Protection rating: IP 20
• Weight 200g
• Automatic clamps
• Terminal screw: 1 x 2.5 mm²
• Number of channels: 2

3. OVERALL DIMENSIONS

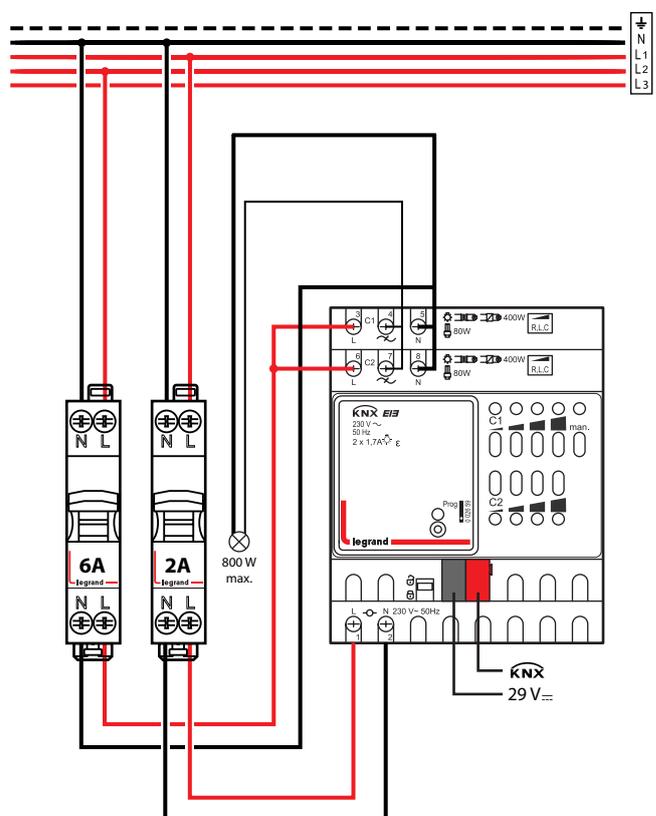


4. CONNECTION

• 0 026 59 - C1/C2

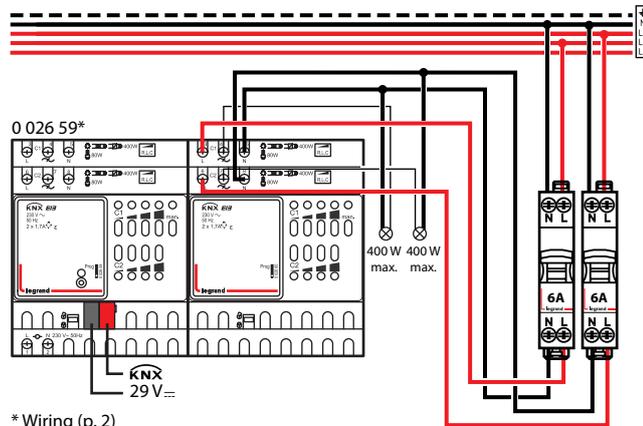


• 0 026 59 - C1//C2 - parallel wiring



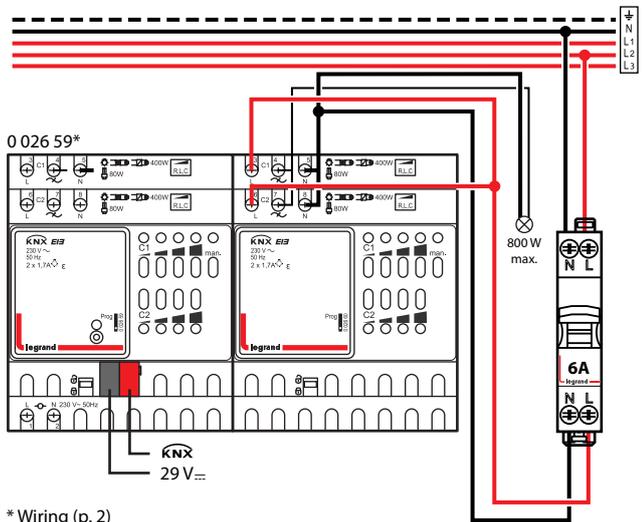
4. CONNECTION (CONTINUED)

• 0 026 59 + 0 026 60 - C1/C2



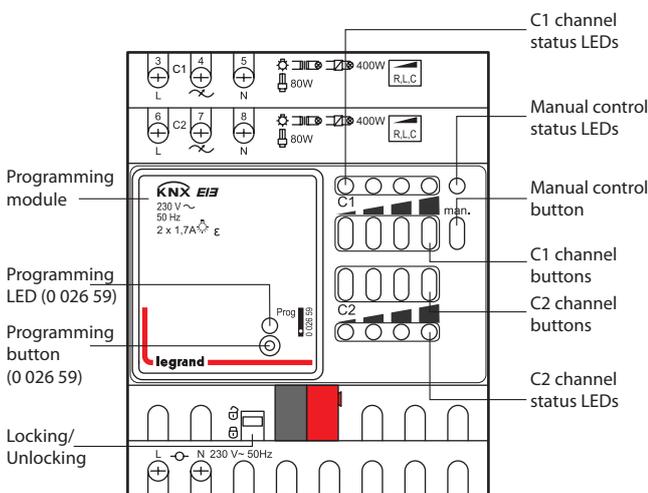
* Wiring (p. 2)

• 0 026 59 + 0 026 60 - C1//C2 - Parallel wiring



* Wiring (p. 2)

5. OPERATION



5. OPERATION (CONTINUED)

Every dimmer actuator has a manual button. When manual mode is activated the dimmer can only be operated with the buttons.

BUS telegrams will not be delivered. 4 buttons and 4 LEDs are available for each channel.

The LEDs show the current state as a bar display:



The device dims down to 0% in the event of excess temperature or short circuit in the load.

The buttons call up the following dimming values:

Button 1	Button 2	Button 3	Button 4
25 % or OFF	50 %	75 %	100 %

In standard operation:

Pressing a button establishes the desired dimming value. A status established via the channel button can be overwritten via BUS at any time.

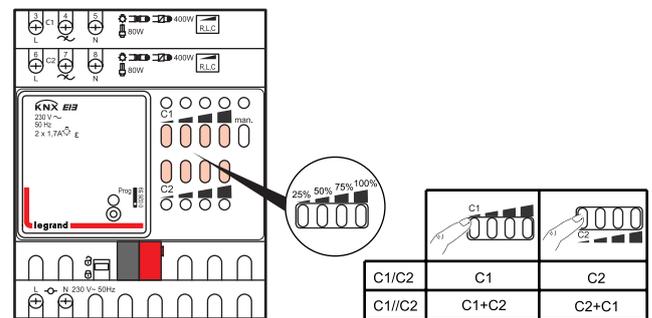
In manual operation with the manual button or Manual object:

If the "manual" function is selected, the associated LED lights up. Any time-based function which is running (e.g. soft switching) will be terminated.

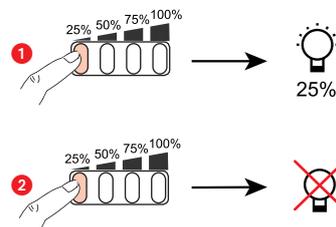
The dimming status will be frozen and can only be changed via the channel buttons. KNX BUS telegrams will not be delivered.

The "Manual" state will be reset during a mains power failure. After cancelling manual operation already received KNX BUS events will not be obtained later.

Normal mode



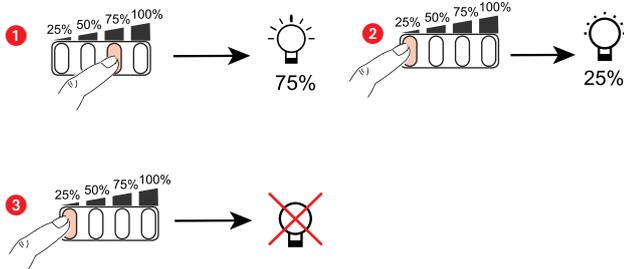
ON/OFF 25 %



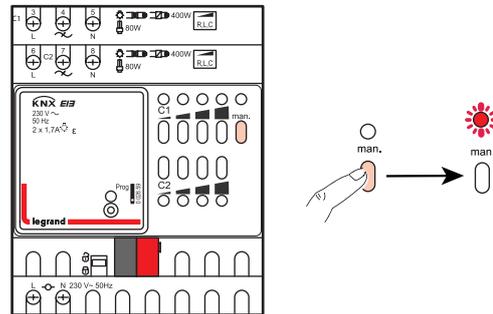
5. OPERATION (CONTINUED)

ON/OFF 50 %, 75 %, 100 %

Ex: ON/OFF 75 %



In manual mode, BUS telegrams are not delivered



6. STANDARDS AND APPROVALS

Marking

- KNX EIB, CE

Note: All technical information is available at



7. MAINTENANCE

Clean the surface with a cloth.
Do not use acetone, tar-removing cleaning agents or trichloroethylene.

Caution: Always test before using other special cleaning products.

8. COMMUNICATION OBJECTS

The objects are divided into channel-related and common objects

8.1 Channel-related objects

0	002659 channel C1	Switching ON/OFF	1 bit	C	R	W	-	U
1	002659 channel C1	Brighter/darker	4 bit	C	R	W	-	U
2	002659 channel C1	Dimming value	1 Byte	C	-	W	-	U
3	002659 channel C1	Soft switching	1 bit	C	R	W	-	U
4	002659 channel C1	Lock	1 bit	C	R	W	-	U
5	002659 channel C1	Call up/save scenes	1 Byte	C	R	W	-	U
6	002659 channel C1	Lock scenes = 1	1 bit	C	R	W	-	-
7	002659 channel C1	Forced mode	2 bit	C	R	W	-	U
8	002659 channel C1	Dimming value limit	1 Byte	C	R	W	-	U
9	002659 channel C1	Feedback On/Off	1 bit	C	R	-	T	U
10	002659 channel C1	Feedback in %	1 Byte	C	R	-	T	U
11	002659 channel C1	Time to next service	2 Byte	C	R	W	T	U
12	002659 channel C1	Service required	1 bit	C	R	-	T	U

8. COMMUNICATION OBJECTS (CONTINUED)

13	002659 channel C1	Reset service	1 bit	C	R	W	-
14	002659 channel C1	General error message	1 bit	C	R	-	T
15	002659 channel C1	Short circuit message	1 bit	C	R	-	T
16	002659 channel C1	Excess temperature message	1 bit	C	R	-	T
17	002659 channel C1	Mains power failure	1 bit	C	R	-	T
18	002659 channel C1	Load type message (R, C/L)	1 bit	C	R	-	T
30	002659 channel C2	Switching ON/OFF	1 bit	C	R	W	-
31	002659 channel C2	Brighter/darker	4 bit	C	R	W	-
32	002659 channel C2	Dimming value	1 Byte	C	-	W	-
33	002659 channel C2	Soft switching	1 bit	C	R	W	-
34	002659 channel C2	Lock	1 bit	C	R	W	-
35	002659 channel C2	Call up/save scenes	1 Byte	C	R	W	-
36	002659 channel C2	Lock scenes = 1	1 bit	C	R	W	-
37	002659 channel C2	Force = 1	1 bit	C	R	W	-
38	002659 channel C2	Dimming value limit	1 Byte	C	R	W	-
39	002659 channel C2	Feedback On/Off	1 bit	C	R	-	T
40	002659 channel C2	Feedback in %	1 Byte	C	R	-	T
41	002659 channel C2	Time to next service	2 Byte	C	R	W	T
42	002659 channel C2	Service required	1 bit	C	R	-	T
43	002659 channel C2	Reset service	1 bit	C	R	W	-
44	002659 channel C2	General error message	1 bit	C	R	-	T
45	002659 channel C2	Short circuit message	1 bit	C	R	-	T
46	002659 channel C2	Excess temperature	1 bit	C	R	-	T
47	002659 channel C2	Mains power failure	1 bit	C	R	-	T
48	002659 channel C2	Load type message	1 bit	C	R	-	T

8. COMMUNICATION OBJECTS (CONTINUED)

Overview of channel-related objects

BASIC MODULE 0 026 59		1ST EXTENSION 0 026 60		2ND EXTENSION 0 026 60	
C1	C2	C1	C2	C1	C2
0	30	80	110	160	190
1	31	81	111	161	191
2	32	82	112	162	192
3	33	83	113	163	193
4	34	84	114	164	194
5	35	85	115	165	195
6	36	86	116	166	196
7	37	87	117	167	197
8	38	88	118	168	198
9	39	89	119	169	199
10	40	90	120	170	200
11	41	91	121	171	201
12	42	92	122	172	202
13	43	93	123	173	203
14	44	94	124	174	204
15	45	95	125	175	205
16	46	96	126	176	206
17	47	97	127	177	207
18	48	98	128	178	208

8.2 Common objects

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

78	002659	Manual		1 bit	C	R	W	T
240	Central permanent ON	002659/002660		1 bit	C	R	W	T
241	Central permanent OFF	002659/002660		1 bit	C	R	W	T
242	Central switching	002659/002660		1 bit	C	R	W	T
243	Central recall/save scenes	002659/002660		1 Byte	C	R	W	T
250	BCU version	Transmit		14 Byte	C	R	-	T
251	Version of basic module	Transmit		14 Byte	C	R	-	T

8.3 Description of objects

• **Objects 0, 30, 80, 110, 160, 190 "Switching ON/OFF"**

A 1 on this object dims up to 100%, and 0 dims to 0%

• **Objects 1, 31, 81, 111, 161, 191 "brighter/darker"**

This object is actuated with 4-bit telegrams (DPT 3.007 Control Dimming).

This function can be used to dim the light up or down incrementally. In the standard application, telegrams are sent with 64 increments.

IMPORTANT: The response to 4-bit telegrams depends on the "Switching On/Off with a 4-bit telegram" parameter.

• **Objects 2, 32, 82, 112, 162, 192 "Dimming value"**

This object can be used to select the desired dimmer setting directly.

Format: 1 byte percentage value EIS 2 dimming, value.

0 = 0%

255 = 100%

8. COMMUNICATION OBJECTS (CONTINUED)

• Objects 3, 33, 83, 113, 163, 193 "Soft switching"

A "1" on this object starts a soft switching cycle, i.e.:

The brightness is gradually increased, starting from the minimum brightness.

The dimming value remains constant for the programmed time and is then gradually reduced after this time has elapsed.

Once the programmed minimum brightness has been reached the dimming value is reset to 0%.

The cycle can be extended or prematurely terminated via telegrams.

This sequence can also be controlled using a **time switch** if the "Time between soft ON and soft OFF" parameter is set to "Until soft OFF telegram".

The dimming cycle is then started with a "1" and finished with a "0".

• Object 4, 34, 84, 114, 164, 194 "Lock"

Responses to setting and cancelling the lock can be configured if the lock function has been activated. (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**).

The lock only applies when the object is received, i.e. with Lock with OFF telegram the channel is not locked after BUS restoration.

If the parameter Behaviour when setting the lock = no reaction, a running soft-switch process will not be interrupted.

• Objects 5, 35, 85, 115, 165, 195 "Call up/save scenes"

Only available if the scene function has been activated (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**).

This object can be used to save and subsequently call up scenes.

Saving stores the dimming value of the channel.

It does not matter how this dimming value is produced (whether via switching commands, central objects or the buttons on the device).

The saved dimming value 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.

• Objects 6, 36, 86, 116, 166, 196 "Lock scenes = 1, Enable scenes = 1"

Parameters scenes : locks with OFF telegram or locks with ON telegram.

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.

• Objects 7, 37, 87, 117, 167, 197 "Forced operation = 1" / "Forced operation = 0" / "Dimming value during forced operation"

The function of the forced operation object can be configured as a 1-bit, 2-bit or 1-byte object.

Format of forced object	Forced operation		Response with forced operation	
	Trigger with	End with	Start	End
1 bit	1 or 0 (configurable)	0 or 1 (configurable)	Configurable in the application program	
2 bit	Forced operation on = 3 Forced off = 2	Deactivate forced operation = 0 or 1	Configurable in the application program.	The last dimming value before forced operation is restored
1 byte	1-100 %	0	The triggering telegram also acts simultaneously as a forced operation dimming value	The last dimming value before forced operation is restored

• Objects 8, 38, 88, 118, 168, 198 "Dimming value limit"

The value received will be configured as the maximum configurable dimming value.

Its range of applicability is defined on the Dimming value restrictions parameter page.

• Object 9, 39, 89, 119, 169, 199 "Feedback On/Off"

Sends the current dimming status:

1 = current dimming value is between 1% and 100%

0 = current dimming value is 0%

• Object 10, 40, 90, 120, 170, 200 "Feedback in %"

Sends the new dimming value after a change as soon as a dimming procedure is completed, i.e. once the new set point value has been reached.

Format: 1 Byte, 0 ... 255 i.e. 0 ... 100%

• Objects 11, 41, 91, 121, 171, 201 "Operating hours feedback", "Time to next service"

Only available if the operating hours counter function has been activated (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**).

Reports, depending on selected Type of operating hours counter (see parameters page Hour meter and service), either the remaining period to the next set service or the current status of the operating hours counter.

8. COMMUNICATION OBJECTS (CONTINUED)

• Objects 12, 42, 92, 122, 172, 202 "Service required"

Only available if the operating hours counter function has been activated (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**) and Type of operating hours counter = Counter for time to next service (Hour meter and service parameters page).

Reports if the next service is due.

0 = not due

1 = service is due.

• Objects 13, 43, 93, 123, 173, 203 "Reset operating hours", "Reset service"

Only available if the operating hours counter function has been activated (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**).

• Object 14, 44, 94, 124, 174, 204 "General error message"

Used as a malfunction signal:

0 = No error

1 = an error has been detected

This message can, for example, be displayed on a screen.

• Object 15, 45, 95, 125, 175, 205 "Short circuit message"

0 = OK

1 = Short circuit at dimmer output:

Check connected lines and load.

→ When there is a short circuit, all 4 status LEDs on the device flash.

• Object 16, 46, 96, 126, 176, 206 "Excess temperature message"

0 = OK

1 = the dimmer is overloaded:

- connected power is too high,
- ambient temperature is too high,
- booster defective
- incorrect installation position, i.e. device cannot dissipate heat,

→ If there is excess temperature, the status LEDs 2, 3, and 4 flash.

• Object 17, 47, 97, 127, 177, 207 "Mains power failure"

0 = OK

1 = No mains voltage available:

Loss of power or defective hardware

→ To be able to recognise the mains power failure on the load side, the dimmer must be supplied with power via the mains connection on the basic device.

• Object 18, 48, 98, 128, 178, 208 "Load type message (R/C, L)"

Currently selected load type feedback

0 = Phase control (L load connected), conventional transformers.

1 = Reverse phase control (R, C load connected), electronic transformers or incandescent lamps.

• Objects 78, 158, 238 "Manual"

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 will not work. Any time-based functions that are running (e.g. soft switching) will be terminated.

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

After cancelling manual operation already received BUS events will not be obtained later. The "Manual" state will be reset during a mains power failure.

• Object 240 "Central permanent ON"

Central switch-on function. Enables simultaneous switch-on of all channels (basic and extension modules) with a single telegram.

0 = No function

1 = Permanent ON

Participation in this object can be set individually for each channel (see parameters page **0 026 59 channel C1/C2: Function selection**).

IMPORTANT:

This object takes top priority.

As long as it is set, the other switching commands will not work on the participating channels.

8. COMMUNICATION OBJECTS (CONTINUED)

• Object 241 "Central permanent OFF"

Central switch-off function.

Enables simultaneous switch-off of all channels (basic and extension modules) with a single telegram.

0 = No function

1 = Permanent OFF

Participation in this object can be set individually for each channel (see parameters page **0 026 59/0 026 60 channel C1/C2: Function selection**).

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

• Object 242 "Central switching"

Central switching function.

Enables simultaneous switch-on or off of all channels (basic and extension modules) with a single telegram.

0 = OFF

1 = ON

Participation in this object can be set individually for each channel (see parameters page **0 026 59 channel C1/C2: Function selection**).

With this object, every participating channel responds exactly as if its first object (i.e. obj. 0, 30, etc.) were receiving a switching command.

• Object 243 "Call up/ save central scenes"

This object can be used to save and subsequently call up "scenes". The save process stores the current status of the dimming channel (or the switch state with other actuators), regardless of how the status was brought about (e.g. via dimming values, switching commands, central objects or the manual switches). The saved status is thus restored when called up. Each channel can participate in a maximum of 8 scenes.

• 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: Axx Hyy Vzzz

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: A10 H03 V014

- ETS application version 1.0

- Hardware version \$03

- Firmware version \$14

• Object 251 "Version of basic module"

For diagnostic purposes only. Only for basic devices in the MIX 2 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: Mxx Hyy Vzzz

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

Example: M11 H25 V025

- Module \$11 = RMG 8 S

- Hardware version V25

- Firmware version V25

Possible module codes (as at 2012)

Module	Code
Module or mains voltage are unavailable.	\$00
0 026 60	\$13

8. COMMUNICATION OBJECTS (CONTINUED)

• Object 252 "Version of first extension module"

Telegram format: See above, object 251

Possible module codes

Module	Code
Module or mains voltage are unavailable.	\$00
0 026 60	\$13

• Object 253 "Version of second extension module"

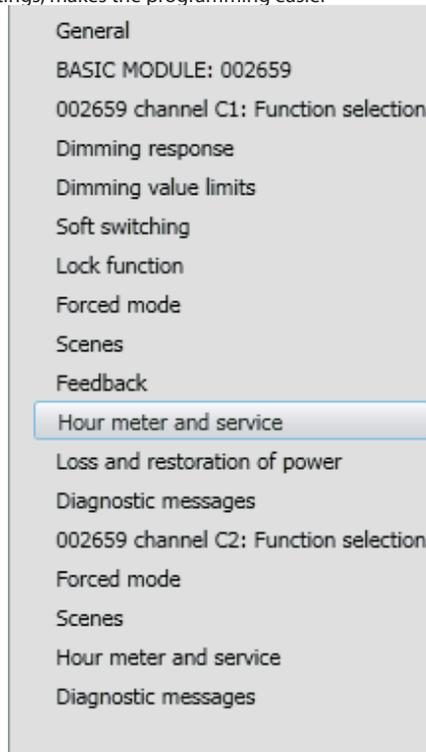
See above, object 252

8.4 Parameters

8.4.1 Parameter pages

Every device has 2 identical channels.

A copy function on channel 2, of the channel 1 settings, makes the programming easier



Parameter page name	Selectable settings description
General	Selection of the number of installed modules and central parameters.
BASIC MODULE: 0 026 59	(Empty page)
0 026 59 channel C1: Function selection	Characteristics of channel and activation of additional functions (soft switching, forced operation, scenes, etc.).
Dimming response	Load selection, dimming times, dimming switch-on value, etc.
Dimming value limits	Definition of the limits
Soft switching	Brightness/dimming value and time settings for soft switching.
Lock function	Type of lock telegram and response to locking.
Forced mode	Behaviour in forced operation mode
Scenes	Selection of scene numbers relevant to the channel.
Feedback	Format of the feedback objects and cyclical transmission time.
Hour meter and service	Type of operating hours counter and, if required, service interval etc.
Loss and restoration of power	Behaviour during failure and restoration of KNX BUS and mains power.
Diagnostic messages	Activate transmission of the diagnostic and error messages.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.2 General

Type of basic module	002659
Type of first extension module	002660 ▼
Type of second extension module	002660 ▼
Function of manual push button	valid until reset via object ▼
Manual operation of channels	enabled ▼

Designation	Values	Description
Type of basic module	Select device. 0 026 59	Selection of available basic module
Type of first extension module	Not available/inactive 0 026 60	Selection of first extension module, if available.
Type of second extension module	Not available/inactive 0 026 60	Selection of second extension module, if available.
Function of manual push button	Applies for 24 hours or until reset via object disabled Valid 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
Manual operation of channels	Enabled Disabled	The channels can be operated via the push-buttons on the device. No manual operation, the push-buttons on the device are locked.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.3 0 026 59 Channel C1/C2: Function selection

Copy main parameters from channel C1	no
Adjust dimming value limits	no
Adjust soft switching	no
Adjust lock function	no
Activate forced mode	no
Activate scenes	no
Participation in central objects	no
Adjust feedback	no
Activate hour meter	no
Activate diagnostic messages	no

Designation	Values	Description
Copy main parameters from channel C1	<p>No</p> <p>Yes</p> <p>Yes, channel C2 boosts channel C1</p>	<p>This parameter is only available for C2. C1 and C2 can be configured separately from one another.</p> <p>C2 is operated automatically with the same settings as C1. Only forced operation, scenes, operating hours counter and diagnostic messages remain individually configurable for C2.</p> <p>Channel C2 is wired in parallel with C1 and serves only as an output amplifier. In this mode up to 4 booster modules can be connected in parallel and a dimming output of up to 2000 W can be reached</p>
Adjust dimming value limits	<p>No</p> <p>Yes</p>	<p>The standard values apply: Implement limit when executing the object = no Limit applies for:</p> <ul style="list-style-type: none"> - Soft switching, - absolute dimming, - relative dimming, - switch command = no <p>The page Dimming value limits will be shown and all parameters can be adjusted individually.</p>
Adjust soft switching	<p>No</p> <p>Yes</p>	<p>The standard values apply:</p> <ul style="list-style-type: none"> - Time for Soft ON = 1 min - Dimming value after Soft On = 100% - Time between Soft On and Soft Off = 5 min - Time for Soft OFF = 1 min <p>The page Soft switching will be shown and all parameters can be adjusted individually.</p>
Adjust lock function	<p>No</p> <p>Yes</p>	<p>The standard values apply:</p> <ul style="list-style-type: none"> - Lock with ON telegram - Behaviour when setting the lock = 10 % - Behaviour when cancelling the lock = update <p>The page Lock function will be shown and all parameters can be adjusted individually.</p>
Activate forced mode	<p>No</p> <p>Yes</p>	<p>No forced operation function.</p> <p>The page Forced mode will be shown.</p>
Activate scenes	<p>No</p> <p>Yes</p>	<p>Do not use scenes.</p> <p>The page Scenes will be shown</p>

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.3 0 026 59 Channel C1/C2: Function selection (continued)

Designation	Values	Description
Participation in central objects	No Yes: in all central objects only in central continuous ON only in central continuous OFF only in central switching only in central switching and continuous ON only in central switching and continuous OFF only in central permanent On and permanent OFF	Central objects are not taken into account. Which central objects have to be taken into account? Central objects enable the simultaneous switching ON and OFF of several channels with one single object.
Adjust feedback	No Yes	The standard values apply: - Format of 1-bit feedback = not inverted - Send 1-bit feedback cyclically = no - Send 8-Bit feedback: = only after ending dimming process - Send 8-bit feedback cyclically = no - Time for cyclical transmission of feedback = 60 min The page Feedback will be shown and all parameters can be adjusted individually.
Activate hour meter	No Yes	No operating hours counter. The page Hour meter and service will be shown.
Activate diagnostic messages	No Yes	No diagnostic messages The page Diagnostic messages will be shown.

8.4.4 Dimming response

Load selection	fan (soft switching deactivated) ▼
Start-up time	10 s ▼
Minimum dimming value	10 % ▼
Dimming time 1 from 0% to 100%	4 s ▼
Dimming time 2 from 0% to 100%	8 s ▼
Dimming time 3 from 0% to 100%	12 s ▼
When receiving a switching order (1 bit)	soft on with dimming time 1 ▼
When receiving a dimming order (4 bit)	soft on with dimming time 1 ▼
When receiving an absolute value (8 bit)	soft on with dimming time 1 ▼
Switch-on value	brightness value before previous switch-OFF ▼
Switching ON/OFF with a 4-bit dim telegram	yes ▼

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.4 Dimming response (continued)

Designation	Values	Description
Load selection	Automatic	The dimmer detects what type of load is connected and automatically selects the appropriate dimming strategy (phase control or reverse phase control).
	RC load (incandescent lamps, electronic transformers)	Phase control for resistive and capacitive loads (LED lamps, incandescent lamps, halogen high-voltage lamps etc.). For electronic transformers/power units designated for use with RC-mode dimmers (phase control/ trailing edge phase ctrl.). Notice: When selecting RC mode load recognition will always be performed in the interests of safety. This should prevent the dimmer from being damaged (e.g. wound transformer) when an L-load is connected. The RC mode is actually only used when no L-load is recognised.
	L load (wound transformers)	Phase control (leading edge phase ctrl.) for inductive loads, e.g. wound transformers. Not suitable for electronic transformers, can lead to a dimmer overload.
	Dimmable energy-saving lamps with RC response	Generally recommended for ESL, especially for high loads (advantage: less heat generated in the dimmer).
	Dimmable energy-saving lamps with L response	With ESL, only use if a disruptive flickering is noted when dimming up or down.
	Fan (soft switching deactivated)	Special mode for fans, with configurable start-up time (see below).
	LEDs (RC, 0-90 %, from 09/2013) Reserve 2 ... Reserve 32	Only for LED lights that cannot be dimmed down when = 100% Do not use.
Start-up time	2-60 s	Only with Load selection = fan. Time for which the fan must be driven with full voltage, until it has reached a specific speed.
Minimum dimming value	1 %, 5 %, 10 % , 15 %, 20 %, 25 %, 30 %, 35 %, 40 %, 45 %, 50 %	Minimum dimming value for all dimming processes (except 0%). Any values (switch-on dimming value, response to BUS failure, etc.) which are below this threshold are increased to the minimum dimming value.
Dimming time 1 from 0% to 100%	1 s, 2 s, 4 s , 6 s, 8 s, 12 s, 15 s, 24 s, 30 s, 60 s	This parameter defines the maximum dimming speed from 0 to 100% For greater flexibility 3 different values can be specified. (see below).
Dimming time 2 from 0% to 100%	1 s, 2 s, 4 s, 6 s, 8 s , 12 s, 15 s, 24 s, 30 s, 60 s	
Dimming time 3 from 0% to 100%	1 s, 2 s, 4 s, 6 s, 8 s, 12 s , 15 s, 24 s, 30 s, 60 s	
When receiving a switching order (1-bit)	Immediate on	The change from 0% to 100% or 100% to 0% takes place within max. 1 s.
	Soft on with dimming time 1 Soft on with dimming time 2 Soft on with dimming time 3	The change from 0% to 100% or 100% to 0% takes place within the preset dimming time.
When receiving a dimming order (4-bit)	Immediate on	The change from 0% to 100% or 100% to 0% takes place within max. 1 s (in very quick increments), but can be interrupted by a stop command (release button).
	Soft on with dimming time 1 Soft on with dimming time 2 Soft on with dimming time 3	The change from 0% to 100% or 100% to 0% takes place within the preset dimming time in correspondingly lower increments.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.4 Dimming response (continued)

Designation	Values	Description
When receiving an absolute value (8-bit)	Immediate on Soft on with dimming time 1 Soft on with dimming time 2 Soft on with dimming time 3	The received dimming value is adopted immediately (max. delay 1 s). The change from the new dimming value takes place within the preset dimming time proportionately to the change in value. Example with dimming time 1 = 12 s: Change from: - 0 to 100% or 100 to 0% in 12 s (= 100 % of 12s) - 25 to 50% or 50 to 25% in 3 s (= 25% of 12s) etc.
Switch-on value	Brightness value before previous switch-OFF Minimum value 100 % 10 %, 20 %, 30 % 40 %, 50 %, 60 % 70 %, 80 %, 90 %	The last dimming value before switching off is saved and restored The configured minimum brightness is applied. The dimmer adopts the selected value after it is switched on. Here again the configured minimum dimmer value needs to be taken into account.
Switching ON/OFF with a 4-bit dim telegram	No Yes	Defines the response if the channel is switched OFF and a 4-bit telegram (brighter/darker) is received. Channel status remains unchanged. Channel is switched ON and dimmed or switched OFF.

8.4.5 Dimming value limits

The dimming value can be temporarily restricted via the Object 8 Dimming value limit. This is used, for example, to ensure that basic lighting is not exceeded at night, while during the evening the full range of lighting can be used.

The function is implemented as follows:

If the object value = 0, the dimming value is not restricted.

If the object value is greater than 0, then this value indicates the limits for the dimming value.

If the object value is smaller than the configured minimum dimming value, then the brightness is restricted to this minimum dimming value.

If the restriction is removed, the dimming value continues to remain restricted until a new dimming command is received.

During the restriction, the Soft On and Soft Off times are adjusted in such a way that the speed of the brightness change remains the same as when there are no restrictions.

Perform limitation when writing object	no
Limit applies to switching command (1-bit)	no
Limit applies to relative dimming (4-bit)	no
Limit applies to absolute dimming (8-bit)	no
Limit applies to soft switching	no

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.5 Dimming value limits (continued)

Designation	Values	Description
Perform limitation when writing object	No Yes	Limit not applied till next dimming process. Dimming value limit as soon as a value is received on the dimming value limit object (Obj. 8, 38..).
Limit applies to switching command (1-bit)	No Yes	No limit during switching commands. Limit is effective.
Limit applies to relative dimming (4-bit)	No Yes	No restriction during brighter/darker dimming. Limit is effective.
Limit applies to absolute dimming (8-bit)	No Yes	No limit for percentage value telegrams. Limit is effective.
Limit applies to soft switching	No Yes	No limit for soft switching Limit is effective.

8.4.6 Soft switching

Time for Soft ON	1 min
Dimming value after Soft ON	100 %
Time between Soft ON and Soft OFF	5 min
Time for Soft OFF	1 min

Designation	Values	Description
Time for Soft ON	0 s, 1 s, 2 s, 4 s 6 s, , 8 s, 12 s, 15 s 24 s, 30 s, 45 s, 1 min , 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 12 min, 15 min, 20 min, 30 min, 40 min, 50 min, 60 min	Duration of the dimming-up phase (t1) for Soft switching (see appendix). 0 sec. = switch on immediately.
Dimming value after Soft ON	10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %, 100 %	Final value at the end of the Soft ON phase (val) Remarks: Here again the configured minimum dimmer value needs to be taken into account.
Time between Soft ON and Soft OFF	Until Soft OFF telegram 1 s, 2 s, 3 s, 4 s 5 s, 6 s, 7 s, 8 s, 9 s 10 s, 15 s, 20 s, 30 s 40 s, 50 s, 1 min, 2 min 3 min, 4 min, 5 min , 6 min, 7 min, 8 min, 9 min, 10 min 12 min, 15 min, 20 min, 30 min 40 min, 50 min, 60 min	No time restriction; Soft OFF phase is initiated by a telegram. Delay (t2) to the start of the Soft OFF phase
Time for Soft OFF	0 s, 1 s, 2 s, 4 s 6 s, 8 s, 12 s, 15 s 24 s, 30 s, 45 s, 1 min , 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 12 min, 15 min, 20 min 30 min, 40 min, 50 min, 60 min	Duration of the dimming-down phase (t3) for Soft switching (see appendix). 0 sec. = switch OFF immediately

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.7 Lock function

Lock telegram	lock with ON telegram
Reaction when setting the lock	10 %
Reaction when unlocking	update

Designation	Values	Description
Lock telegram	lock with ON telegram lock with OFF telegram	0 = Enable 1 = lock 0 = lock 1 = Enable Note: The lock is always deactivated after reset.
Reaction when setting the lock	No change 100 % 0 %, 10 % , 20 %, 30 % 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	No response. Dim to the set value
Reaction when unlocking	No change Update 100 %, 0 %, 10 %, 20 %, 30 % 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	No response. If a telegram was received during the lock: apply state. Otherwise: restore state before the lock. Dim to the set value

8.4.8 Forced mode

Format of forced object	1 bit
Activate forced mode with	1
Behaviour at start of forced mode operation	no change
Behaviour at end of forced mode	value before forced mode

Format of forced object	2 bit
Reaction on forced ON	100 %
Reaction on forced OFF	OFF
Behaviour at end of forced mode	value before forced mode

Format of forced object	1 byte (%)
Behaviour at end of forced mode	minimum value

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.8 Forced mode (continued)

Designation	Values	Description
Format of forced object	1 bit	Forced operation triggered by:
	2 bit	Switch telegram.
	1 byte (%)	Priority telegram. Dimming value.
1 bit		
Activate forced mode with	1 0	Recommended. After reset/download forced operation is already activated and must be cancelled if necessary.
Behaviour at start of forced mode operation	No change Minimum dimming value 100 % OFF 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Response at the reception of a forced operation telegram. Here again the configured minimum dimming value needs to be taken into account.
Behaviour at end of forced mode	Update Value before forced mode Minimum value 100 % OFF 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Response at the end of forced operation. Here again the configured minimum dimming value needs to be taken into account.
2 bit		
Reaction on forced ON	No change Minimum value 100 % OFF 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Response at the reception of a forced operation telegram. Here again the configured minimum dimming value needs to be taken into account.
Reaction on forced OFF	OFF	
Behaviour at end of forced mode	Update Value before forced operation Minimum dimming value 100 % OFF 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Response at the end of forced operation Here again the configured minimum dimming value needs to be taken into account.
1 byte (%)		
Behaviour at end of forced mode	Minimum value	Response at the end of forced operation Here again the configured minimum dimming value needs to be taken into account.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.9 Scenes

This page appears when the Scenes are activated on the **0 026 59 channel C1/C2: Function selection** parameters page. Each channel can participate in up to 8 scenes.

Lock telegram for scenes	lock with ON telegram
All scene statuses of channel	overwrite when downloading
Participation in object Central scene	no
Channel reacts to	scene number 1
Allocated dimming value	10 %
Response when receiving scene numbers	immediate on
Permit teach-in	no
Channel reacts to	scene number 2
Allocated dimming value	20 %
Response when receiving scene numbers	immediate on
Permit teach-in	yes

Channel reacts to	scene number 3
Allocated dimming value	30 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes
Channel reacts to	scene number 4
Allocated dimming value	40 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes
Channel reacts to	scene number 5
Allocated dimming value	50 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.9 Scenes (continued)

Channel reacts to	scene number 6
Allocated dimming value	60 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes
Channel reacts to	scene number 7
Allocated dimming value	70 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes
Channel reacts to	scene number 8
Allocated dimming value	80 %
Response when receiving scene numbers	soft on with dimming time 1
Permit teach-in	yes

Designation	Values	Description
Lock telegram for scenes	lock with ON telegram lock with OFF telegram	0 = Enable 1 = lock 0 = lock 1 = Enable Note: The lock is always deactivated after reset.
All scene statuses of channel	Overwrite when downloading Unchanged after download	A download deletes all scene memories of 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: Enter scenes without telegrams All previously taught-in scenes are kept. However, the scene numbers the channel can react to can be changed (see below: Channel reacts to).
Participation in object Central scene	No yes	Indicates if the device has to react to the central scene object
Channel reacts to	No scene number Scene number 1 ... Scene number 63	Here it is possible to select the first of the 8 scenes the channel must react to
Allocated dimming value	Off 10 % , 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %, 100 %	New dimming value to be assigned to the selected scene number. Only possible if the scene statuses can be overwritten after download.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	Scenes can only be called up. The user can both call up and teach-in or amend scenes.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.9 Scenes (continued)

Designation	Values	Description
Channel reacts to	No scene number Scene number1 Scene number 2 ... Scene number 63	Here it is possible to select the second of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 % , 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.
Channel reacts to	No scene number Scene number1 ... Scene number 3 ... Scene number 63	Here it is possible to select the third of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 % , 40 %, 50 %, 60 %, 70 %, 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.
Channel reacts to	No scene number Scene number1 ... Scene number 4 ... Scene number 63	Here it is possible to select the fourth of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 %, 40 % , 50 %, 60 %, 70 %, 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.
Channel reacts to	No scene number Scene number1 ... Scene number 5 ... Scene number 63	Here it is possible to select the fifth of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 %, 40 %, 50 % , 60 %, 70 %, 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.9 Scenes (continued)

Designation	Values	Description
Channel reacts to	No scene number Scene number1 ... Scene number 6 ... Scene number 63	Here it is possible to select the sixth of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 %, 40 %, 50 %, 60 % , 70 %, 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.
Channel reacts to	No scene number Scene number1 ... Scene number 7 ... Scene number 63	Here it is possible to select the seventh of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 % , 80 %, 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.
Channel reacts to	No scene number Scene number1 ... Scene number 8 ... Scene number 63	Here it is possible to select the eighth of the 8 scenes the channel must react to
Allocated dimming value	Off 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 % , 90 %, 100 %	See above.
Response when receiving scene numbers	Immediate ON soft on with dimming time 1 soft on with dimming time 2 soft on with dimming time 3	You choose the dimming slop
Permit teach-in	No Yes	See above.

8.4.10 Feedback

Each channel has 2 feedback objects (e.g. Obj. 9 + 10, 39 + 40, etc.)

Format of 1-bit feedback	<input type="text" value="not inverted"/>
Send 1-bit feedback cyclically	<input type="text" value="yes"/>
Send 8-bit feedback	<input type="text" value="only after ending dimming process"/>
Send 8-bit feedback cyclically	<input type="text" value="yes"/>
Time for cyclical transmission of feedback (if available)	<input type="text" value="60 min"/>

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.10 Feedback (continued)

Designation	Values	Description
Format of 1-bit feedback	Not inverted Inverted	Standard setting: 1-100 % = 1 0 % = 0 1-100 % = 0 0 % = 1
Send 1-bit feedback cyclically	No Yes	Indicates if the 1-bit feedback object has to be cyclically sent
Send 8-bit feedback	Only after ending dimming process Every 10 % Every 20 % Every 30 %	Only send current dimmer value when the new dimmer value has been reached. Send even during the dimming process
Send 8-bit feedback cyclically	No Yes	Indicates if the 1-bit feedback object has to be cyclically sent
Time for cyclical transmission of feedback (if available)	2 min, 3 min, 5 min, 10 min, 15 min, 20 min, 30 min, 45 min, 60 min	This is the interval at which the feedbacks must be cyclically sent. This setting applies for both feedback objects (1 and 8-bit)

8.4.11 Hour meter and service

This page appears when Activate hour meter is selected on the **0 026 59 channel C1/C2: Function selection** parameters page.

Type of hour meter: operating hours counter

Report operating hours at change (0..100 h, 0 = no report): 10

Transmit operating hours cyclically: yes

Time for cyclical transmission: 60 min

Type of hour meter: counter for time to next service

Service interval (0..2000, x 10 h): 100

Report time to service when changed (0..100 h, 0 = no report): 10

Transmit time to service cyclically: yes

Report service cyclically: yes

Time for cyclical transmission (time to service): 60 min

Designation	Values	Description
Type of hour meter	Operating hours counter Counter for time period before next service	Measure the power-on time of the channel. Backward counter for channel power-on time.
Report operating hours at change (0..100 h, 0 = no report)	0..100 Default value = 10	Indicates the time interval at which the counter status has to be sent. Example: 10 = Send each time the counter status increases by another 10 hours.
Transmit operating hours cyclically	No Yes	Indicates if the counter has to be sent cyclically.
Time for cyclical transmission	2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes, 60 minutes	Interval at which the counter has to be cyclically sent.

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.11 Operating hours counter and service (continued)

Type of hour meter	Counter for time period before next service	Measure the time interval to the 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
Report time to service when changed (0..100 h, 0 = no report)	0..100 Default value = 10	Indicates the time interval at which the counter status has to be sent. Example: 10 = Send each time the counter status decreases by another 10 hours.
Transmit time to service cyclically	No Yes	Indicates if the counter has to be sent cyclically. → Object Time to next service.
Report service cyclically	No Yes	Send expiry of time to next service at regular intervals? → Object Service required.
Time for cyclical transmission (time to service)	2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes 60 minutes	Interval at which the counter has to be cyclically sent.

8.4.12 Loss and restoration of power

Status at download and bus failure

Status at restoration of mains or bus power

Designation	Values	Description
Status at download and BUS failure	Same as before failure 100 %, 0 %, 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Restore the status previous to a download or BUS failure. Apply set value here. Here again the configured minimum dimming value needs to be taken into account.
Status at restoration of mains or BUS power	Same as before failure 100 %, 0 %, 10 %, 20 %, 30 %, 40 %, 50 %, 60 %, 70 %, 80 %, 90 %	Restore the status previous to a mains or BUS power failure Apply set value here. Here again the configured minimum dimming value needs to be taken into account.

8.4.13 Diagnostic messages

The diagnostic messages are used during troubleshooting when there are faults.

Send general error cyclically

Send short circuit cyclically

Send excess temperature cyclically

Send mains failure cyclically

Send load type cyclically

Cycle time for all diagnostic messages (if used)

8. COMMUNICATION OBJECTS (CONTINUED)

8.4.13 Diagnostic messages (continued)

Designation	Values	Description
Send general error cyclically	No Yes	Indicates if the corresponding diagnostic message has to be cyclically sent.
Send short circuit cyclically	No Yes	
Send excess temperature cyclically	No Yes	
Send mains failure cyclically	No Yes	
Send load type cyclically	No Yes	
Cycle time for all diagnostic messages (if used)	2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes, 60 minutes	Indicates the time interval at which the diagnostic messages have to be cyclically sent It applies to all messages.

Note: All the above described settings and parameters are applicable also for the first and second 0 026 60 extension modules.