

**Universal dimmer - Series MX**

<b>DMG 2 S</b> (Basic module)	491 0 270
<b>DME 2 S</b> (Upgrade module)	491 0 271
<b>DMB 2 S</b> (Performance upgrade)	491 0 272

**1.0 Designated use**

The **DMG 2 S** universal dimmer is a series device used to dim or switch electrical consumers such as lights with incandescent lamps, high-voltage halogen lamps, energy-saving lamps and low-voltage halogen lamps with series-connected conventional or electrical transformers.

ETS (Engineering Tool Software) enables application programs to be selected, specific parameters and addresses to be assigned and transferred to the device. The **DMG 2 S** basic module can be upgraded by a max. of 2 further modules.

**MX** can be combined with all Mix series devices

**2.0. Safety notes**



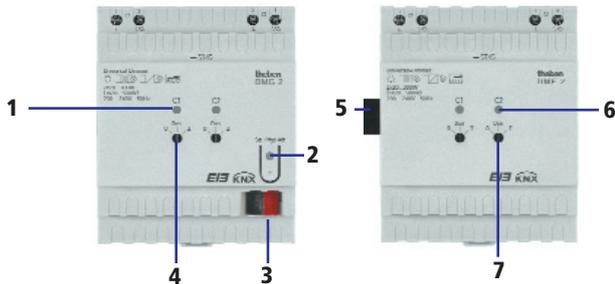
The professional installation of bus lines and commissioning of devices requires compliance with the provisions of EN 50428 for switches or similar installation equipment for use in building construction technology. Tampering with, or making modifications to, the device invalidates the guarantee.

- Do not connect the dimmer in series with other dimmers and/or in the secondary transformer circuit.
- Only use transformers that feature a thermal fuse and have been approved for dimmer operation.
- Do not bridge the dimmer with inductive load.
- If you connect an inductive load (e. g. wound transformer, fan motor) this can destroy the dimmer if an RC load is set in the application.

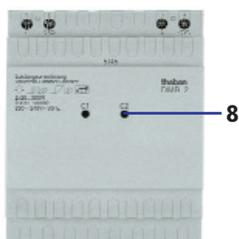
**3.0 Description**

**3.1 Basic functions**

**DMG 2 S** Basic device      **DME 2 S** Upgrade module



**DMB 2 S** Performance upgrade



The two channels are electrically isolated from each other, work completely independently and can be operated with different loads and mains phases.

**DMG 2 S (Basic device)**

- 1 **LED On** = Dimmer output value > 0 (LED flashing signals, see Chapter 3.2)
- 2 Programming key for physical address
- 3 Bus connection: Ensure correct polarity!
- 4 Manual selector switch: Permanently On/Off or Bus

**DME 2 S (Upgrade module)**

- 5 Plug as connection between upgrade module and basic device
- 6 **LED On** = Dimmer output value > 0 (LED flashing signals, see Chapter 3.2)
- 7 Manual selector switch: Permanently On/Off or Bus

**DMB 2 S (Performance upgrade)**

- 8 **LED On** = Dimmer output value > 20 %

**Manual switch permanently – ON / OFF – Bus operation**

**Manual switch in position:**

- The output status is determined by the messages on the **bus**.
- The output status is in the permanently **On (100 %)** position.
- The output status is in the permanently **Off (0 %)** position.

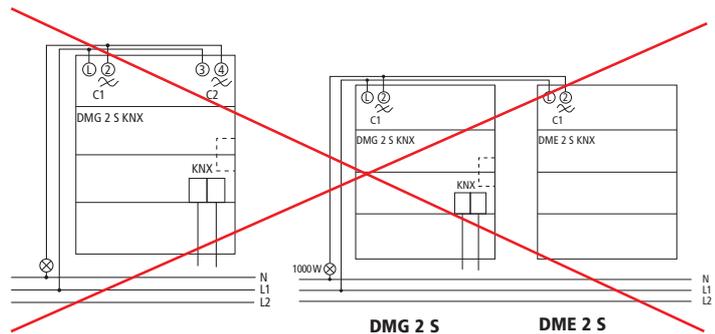
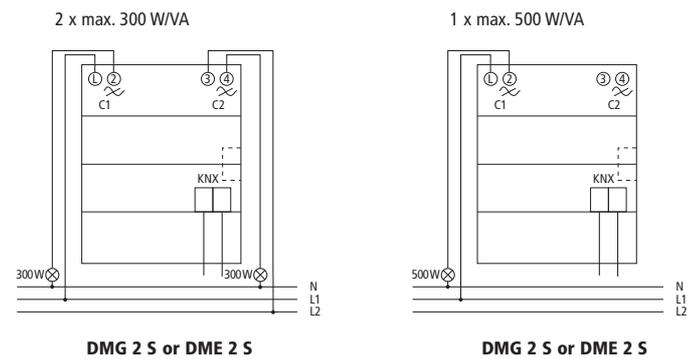
**3.2 LED flashing signals**

• LED flashes 1 s	Short circuit*
• LED flashes: 1 s on and 3 s off	As long as overtemperature is present
• LED flashes fast (0.1 s)	Load detection running
• LED flashes: 3 s on and 1 s off	Internal hardware fault
• LED flashes: 2 x fast and 2 s off	Surging*
• LED flashes: 3 x fast and 2 s on	Frequency fault*

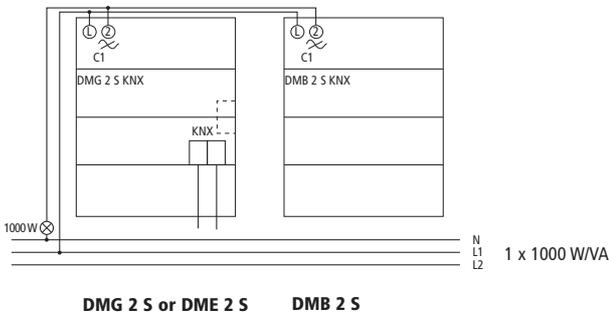
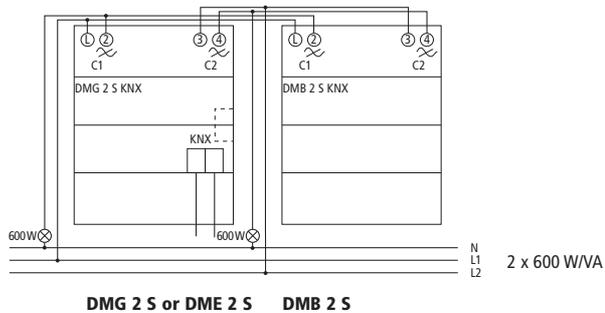
\* Status re-checked after approx. 10 min.

**4.0. Electrical connection**

**Connection for dimmer actuators DMG 2 S, DME 2 S and DMB 2 S**



## Performance upgrade



- The device's on power draw is very low and connection capacity is self-optimising, so that there are no restrictions or recommendations for certain manufacturers or makes when electronic transformers are used.
- The dimmer works with the factory setting by automatic load detection. For fans (e.g. kitchen, toilet, conservatory venting), manual load selection (fan) using ETS is recommended.

=> Operate dimmer and load with manual switch "0" ("Off") and program the ETS.

Mains and KNX voltage must be present at the time, so that the ETS parameters are transferred to the power unit and thus become effective.

=> Then move the manual switch to the required position.

	Unit	DMG 2 S	DME 2 S	DMB 2 S	Comment
230 V/ 50Hz mains power	W / VA	<0,5		<1,5	per channel with open circuit
Power supply KNX	mA	max. 10			
Minimum load	W / VA	20 *			per channel
Channels per module	–	2			
Maximum load symmetrical	W / VA	2 x 300	2 x 300	Upgrade by 2 x 300	all channels used individually
Maximum load asymmetrical	W / VA	1 x 500	1 x 500	Upgrade by 500	one channel only per module used
Example of asymmetrical load	W / VA 1 x 100	1 x 400 and 1 x 100	1 x 400 u.	Upgrade by 1 x 400 and 1 x 100	Total output per module max. 500
Cable length Dimmer load	m	max. 100	Do not connect any other consumers to lines between load and dimmer.		
Fusing	Automatic cut-out - Characteristic B 16 A				
Terminal - cross sections	solid: 0.5 mm <sup>2</sup> (dia. 0.8) to 4 mm <sup>2</sup> Strand with wire end sleeve: 0.5 mm <sup>2</sup> to 2.5 mm <sup>2</sup> Cross-head screwdriver PZ 1				
Permitted ambient temp. Protection class Protection rating Equipment standard	–5 °C ... +45 °C (–5 T45) II subject to correct installation IP 20 in accordance with EN 60529 EN 50090, EN 60669				
Housing	45 x 71 x 60 mm (4 TE)				

## 5.0 Bus connection, mains bus failure

- 2 channels must not be connected in parallel (possible only with performance upgrade) => The device would not be able to function!

### Information in the event of power failure

- If the power fails, the dimmer will not function.

### Information in the event of bus failure

- If a mains supply is available, the dimmer can be operated using the manual switches should the bus fail.
- The output values for when mains power or the bus is restored can be set via the parameters.

## 6.0 Upgrading the channels

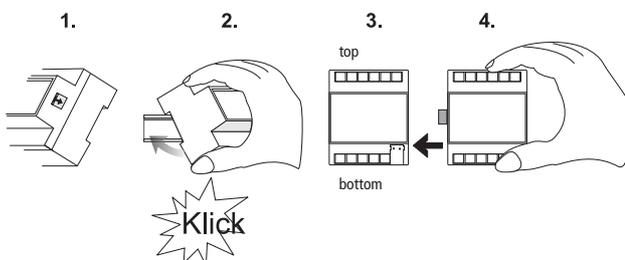
The **DMG 2 S** dimmer can be expanded to up to 6 channels by a max. of 2 **DME 2 S** upgrade modules.

- Move the slide on the right side of the **DMG 2 S/DME 2 S** device.
- Lock the **DMG 2 S/DME 2 S** modules onto the distributing bus bar. Push the **DMG 2 S** and **DME 2 S** modules together.

### Connection:

- Ensure correct polarity of the bus connection terminal.
- Close the dimmer actuator as shown on the wiring diagram in Chapter 4.0.

The bus is connected to **DMG 2 S**.



## 7.0 Technical features

- Protecting against short-circuit
- The light can flash briefly during load detection. It is therefore advisable to specify the load type using ETS in order to bypass the load test once the mains voltage is restored (e.g. in a bedroom).

- Observe the minimum loads of transformers.  
Automatic load detection only functions correctly with minimum load.
- Observe varying minimum and maximum outputs for dimmable energy-saving lamps.

### Power demand (W/VA) and examples of potential module combinations

2 x 300	DMG 2 S
1 x 350 and 1 x 150	DMG 2 S
1 x 450 and 1 x 50	DMG 2 S
1 x 500	DMG 2 S (one channel used on the module, the other channel remains unconnected)
2 x 500	DMG 2 S + DME 2 S (1 channel per module in each case)
2 x 600	DMG 2 S + DMB 2 S (each of the two DMG 2 S channels are upgraded by a DMB 2 S channel)
4 x 300	DMG 2 S + DME 2 S
6 x 300	DMG 2 S + DME 2 S + DME 2 S
6 x 600	DMG 2 S + DME 2 S + DME 2 S + 3 DMB 2 S (each of the two DMG 2 S) and DME 2 S channels are upgraded by a DMB 2 S channel)
1 x 1000	DMG 2 S + DMB 2 S (one DMB 2 S channel is upgraded with one DMB 2 S channel)
3 x 1000	DMG 2 S + DME 2 S + DME 2 S + 3 DMB 2 S (one channel per module used)
>1 kW	on request

- Observe varying minimum and maximum outputs for dimmable energy-saving lamps.

## Dimmable loads

Load type	dimmable	Comment
Halogen lights and incandescent lamps for 230 V~	YES	–
Low-voltage halogen lights with electronic transformer	YES	*
Low-voltage halogen lights with laminated core transformer	YES	* with transformers of the "dimmable" and at minimum load
Low-voltage halogen lights with toroidal mains transformer	YES	–
Combined operation of low-voltage halogen lights with electronic transformer and 230V~ incandescent lamps	YES	*
Compact fans (<50 W)	YES	with preset „inductive" load type in the ETS database
Metal vapour lamps	NO	–
Dimmable energy-saving lamps	YES	Observe minimum and maximum loads. See appendix: Dimming energy-saving lamps
Energy-saving lamps not designated as dimmable	NO	–
Fluorescent lamps	YES	Only with starter devices that can be dimmed using phase control or reverse phase control.
Lamps with own dimmer	NO	–
Lamps with other electronic starter devices	NO	–

- Should a switch be series-connected with the dimmer and the load is on, a time delay will result when switching on. This delay can be reduced with the ETS load selection without automatic load test.

Standard energy-saving lamps are not dimmable unless specifically denoted as dimmable.

There are also manufacturer- and type-related differences. Although the Theben dimmer takes account of the characteristic features of dimmable energy-saving lamps, attention should be to the following points.

- Parallel switching is possible but it is only recommended to use lights of the same type parallel on one channel.
- The maximum load per device is 2 x 60 W or 1x 100 W.
- The minimum output per channel is 7 W.

Theben offers a special mode to dim dimmable energy-saving lamps that is selected using the load selection = dimmable energy-saving lamp parameter (see KNX handbook).

The device is suitable for use in conditions with a normal environment. Observe deviating technical data on the device rating plate! Technical changes reserved. The devices comply with European Directives 73/23/EEC (low-voltage directive) and 89/336/EEC (EMC Directive).

If the devices are combined with others for use within a system, ensure that the system as a whole does not cause radio interference.

The ETS database can be found under

**[www.theben.de](http://www.theben.de)**

Please refer to the KNX handbook for detailed functional descriptions.

## Further information

- Respect the minimum load values issued by the transformer manufacturer! Non-compliance can result in radio interference and dimmers or transformers can be destroyed. The lamps have a reduced service life.
- Should no specifications be known, always connect at least 80 % of the nominal load for the transformer.
- Correct, automatic load detection is only guaranteed with minimum load.
- The device must be disconnected before changing the load.
- The voltage supply (at the fuse box) must be switched off when replacing lamps.
- There must be no KNX voltage present when sticking together or separating modules.
- Do not connect dimmers in series or in parallel; only the DMB 2 S booster module is connected in parallel.
- Dimmable lighting with electrical isolation (e.g. in the bathroom):
  - Use 12 V halogen lamps. Transformers for 12V halogen lamps normally have sufficient electrical isolation.
  - Do not install an isolation or adjustable transformer before the dimmer.
- Electronic power units from some manufacturers are also specified for reverse phase (C-load) in addition to phase control (L-load). The Theben dimmer recognises C-load mode and correctly controls these devices. L-mode and mixed installation with conventional transformers is not allowed for electronic power units.

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