WECASS BRAUN Integrated Energy Ltd.
Tel: +234 8126064555
E-Mail: info@wecass-braun.com
URL: www.wecass-braun.com

MaxiDimm3000

The MaxiDimm3000 is a 4-channel LED constant current driver with various features for controlling the LED outputs. Further, the MaxiDimm3000 and the implemented features are described. The MaxiDimm3000 can help to reduce the energy consumption for lighting systems by its functionality with the dimming options, thus further reducing CO2 emissions and other environmental pollution (e.g. light pollution).

General description

The MaxiDimm3000 is an LED control module that contains four controllable constant current drivers. In addition, the MaxiDimm3000 has interfaces with which the control of the LED drivers can be specifically influenced. These interfaces are 3 rotary coding switches and control inputs for a 230VAC control voltage as well as a passive 1-10V interface.

Connections

All connections on the MaxiDimm3000 are designed as multi-pole plug connections, whereby all lines on the plug system must be connected via screw connections.
There are two connection strips:

- A 10-pin connector strip where the 8 connectors of the 4-LED constant current drivers are located and the 2 connectors for the voltage supply (min. 10V - max. 40V)
- On the second connection strip there are 2 connections for an external 230VAC interface as control input and a 2-pole connection for a 1-10V interface for active control. The middle connection of the 5-pin connector strip is not used

The connections of the MaxiDimm3000 are shown in Table 1: Pin Assignment and described in detail in Figure 1: Pin Assignment.
Furthermore Figure 3: Block Diagram and Wiring of Cables shows an example for the connection of the MaxiDimm3000 including external power supply. The connections are named according to Table 1: Pin Assignment.

Connection number	Function	Polarity
1	Supply voltage (Input)	+
2		-
3	LED 1 Output	+
4		-
5	LED 2 Output	+
6		-
7	LED 3 Output	+
8		-
9	LED 4 Output	+
10		-
11	1-10V Output	-
12		+
13		
14	Control Input	230VAC
15		

Table 1: Pin Assignment

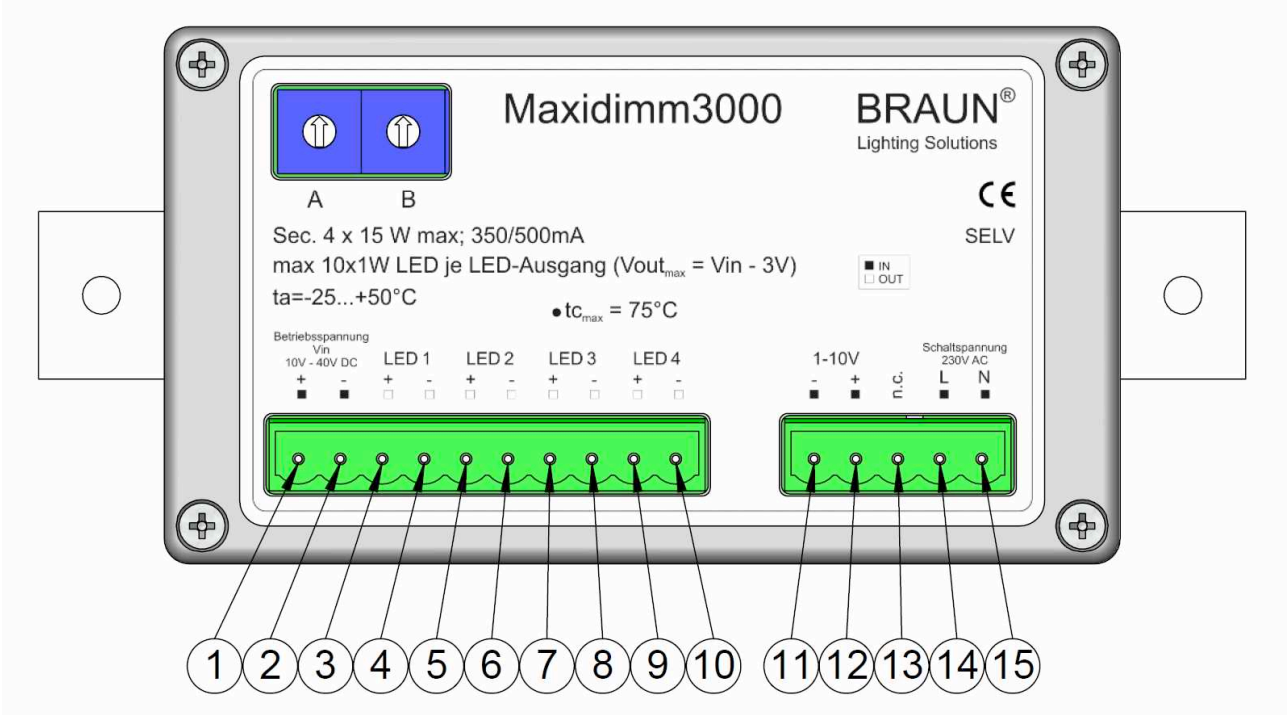

Figure 1: Pin Assignment

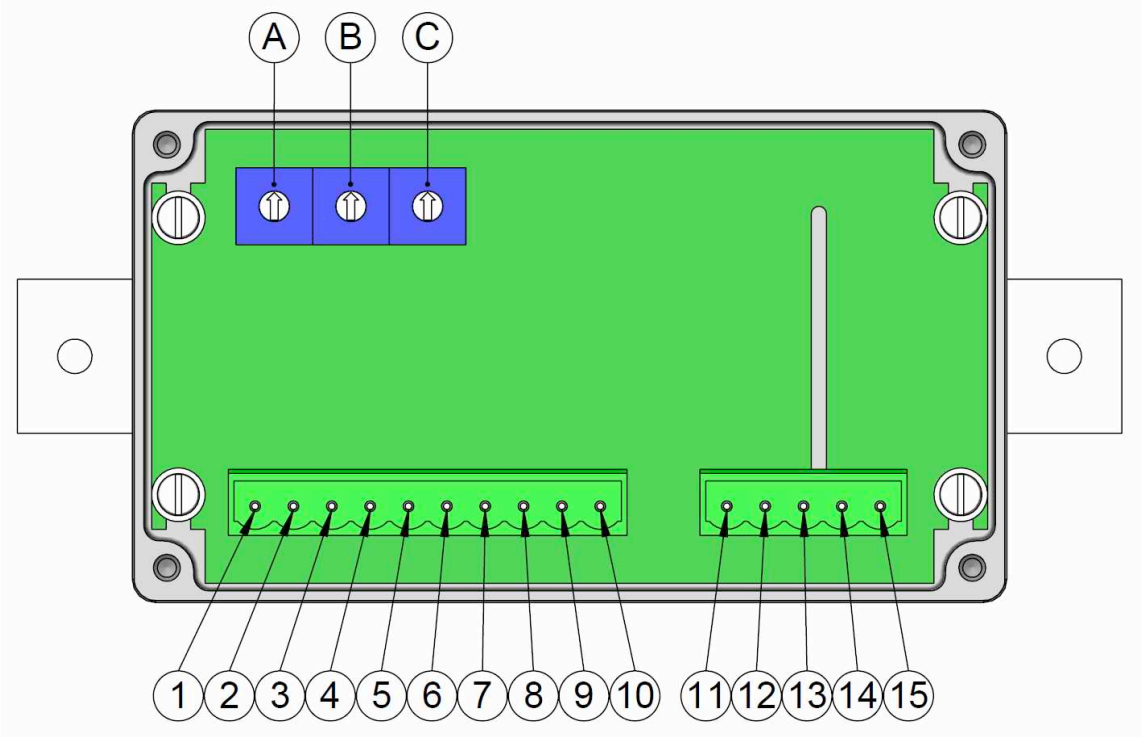

Figure 2: Pin Assignment and Coding Switch Assignment

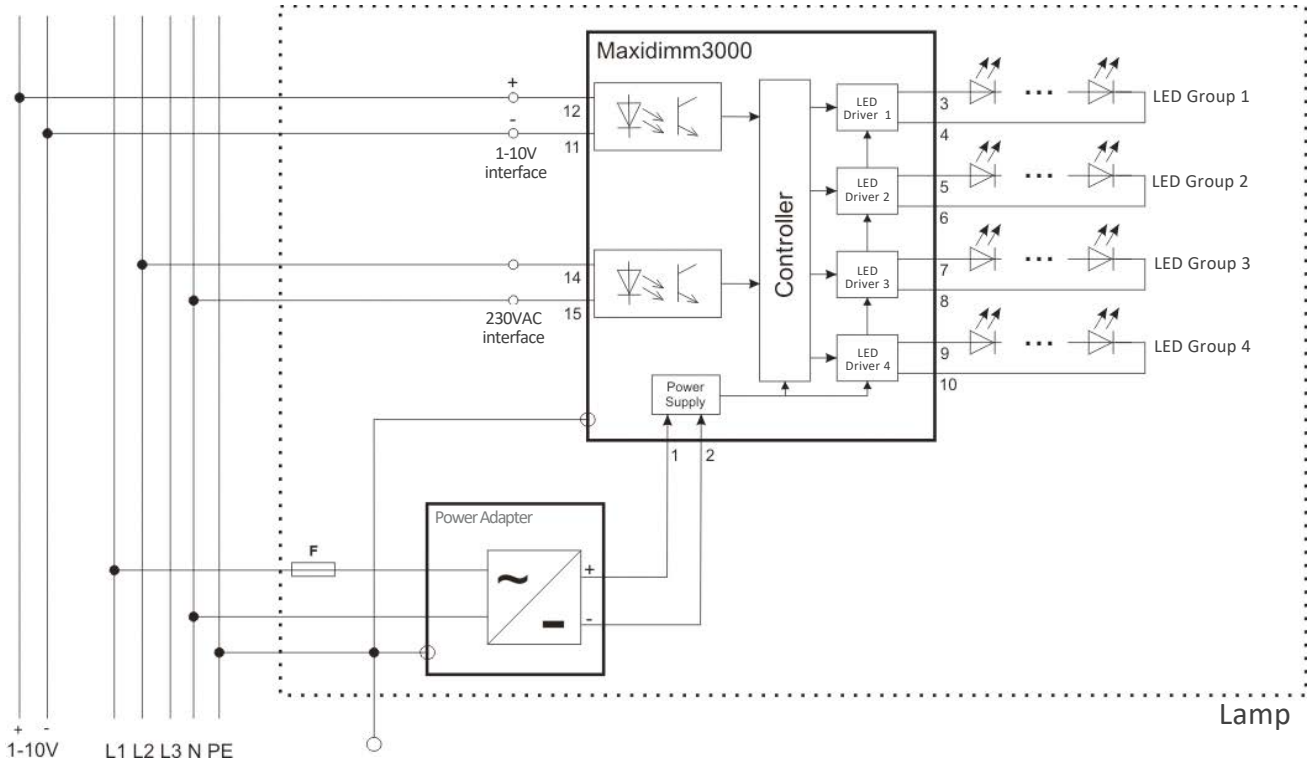

Figure 3: Block Diagram and Wiring of the Cables

WECASS BRAUN Integrated Energy Ltd.
Tel: +234 8126064555
E-Mail: info@wecass-braun.com
URL: www.wecass-braun.com

Setting options

The MaxiDimm3000 can be set externally via three rotary coding switches in the operating modes and their parameters. The rotary coding switch C is used to set the operating mode, and the rotary coding switches A and B are used to set the parameters in the selected mode. Not all parameter coding switches are used in every mode. The assignment is described in detail in the chapter "Operating modes".
Table 2: LED Current Setting on Coding Switches shows the LED currents matching the switch positions.

Switch position (switches B and C)	LED-Current (@350mA / @500mA)	
0	10%	35mA / 50mA
1	20%	70mA / 100mA
2	30%	105mA / 150mA
3	40%	140mA / 200mA
4	50%	175mA / 250mA
5	60%	210mA / 300mA
6	70%	245mA / 350mA
7	80%	280mA / 400mA
8	90%	315mA / 450mA
9	100%	350mA / 500mA

Table 2: LED Current Setting on Coding Switches

A further setting option is possible internally after opening the device. By closing a solder bridge (see Figure 4: MaxiDimm3000-PCB with Marks for Solder Bridges) at each constant current driver, the maximum current per driver can be increased from 350mA to 500mA, thus changing the LED currents, and the brightness. Therefore, Table 2: LED Current Setting at Coding Switches shows 2 values each.

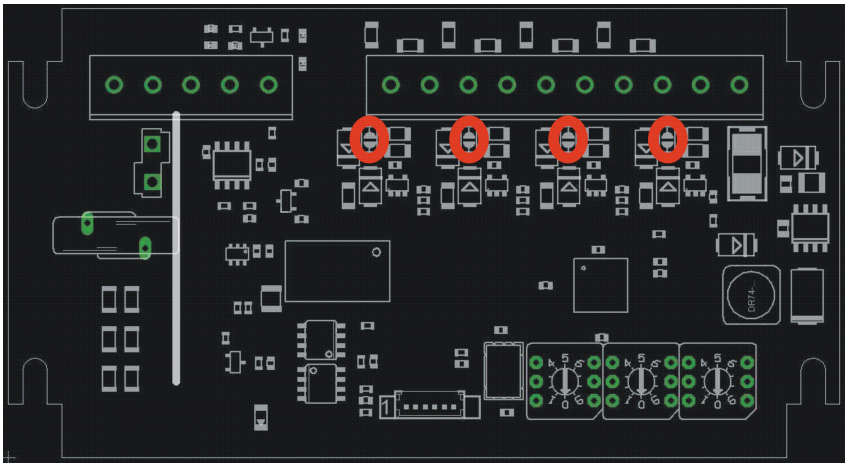

Figure 4: MaxiDimm3000-PCB with Markings for Solder Bridges

The power consumption of the system is exemplary for our LED installation kits shown in Table 3: Power Consumption (MaxiDimm3000 + load) @ 350mA and Table 4: Power Consumption (MaxiDimm3000 + load) @ 500mA (application for historical luminaires, LURA and cone application for technical luminaires). For the different settings of the coding switches A and B the power consumption are listed.

WECASS BRAUN Integrated Energy Ltd.
Tel: +234 8126064555
E-Mail: info@wecass-braun.com
URL: www.wecass-braun.com

The power consumption shown in the overview only refer to the system consisting of MaxiDimm3000 and load. The total power consumption depends on the selected power supply unit for the power supply and its efficiency.

Switch position (switch A / B)	LED Current	Power consumption [W]			
		Historical application 4x8 LED's a 1Watt @350mA	Historical application 4x9 LED's a 1Watt @350mA	LURA application 6x5 LED's a 1Watt @350mA	Cone application 5x5 LED's a 1Watt @350mA
0	10%	**5,8**	**7,2**	**5,4**	**6,4**
1	20%	**9,5**	**11,9**	**8,9**	**9,4**
2	30%	**13,0**	**16,3**	**12,2**	**12,2**
3	40%	**16,7**	**20,6**	**15,6**	**15,2**
4	50%	**20,3**	**25**	**19,1**	**18,2**
5	60%	**23,9**	**29,1**	**22,4**	**21,0**
6	70%	**27,5**	**33,6**	**25,8**	**24,0**
7	80%	**31,0**	**37,9**	**29,1**	**26,8**
8	90%	**34,8**	**42,4**	**32,6**	**29,9**
9	100%	**38,5**	**46,9**	**36,0**	**32,9**

Table 3: Power Consumption (MaxiDimm3000 + Load) @ 350mA

Switch position (switch A / B)	LED Current	Power consumption [W]		
		Historical application 4x8 LED's a 1Watt @350mA	LURA application 6x5 LED's a 1Watt @350mA	Cone application 5x5 LED's a 1Watt @350mA
0	10%	**5,0**	**4,7**	**3,9**
1	20%	**10,0**	**9,4**	**7,8**
2	30%	**15,0**	**14,1**	**11,7**
3	40%	**20,0**	**18,8**	**15,7**
4	50%	**25,1**	**23,6**	**19,7**
5	60%	**30,2**	**28,4**	**23,7**
6	70%	**35,3**	**33,2**	**27,7**
7	80%	**40,5**	**38,0**	**31,8**
8	90%	**45,7**	**42,9**	**35,9**
9	100%	**50,9**	**47,8**	**40,0**

Table 4: Power Consumption (MaxiDimm3000 + Load) @ 500mA

Operating mode

The MaxiDimm3000 can be used in various operating modes. In each of these modes a different performance of the dimmer is defined. The modes and their functions are described further and are shown as an overview in Table 5: Operating Modes and Coding Switch-Function assignment.

!!! *The settings made for a mode are only activated after the device is switched on again.*

WECASS BRAUN Integrated Energy Ltd.
Tel: +234 8126064555
E-Mail: info@wecass-braun.com
URL: www.wecass-braun.com

Coding Switch C (MODE)	Description	Coding Switch B	Coding Switch A
0	Normal operation	Brightness adjustment	Without function
1	Half-night switching 1 230VAC control	Brightness for 230VAC control active	Brightness for 230VAC control inactive
2	Half-night switching 2 230VAC control	Brightness adjustment	Brightness for 230VAC control inactive
3	1-10V Control system	Without function	Without function
4	1-10V & 230VAC Control system	brightness for 230VAC control active	Without function
5	Half-night switching 2 230VAC control fixed switch-off	Brightness adjustment	Brightness for 230VAC control inactive
6	See Mode 0		
7	See Mode 0		
8	Flash Bode	Time control LED's on	Time control LED's off
9	See Mode 0		

Table 5: Operating Modes and Coding Switch-Function Assignment

Mode 0

In mode 0 all four LED drivers supply a fixed LED current, which is defined by the rotary coding switch B. The LED current can be selected in 10% steps, whereby position 0 sets the LED current to 10% of the maximum current and position 9 supplies the maximum LED current, i.e. 100%. All LED current drivers supply the same current. The rotary coding switch A is not used in this mode.

Mode 1

In this mode the LED driver control is synchronous, i.e. all four drivers have the same behavior and the 230VAC control interface is monitored (on/off monitoring). The special feature of this mode is that the LED current is set by rotary coding switch B when voltage is applied to the 230VAC interface and by rotary coding switch A when no voltage is applied to the 230VAC interface. The transitions are smooth (fading -> brightness changes smoothly from light to dark or vice versa).

!!! *It is important that both coding switches are not set to the same coding. This would result in the brightness not changing.*

Mode 2

In this mode the LED driver control is asynchronous and the monitoring of the 230VAC control input is active. If the voltage at the 230VAC interface is switched off, the outputs of LED groups 1 and 3 are switched off. In order to ensure even wear of the LEDs, there is a switch-over, i.e. when the operating voltage is switched on again (following night), the outputs of LED groups 2 and 4 are switched off. If the voltage is applied to the 230VAC interface, all four LED drivers supply the same output current, which is set by coding switch B.

Mode 3

In this mode the 230VAC input is inactive. The system works with the 1-10V input. The rotary coding switches A and B are also inactive. Depending on the voltage level (1-10V), the four LED outputs are supplied with different currents, resulting in the brightness of the LEDs (1V = lowest brightness, 10V = maximum brightness). The interface can only be operated with an active 1-10V source. The passive control via potentiometer is planned for the future.

Mode 4

In this mode both control inputs (230VAC input and 1-10V input) are active. The system works with the 1-10V input, which can be used to control the brightness of the LEDs. If 230VAC control input is 230V, the LED drivers supply the LED's with the value set by rotary coding switch B. If the voltage at the 230VAC control voltage is switched off again, the 1-10V input is active again to control the LED drivers. The changes in brightness of the LED's resulting from a switchover are changed smoothly (Fading -> brightness change smoothly from light to dark or vice versa). The 1-10V input is designed for active control (voltage source). The passive control via potentiometer is planned for the future.

Mode 5

Operating mode 5 is similar to mode 2. Mode 5 differs only in the way that the output channels are not switched off every night. This means that the same LED outputs are always deactivated, which can be used, for example, for dimming to one window side of a luminaire. The luminous flux for the deactivated state can be set separately via the coding switch A, so that further potential energy savings are possible.

Mode 6

Not yet used, with this switch position the MaxiDimm operates in **MODE 0**!

Mode 7

Not yet used, with this switch position the MaxiDimm operates in **MODE 0**!

Mode 8

This mode can be used if you want to install hazard warning signals or beacons, for example on wind turbines, chimneys or radar and antenna systems.

In this mode the LED driver control is synchronous. This mode is called flash mode. With the rotary coding switch B you set the duration of the LED's and with the rotary coding switch A the pause times. Table 6: Control Times for LED Flash Mode shows the control times associated with the positions of rotary coding switches A and B. Figure 5: Signal Sequence - Coding Switch / Time Assignment shows the signal / pulse sequence which can result from the settings with the time coding switches B and C.

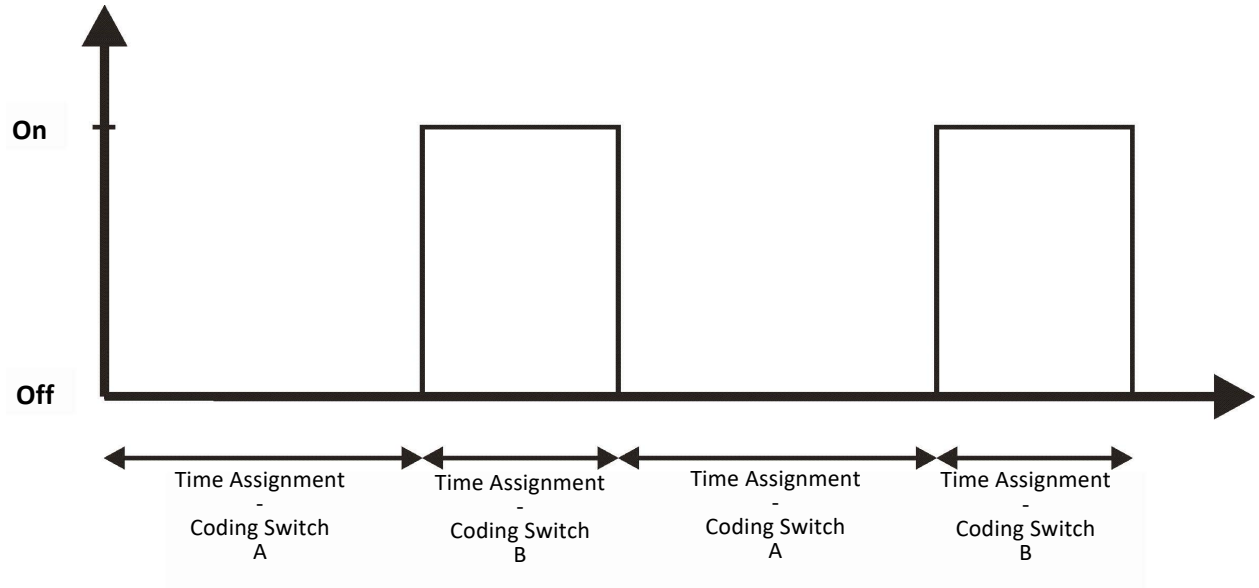

Figure 5: Signal Sequence - Coding Switch / Time Assignment

Switch position (switches A and B)	Light duration/ pause time [s]
0	0,5
1	1,0
2	1,5
3	2,0
4	2,5
5	3,0
6	3,5
7	4,0
8	4,5
9	5,0

Table 6: Control Times for LED Flash Mode

Mode 9

Not yet used, with this switch position the MaxiDimm operates in **MODE 0!**

WECASS BRAUN Integrated Energy Ltd.
Tel: +234 8126064555
E-Mail: info@wecass-braun.com
URL: www.wecass-braun.com

Technical Data

- Housing dimensions (H x W x D): ca. (40 x 114 x 64) mm
- Operating voltage range: 10VDC bis 40VDC
  recommended: >30VDC
- protected against reverse polarity (electronically and by coded plug connections)
- LED outputs are short-circuit proof and separately fused
- 1-10V input and 230 VAC input are galvanized
- maximum wire cross section for connections: 2.5mm²