Driver LC 17W 250–700mA bDW SC PRE2

premium series

Product description

- Dimmable built-in constant current LED Driver
- Can be either used build-in or independent with clip-on strain-relief (see accessory)
- Forms automatically a wireless communication network with up to 127 nodes
- Dimming range 1 – 100 %
- For luminaires of protection class I and protection class II
- Adjustable output current between 250 and 700 mA via ready2mains™ Programmer oder I-SELECT 2 plugs
- Max. output power 17 W
- Up to 86 % efficiency
- Power input on stand-by < 0.35 W
- Nominal life-time up to 100,000 h
- 5-year guarantee

Housing properties

- Casing: polycarbonate, white
- Type of protection IP20

Interfaces

- basicDIM Wireless
- ready2mains™ (configuration via mains)
- Terminal blocks: 45° push terminals

Functions

- Adjustable output current (ready2mains™, I-SELECT 2)
- Constant light output function (CLO)
- Power-up fading at AC
- Configurable via ready2mains™
- Service monitor to log certain events
- Protective features (overtemperature, short-circuit, overload, no-load, input voltage range, reduced surge amplification)
- Suitable for emergency escape lighting systems acc. to EN 50172

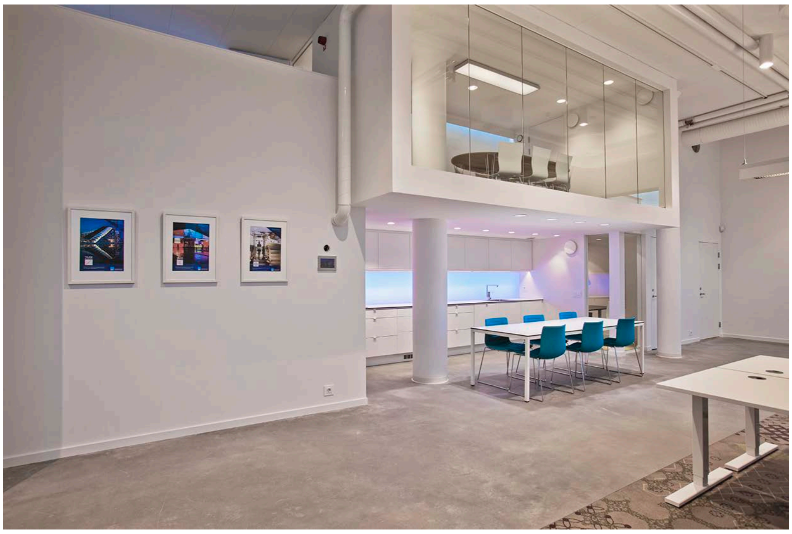
Benefits

- Application-oriented operating window for maximum compatibility
- Best energy savings due to low standby losses and high efficiency
- Flexible configuration via basicDIM Wireless, ready2mains™ and I-SELECT 2

Typical applications

- For linear/area lighting in office applications

With strain-relief



Standards, page 5

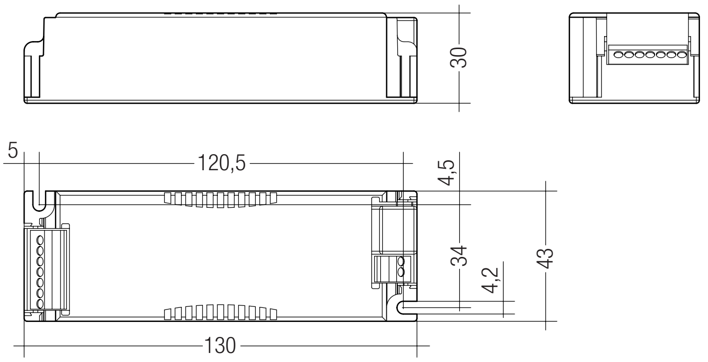
IP20 SELV RoHS

Driver LC 17W 250–700mA bDW SC PRE2

premium series

Technical data

Rated supply voltage	220 – 240 V
Input voltage, AC	198 – 264 V
Input voltage, DC	176 – 280 V
Mains frequency	0 / 50 / 60 Hz
Overvoltage protection	320 V AC, 48 h
Typ. current (at 230 V, 50 Hz, full load)[1] [2]	65 – 95 mA
Typ. current (220 V, 0 Hz, full load, 15 % dimming level)[2]	15 – 25 mA
Leakage current (at 230 V, 50 Hz, full load)[1] [2]	< 700 µA
Max. input power	22.5 W
Typ. efficiency (at 230 V / 50 Hz / full load)[2]	86 %
λ (at 230 V, 50 Hz, full load)[1]	0.96
Typ. power input on stand-by	< 0.35 W
Typ. input current in no-load operation	12.3 mA
Typ. input power in no-load operation	0.35 W
In-rush current (peak / duration)	20 A / 140 µs
THD (at 230 V, 50 Hz, full load)[1]	< 3 %
Starting time (at 230 V, 50 Hz, full load)[1]	< 0.7 s
Starting time (DC mode)	< 0.4 s
Switchover time (AC/DC)[6]	< 0.4 s
Turn off time (at 230 V, 50 Hz, full load)	< 30 ms
Output current tolerance[1] [5]	± 3 %
Max. output current peak (non-repetitive)	≤ output current + 40 %
Output LF current ripple (< 120 Hz)	± 5 %
Max. output voltage (no-load voltage)	60 V
Dimming range	1 – 100 %
Mains surge capability (between L – N)	1 kV
Mains surge capability (between L/N – PE)	2 kV
Surge voltage at output side (against PE)	< 500 V
Dimensions L x W x H	130 x 43 x 30 mm



Ordering data

Type	Article number	Packaging carton	Packaging pallet	Weight per pc.
LC 17/250-700/50 bDW SC PRE2	**28002412**	10 pc(s).	1,000 pc(s).	0.125 kg

Specific technical data

Type	Output current[3] [5]	Min. forward voltage	Max. forward voltage	Max. output power	Typ. power consumption (at 230 V, 50 Hz, full load)	Typ. current consumption (at 230 V, 50 Hz, full load)	Max. casing temperature tc	Ambient temperature ta max.	I-SELECT 2 resistor value[4]
LC 17/250-700/50 bDW SC PRE2	250 mA	15 V	50 V	12.5 W	15.3 W	68 mA	80 °C	-25 ... +55 °C	open
	300 mA	15 V	50 V	15.0 W	18.0 W	80 mA	80 °C	-25 ... +55 °C	16.67 kΩ
	350 mA	15 V	49 V	17.2 W	20.1 W	89 mA	80 °C	-25 ... +55 °C	14.29 kΩ
	400 mA	15 V	43 V	17.2 W	19.9 W	88 mA	75 °C	-25 ... +60 °C	12.50 kΩ
	450 mA	15 V	38 V	17.1 W	19.6 W	88 mA	75 °C	-25 ... +60 °C	11.11 kΩ
	500 mA	15 V	34 V	17.0 W	19.5 W	86 mA	75 °C	-25 ... +60 °C	10.00 kΩ
	550 mA	15 V	31 V	17.1 W	19.5 W	86 mA	75 °C	-25 ... +60 °C	9.09 kΩ
	600 mA	15 V	28 V	16.8 W	19.2 W	85 mA	75 °C	-25 ... +60 °C	8.33 kΩ
	650 mA	15 V	26 V	16.9 W	19.4 W	86 mA	75 °C	-25 ... +60 °C	7.69 kΩ
	700 mA	15 V	24 V	16.8 W	19.4 W	85 mA	75 °C	-25 ... +60 °C	short circuit (0 Ω)

[1] Valid at 100 % dimming level.

[2] Depending on the selected output current.

[3] The table only lists a number of possible operating points but does not cover each single point. The output current can be set within the total value range in 1-mA-steps.

[4] Not compatible with I-SELECT (generation 1). Calculated resistor value.

[5] Output current is mean value.

[6] Valid for immediate change of power supply type otherwise the starting time is valid.

ACCES-SORIES

Strain-relief set 43x30mm

Product description

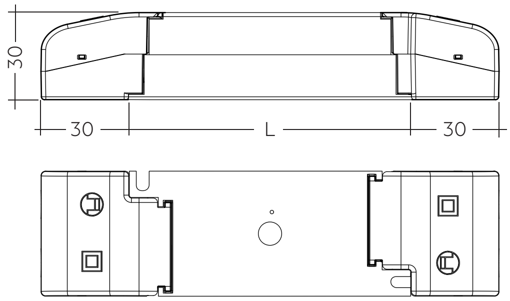
- Optional strain-relief set for independent applications
- Transforms the LED Driver into a fully class II compatible LED Driver (e.g. ceiling installation)
- Easy and tool-free mounting to the LED Driver, screwless cable-clamp channels for long strain-relief (30 x 43 x 30 mm)
- With screws for short strain-relief (15 x 34 x 30 mm)
- Overall length = length L (LED Driver) + 2 x 30 mm (long strain-relief set), 2 x 15 mm (short strain-relief) or long and short strain-relief any combination
- Standard SC (L = 30 mm) available as non-pre-assembled and pre-assembled
- Short SC (L = 15 mm) only pre-assembled available

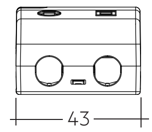
ACU SC 30x43x30mm CLIP-ON SR SET
(28001168, non-pre-assembled)

ACU SC 30x43x30mm CLIP-ON SR SET 300
(28001351, non-pre-assembled, 300 pcs. packaging)

ACU SC 30x43x30mm CLIP-ON SR PA
(28001699, pre-assembled)

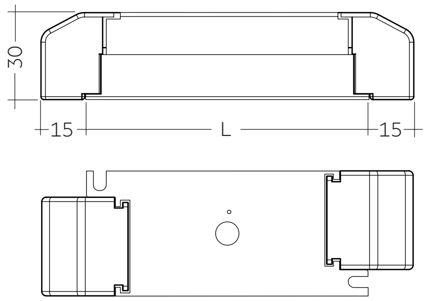
ACU SC 15x43x30mm CLIP-ON SR PA
(28001574, pre-assembled)

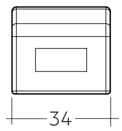




Permissible cable jacket diameter: 2.2 – 9 mm

ACU SC 30x43x30mm CLIP-ON SR SET / PA





Permissible cable jacket diameter: 3 – 9 mm

ACU SC 15x43x30mm CLIP-ON SR PA

Ordering data

Type	Article number	Packaging carton[1]	Packaging outer box	Weight per pc.
ACU SC 43x30mm CLIP-ON SR SET	**28001168**	10 pc(s).	500 pc(s).	0.038 kg
ACU SC 43x30mm CLIP-ON SR SET 300	**28001351**	300 pc(s).	300 pc(s).	0.038 kg
ACU SC 30x43x30mm CLIP-ON SR PA	**28001699**	10 pc(s).	500 pc(s).	0.021 kg
ACU SC 15x43x30mm CLIP-ON SR PA	**28001574**	10 pc(s).	1,200 pc(s).	0.010 kg

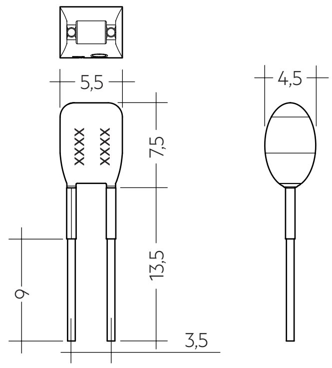
[1] 28001168: A carton of 10 pcs. is equal to 10 sets, each with 2 strain-reliefs parts.
28001351: A carton of 300 pcs. is equal to 300 sets, each with 2 strain-reliefs parts.
28001699 + 28001574: A carton contains exactly 10 pcs. strain-reliefs (no sets).

ACCES-SORIES

I-SELECT 2 PLUG PRE / EXC

Product description

- Ready-for-use resistor to set output current value
- Compatible with LED Driver featuring I-SELECT 2 interface; not compatible with I-SELECT (generation 1)
- Resistor is base isolated
- Resistor power 0.25 W
- Current tolerance ± 2 % to nominal current value
- Compatible with LED Driver series PRE and EXC



Example of calculation

- R [kΩ] = 5 V / I_out [mA] x 1000
- E96 resistor value used
- Resistor value tolerance ≤ 1 %; resistor power ≥ 0.1 W; base isolation necessary
- When using a resistor value beyond the specified range, the output current will automatically be set to the minimum value (resistor value too big), respectively to the maximum value (resistor value too small)

Ordering data

Type	Article number	Colour	Marking	Current	Resistor value	Packaging bag	Weight per pc.
I-SELECT 2 PLUG 250MA BL	**28001106**	Blue	0250 mA	250 mA	20.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 275MA BL	**28001107**	Blue	0275 mA	275 mA	18.20 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 300MA BL	**28001108**	Blue	0300 mA	300 mA	16.50 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 325MA BL	**28001109**	Blue	0325 mA	325 mA	15.40 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 350MA BL	**28001110**	Blue	0350 mA	350 mA	14.30 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 375MA BL	**28001111**	Blue	0375 mA	375 mA	13.30 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 400MA BL	**28001112**	Blue	0400 mA	400 mA	12.40 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 425MA BL	**28001251**	Blue	0425 mA	425 mA	11.80 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 450MA BL	**28001113**	Blue	0450 mA	450 mA	11.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 475MA BL	**28001252**	Blue	0475 mA	475 mA	10.50 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 500MA BL	**28001114**	Blue	0500 mA	500 mA	10.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 525MA BL	**28001960**	Blue	0525 mA	525 mA	9.53 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 550MA BL	**28001115**	Blue	0550 mA	550 mA	9.09 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 600MA BL	**28001116**	Blue	0600 mA	600 mA	8.25 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 650MA BL	**28001117**	Blue	0650 mA	650 mA	7.68 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 700MA BL	**28001118**	Blue	0700 mA	700 mA	7.15 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG MAX BL	**28001099**	Blue	MAX	MAX	0.00 kΩ	10 pc(s).	0.001 kg

1. Standards

EN 55015
EN 61000-3-2
EN 61000-3-3
EN 61347-1
EN 61347-2-13
EN 62384
EN 61547
EN 300330 V2.1.1
EN 301489-1 V2.1.1
EN 301489-3 V2.1.1
EN 300328 V2.1.1
EN 301489-17 V2.1.1
According to EN 50172 for use in central battery systems
According to EN 60598-2-22 suitable for emergency lighting installations

Housing fulfils requirements for reinforced insulation according EN 60598-1.

1.1 Glow wire test

according to EN 61347-1 with increased temperature of 850 °C passed.

2. Thermal details and life-time

2.1 Expected life-time

Expected life-time

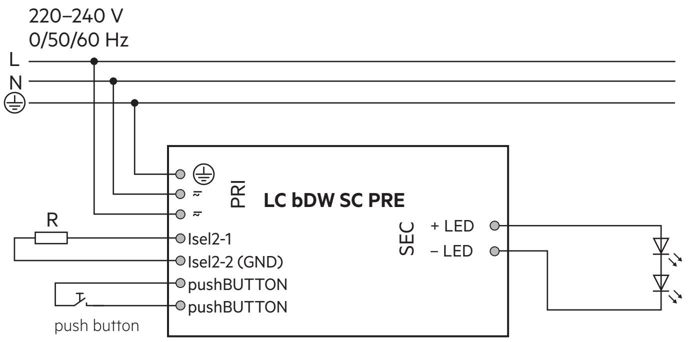
Type	Output current	ta	40 °C	50 °C	55 °C	60 °C
LC 17/250-700/50 bDW SC PRE2	250 – 350 mA	tc	70 °C	75 °C	80 °C	–
		Life-time	> 100,000 h	70,000 h	50,000 h	–
	> 350 – 700 mA	tc	60 °C	65 °C	70 °C	75 °C
		Life-time	> 100,000 h	> 100,000 h	70,000 h	50,000 h

The LED Driver is designed for a life-time stated above under reference conditions and with a failure probability of less than 10 %.

The relation of tc to ta temperature depends also on the luminaire design.
If the measured tc temperature is approx. 5 K below tc max., ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

3. Installation / wiring

3.1 Circuit diagram

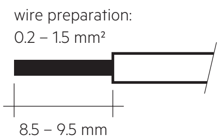


The used push button has to be isolated.

3.2 Wiring type and cross section

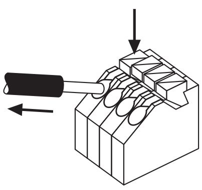
The wiring can be in stranded wires with ferrules or solid with a cross section of 0.2–1.5 mm².
Strip 8.5–9.5 mm of insulation from the cables to ensure perfect operation of the push-wire terminals.
Use one wire for each terminal connector only.
Use each strain relief channel for one cable only.

LED module/LED Driver/supply



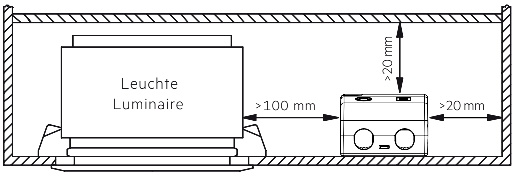
3.3 Loose wiring

Press down the "push button" and remove the cable from front.



3.4 Fixing conditions when using as independent Driver with Clip-On

Dry, acidfree, oilfree, fatfree. It is not allowed to exceed the maximum ambient temperature (ta) stated on the device. Minimum distances stated below are recommendations and depend on the actual luminaire.
Device is not suitable for fixing in corner.



3.5 Wiring guidelines

- The secondary cables should be run separately from the mains connections and mains cables to ensure good EMC conditions.
- The LED wiring should be kept as short as possible to ensure good EMC. The max. secondary cable length is 2 m (4 m circuit).
- The secondary wires (LED module) should be routed in parallel to ensure good EMC performance.
- Secondary switching is not permitted.
- The LED Driver has no inverse-polarity protection on the secondary side. Wrong polarity can damage LED modules with no inverse-polarity protection.
- Wrong wiring of the LED Driver can lead to malfunction or irreparable damage.
- To avoid the damage of the Driver, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).

3.6 Hot plug-in

Hot plug-in is not supported due to residual output voltage of > 0 V.
If a LED load is connected the device has to be restarted before the output will be activated again.
This can be done via mains reset or interface (basicDIM Wireless).

3.7 Earth connection

The earth connection is conducted as protection earth (PE). The LED Driver can be earthed via earth terminal. If the LED Driver will be earthed, protection earth (PE) has to be used. There is no earth connection required for the functionality of the LED Driver. Earth connection is recommended to improve following behaviour:
- Electromagnetic interferences (EMI)
- LED glowing at standby
- Transmission of mains transients to the LED output

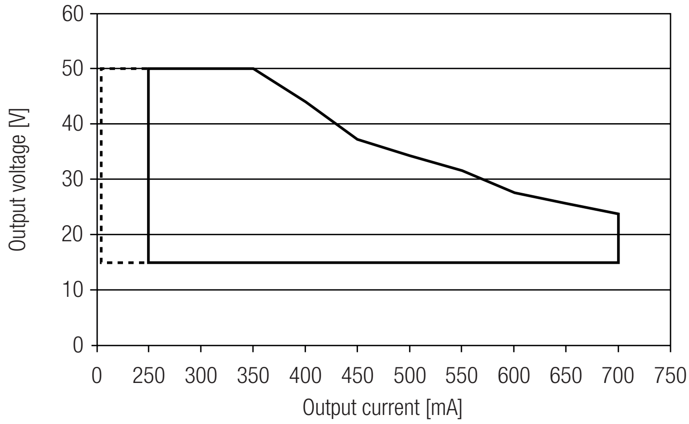
In general it is recommended to earth the LED Driver if the LED module is mounted on earthed luminaire parts respectively heat sinks and thereby representing a high capacity against earth.

3.8 I-SELECT 2 resistors connected via cable

For details see:
http://www.tridonic.com/com/en/download/technical/LCA_PRE_LC_EXC_ProductManual_en.pdf.

4. Electrical values

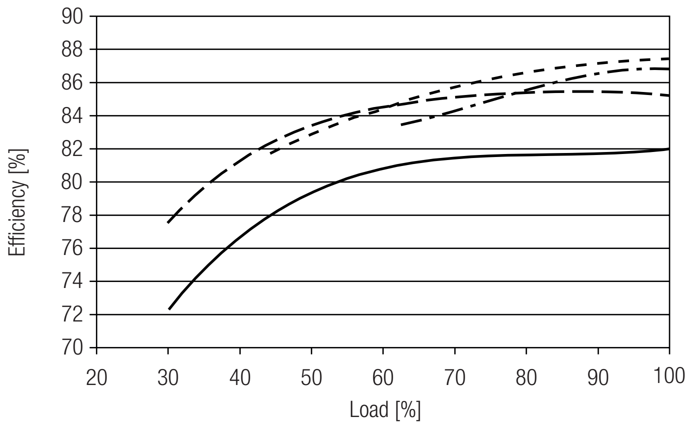
4.1 Operating window



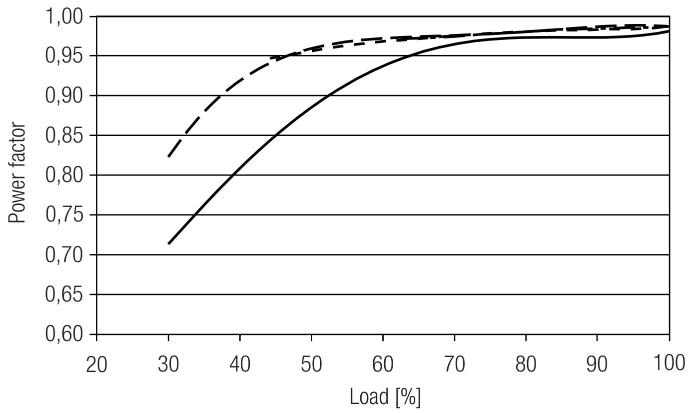
Operating window 100 %
Operating window dimmed

Make sure that the LED Driver is operated within the given window under all operating conditions. Special attention needs to be paid at dimming and DC emergency operation as the forward voltage of the connected LED modules varies with the dimming level, due to the implemented amplitude dimming technology. Coming below the specified minimum output voltage of the LED Driver may cause the device to shut-down. See chapter "6.11 Light level in DC operation" for more information.

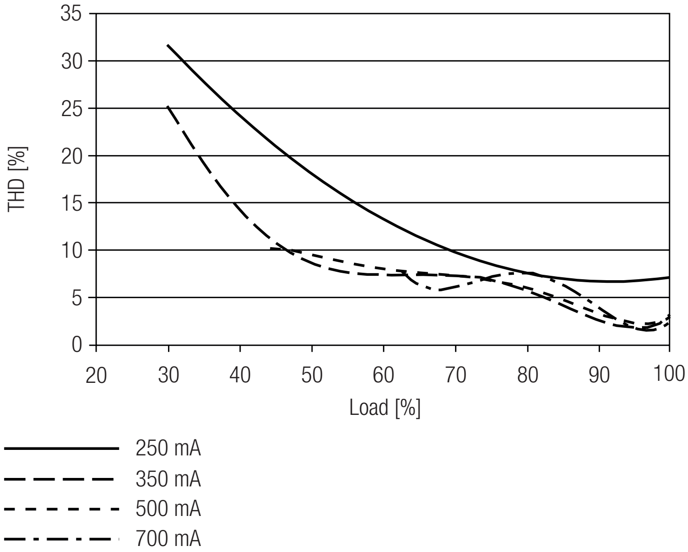
4.2 Efficiency vs load



4.3 Power factor vs load



4.4 THD vs load (without harmonic < 5 mA or 0.6 % of the input current)



100 % load corresponds to the max. output power (full load) according to the table on page 2.

4.5 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm²	1.5 mm²	2.5 mm²	4 mm²	1.5 mm²	1.5 mm²	2.5 mm²	4 mm²	I_{max}	time
LC 17/250-700/50 bDW SC PRE2	40	56	64	80	21	28	35	44	20 A	140 µs

Calculation uses typical values from ABB series S200 as a reference.
Actual values may differ due to used circuit breaker types and installation environment.

4.6 Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

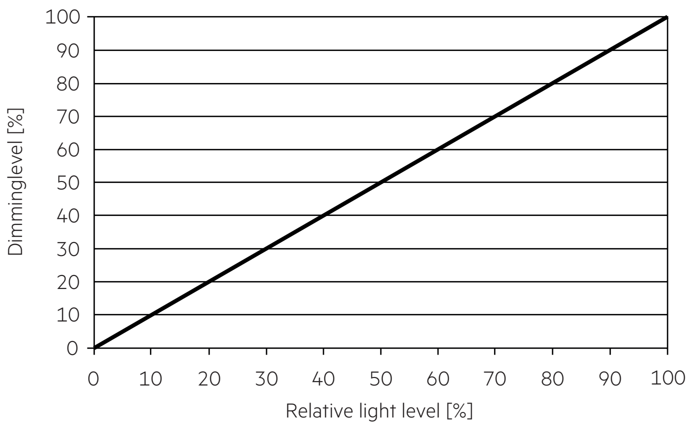
	THD	3.	5.	7.	9.	11.
LC 17/250-700/50 bDW SC PRE2	< 3	< 3	< 2	< 1	< 2	< 1

Acc. to 61000-3-2. Harmonics < 5 mA or < 0.6 % (whatever is greater) of the input current are not considered for calculation of THD.

4.7 Dimming

Dimming range 1 % to 100 %
Digital control with:
- basicDIM Wireless

4.8 Dimming characteristics



5. Interfaces / communication

5.1 Control input

A standard push button can be connected on the input terminals.
Maximum cable lenght of the push button is 1 meter.
This function have to be activated before using.

The control signal is not SELV. Control cable has to be installed in accordance to the requirements of low voltage installations.
Different functions depending on each module.
Profile change see handbook https://www.tridonic.com/com/en/download/technical/Documentation_Tridonic_4remote_BT_EN.pdf

5.2 Control input ready2mains (L, N)

The digital ready2mains protocol is modulated onto the mains signal which is wired to the mains terminal (L and N).

6. Functions

6.1 Function: adjustable current

The output current of the LED Driver can be adjusted in a certain range.
For adjustment there are two options available.

Option 1: I-SELECT 2
By inserting a suitable resistor into the I-SELECT 2 interface, the current value can be adjusted. The relationship between output current and resistor value can be found in the chapter “Accessories I-SELECT 2 Plugs”.

Please note that the resistor values for I-SELECT 2 are not compatible with I-SELECT (generation 1). Installation of an incorrect resistor may cause irreparable damage to the LED module(s).

Resistors for the main output current values can be ordered from Tridonic (see accessories).

Option 2: ready2mains
Adjustment is done by the ready2mains programmer and the corresponding configuration software (see ready2mains documentation).

The priority for current adjustment methods is I-SELECT 2 (highest priority), ready2mains (lowest priority).

6.2 ready2mains – configuration

The ready2mains interface can be used to configure the main parameters of LED Drivers via the mains wiring, such as LED output current, CLO and DC level. These parameters can be adjusted either via ready2mains-capable configuration software or directly via the ready2mains programmer (output current only).

6.3 Short-circuit behaviour

In case of a short-circuit at the LED output the LED output is switched off.
After restart of the LED Driver the output will be activated again.
The restart can either be done via mains reset or via software or pushBUTTON.

6.4 No-load operation

The LED Driver will not be damaged in no-load operation. The output will be deactivated and is therefore free of voltage. If a LED load is connected the device has to be restarted before the output will be activated again.

6.5 Overload protection

If the output voltage range is exceeded the LED Driver turns off the LED output. After restart of the LED Driver the output will be activated again.
The restart can either be done via mains reset or via software or pushBUTTON.

6.6 Overtemperature protection

The LED Driver is protected against temporary thermal overheating. If the temperature limit is exceeded the output current of the LED module(s) is reduced. The temperature protection is activated approx. +5 °C above tc max (see page 2). On DC operation this function is deactivated to fulfill emergency requirements.

6.7 Constant light output (CLO)

The luminous flux of a LED decreases constantly over the life-time.
The CLO function ensures that the emitted luminous flux remains stable.
For that purpose the LED current will increase continuously over the LED life-time.
Via ready2mains it is possible to select a start value (in percent) and an expected life-time.
The LED Driver adjusts the current afterwards automatically.

6.8 Power-up/-down fading

The power-up/-down function offers the opportunity to modify the on-/off behavior. The time for fading on or off can be adjusted in a range of 0.2 to 16 seconds. According to this value, the device dims either from 0 % up to the power-on level or from the current set dim level down to 0 %.
This feature applies while operating via 4remoteBT and when switching the mains voltage on or off. By factory default no fading time is set (=0s).

6.9 Light level in DC operation

The LED Driver is designed to operate on DC voltage and pulsed DC voltage.
For a reliable operation, make sure that also in DC emergency operation the LED Driver is run within the specified conditions as stated in chapter “4.1 operating window”.

Light output level in DC operation: programmable 1 – 100 % (EOF_i = 0.13).
Programming by ready2mains.
In DC operation dimming mode can be activated.

The voltage-dependent input current of Driver incl. LED module is depending on the used load.

The voltage-dependent no-load current of Driver (without or defect LED module) is for:
AC: < 12.2 mA
DC: < 1.3 mA

6.10 Software / programming

With appropriate software and an interface different functions can be activated and various parameters can be configured in the LED Driver.
To do so, a ready2mains programmer or utilityAPP is required.

7. Miscellaneous

7.1 Isolation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 V_{DC} for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal.
The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

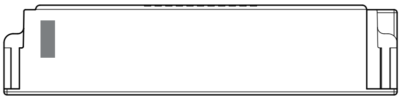
7.2 Conditions of use and storage

Humidity:	5 % up to max. 85 %, not condensed (max. 56 days/year at 85 %)
Storage temperature:	-40 °C up to max. +80 °C

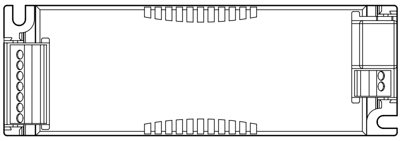
The devices have to be acclimatised to the specified temperature range (ta) before they can be operated.

7.3 Placement

basicDIM Wireless has an integrated antenna for easy integration. In order to maximize the range in every direction some design guidelines should be taken into consideration when mounting the device.
The antenna is located on the corner of the enclosure. It is on the top side of the internal PCB (Printed Circuit Board).
When the device is mounted on a metal plate (e.g. frame of a luminaire), it may efficiently block the radio frequency signal. In this case, a cut-out underneath the antenna may be needed for the RF signal to exit the structure. The cut-out area should be as large as possible. Also the device should be placed as far away from any vertical metal structures as possible.



■ Antenna location



The range of the communication signal is depending on the environment e.g. luminaire, construction of the building, furnitures or humans and needs to be tested and approved in the installation.

7.4 Maximum number of switching cycles

All LED Driver are tested with 50,000 switching cycles.
The actually achieved number of switching cycles is significantly higher.

7.5 Additional information

Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim.
No warranty if device was opened.