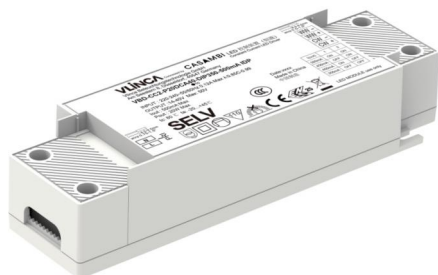


## VBD Series LED Driver



### Product description

- Can be integrated in Casambi systems (Casambi Ready)
- Independent constant current LED driver, Tunable version
- Selectable fixed output current between 350mA and 400mA, 450mA and 500mA via DIP switch
- For luminaires of protection class II
- Forms automatically a wireless communication network with up to 250 nodes
- Max. output power 20 W
- Terminal blocks: 45° push terminals

### Advantage

- Stylish design
- Up to 89% efficiency
- Typ. power consumption on stand-by < 0.35 W
- Dimming range 1 to 100 %
- Life-time up to 50,000 hours
- 5-year guarantee

### Housing properties

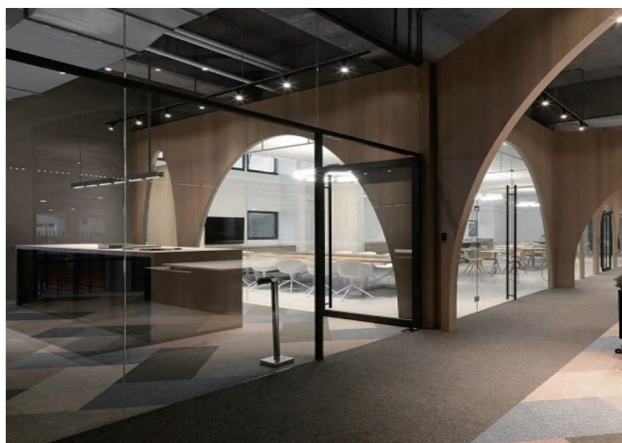
- Casing: polycarbonate, white
- Type of protection IP20

### Features

- Overtemperature protection
- Overload protection
- Short-circuit protection
- No-load protection
- Burst protection voltage 1 kV
- Surge protection voltage 1 kV (L to N)

### Typical applications

- For spot light and downlight in retail, residential and hospitality application



## Specific Technical Data

| Type                                  | Input Voltage | Output Power | Output Voltage | Output Current       | Ripple | TC    | Ta           | Dimension   |
|---------------------------------------|---------------|--------------|----------------|----------------------|--------|-------|--------------|-------------|
| VBD-CC2-P20DCA40<br>-DIP350-500mA IDP | 100-240Vac    | Max.20W      | 14-40V         | 350/400<br>450/500mA | ±5%    | 80 °C | -20...+45 °C | 144*43*30mm |

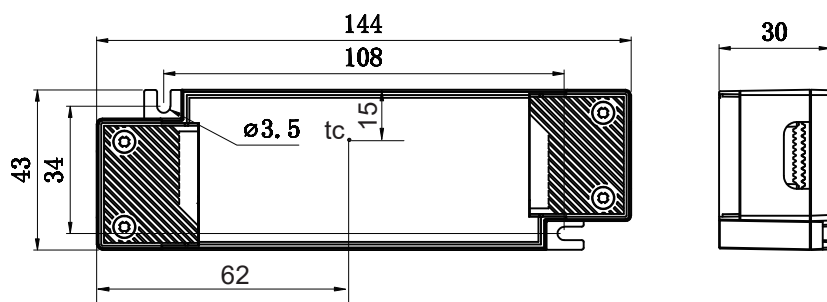
## Ordering data

| Article number | Description                           | Dimension of product | Net Wt/pc | Package/ctn | Dimension of carton |
|----------------|---------------------------------------|----------------------|-----------|-------------|---------------------|
| 1060800548     | VBD-CC2-P20DCA40<br>-DIP350-500mA IDP | 144*43*30mm          | 119g      | 50pcs       | 300*230*180mm       |

## Technical data

| Product type                                               | 20W         |     |
|------------------------------------------------------------|-------------|-----|
| Rated supply voltage=U-IN on label                         | 100-240     | V   |
| Input voltage range, AC                                    | 90-264      | V   |
| Mains frequency                                            | 50/60       | Hz  |
| Overvoltage protection(input side)                         | 320Vac, 1h  |     |
| Max input current (@220-240V, 50/60Hz)=I-IN on label       | 0.17        | A   |
| Max input power (@220-240V, 50/60Hz)=P-IN on label         | 23.6        | W   |
| Typ.power consumption (@230V, full load)                   | 22.5        | W   |
| Max output power (@220-240V, 50/60Hz) P-OUT on label       | 20          | W   |
| Max output voltage (V) (no load)=U-OUT from label          | 50          | V   |
| Output current tolerance(+/-%), (at 230V 50 Hz, full load) | ±7.5        | %   |
| Output current tolerance(+/-%), (at 230V 50 Hz, min load)  | ±7.5        | %   |
| Output LF Current Ripple (<120Hz)                          | <5          | %   |
| Max.output peak current (at 230 V, 50 Hz, full load)       | 564         | mA  |
| Leakage current (230ac/50Hz input, Output full load)       | <450        | µA  |
| THD (at 230V, 50Hz, full load)                             | <13         | %   |
| Power factory (at 230, 50Hz, full load)                    | 0.85C-0.99  |     |
| Operating frequencies, fOP, 1 MHz chann. spacing           | 2402...2480 | MHz |
| Maximum output power, PRF                                  | +8          | dBm |
| Typ. power consumption on stand-by                         | <0.35       | W   |
| Efficiency (at 230, 50Hz, full load)                       | 89          | %   |
| Starting time (at 230, 50Hz, full load)                    | 0.6         | s   |
| Turn off time (at 230, 50Hz, full load)                    | 0.5         | s   |
| Hold-up time at power failure (output)                     | 20          | ms  |
| Ambient temperature ta (°C)                                | -20-+45     | °C  |
| Ambient temperature ta (50000Hrs)                          | 45          | °C  |
| Max.casing temperature tc                                  | 80          | °C  |
| Storage temperature ts                                     | -20-80      | °C  |

## Tc Position (mm)



## Adjust current

Output current can be adjusted by the DIP switch



Set the current by DIP switch after mains off.  
Use of DIP switch only after mains off.

500mA: Switch 1=ON, Switch 2=ON



400mA: Switch 1=ON, Switch 2=OFF



450mA: Switch 1=OFF, Switch 2=ON

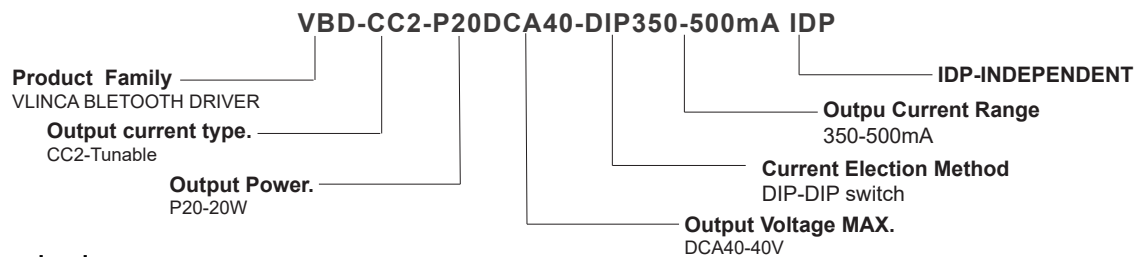


350mA: Switch 1=OFF, Switch 2=OFF



## Product Nomenclature

The part number designation for VLINCA INDEPENDENT BLUETOOTH LED DRIVER Series is explained as follows



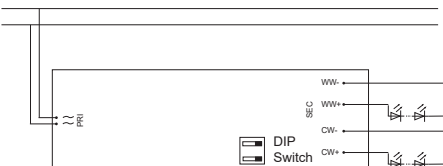
## 1. Standards

EN 62479, EN 50663  
EN 55015, EN 61000-3-2, EN 61000-3-3, EN 61547  
EN 61347-1, EN 61347-2-13, EN 62493  
EN 62384, EN 61643-11  
ETSI EN 301 489-1  
ETSI EN 301 489-17  
ETSI EN 300 328

## 2. Installation and wiring

### 2.1 Circuit diagram

220V-240V  
50/60Hz



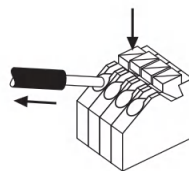
### 2.2 Wiring type and cross section

The wiring can be in stranded wires with ferrules or solid with a cross section of 0.75-1.5mm<sup>2</sup> for input and 0.5-1.5mm<sup>2</sup> for output. Strip 8.5-9.5 mm of insulation from the cables to ensure perfect operation of the push-wire terminals



### 2.3 Release of the wiring

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



### 2.4 Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behaviour.
- Mains leads should be kept apart from LED Driver and other leads (ideally 5 – 10 cm distance).
- The secondary wires (LED module) should be routed in parallel to ensure good EMC performance
- Incorrect wiring can damage LED modules.
- 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.).

### 2.5 Replace LED module

1. Mains off
2. Remove LED module
3. Wait for 10 seconds
4. Connect LED module again

### 3. Thermal details and life-time

Expected life-time

| Type                              | ta        | 35 °C    | 45 °C   |
|-----------------------------------|-----------|----------|---------|
|                                   | tc        | 70 °C    | 80 °C   |
| VBD-CC2-P20DCA40-DIP350-500mA IDP | Life-time | >100000h | >50000h |

The LED drivers are designed for a life-time based on left reference conditions and with a failure probability of less than 10%.

Life-time declarations are informative and represent no warranty claim.

Test result at max. output voltage.

### 4. Maximum loading of automatic circuit breakers in relation to inrush current

Maximum loading of automatic circuit breakers

Inrush current

| Automatic circuit                 | C10                | C13                | C16                | C20                | B10                | B13                | B16                | B20                | I <sub>max</sub> | Time |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------------|------|
| Installation Ø                    | 1.5mm <sup>2</sup> | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> | 4.0mm <sup>2</sup> | 1.5mm <sup>2</sup> | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> | 4.0mm <sup>2</sup> |                  |      |
| VBD-CC2-P20DCA40-DIP350-500mA IDP | 23                 | 30                 | 37                 | 46                 | 23                 | 30                 | 37                 | 46                 | 13.3A            | 76µs |

These are Max.values calculated out of inrush current! Please consider not to exceed the maximum rated continuous current of the circuit breaker, Calculation used typical values from ABB series S200 as a reference.

Actual values may differ due to used circuit breaker types and installation environment.

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

| Type                              | THD  | 3    | 5    | 7   | 9   | 11  |
|-----------------------------------|------|------|------|-----|-----|-----|
| VBD-CC2-P20DCA40-DIP350-500mA IDP | <15% | <12% | <10% | <7% | <5% | <3% |

Acc. to EN61000-3-2. Harmonics < 5 mA or < 0.6 % (whatever is greater) of the input current are not considered for calculation of THD.

### 5. Functions

#### 5.1 Short-circuit behaviour

In case of a short circuit on the secondary side (LED) the LED Driver switches off. After elimination of the short circuit the nominal operation is restored automatically.

#### 5.2 No-load operation

The LED Driver works in burst working mode to provide a constant output voltage regulation which allows the application to be able to work safely when LED string opens due to a failure.

#### 5.3 Overload protection

If the output voltage range is exceeded the LED Driver will protect itself by reducing the LED output current.

After elimination of the overload, the nominal operation is restored automatically.

#### 6.For LED module use only.

#### 7.Installation shall be done by qualified technician.

**8.Do not dispose of electrical appliances as unsorted municipal waste,use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain,damaging your health and well-being.**



### 9. Miscellaneous

#### 9.1 Insulation 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!) ,each luminaire should be submitted to an insulation test with 500V DC for1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal.

The insulation resistance must be at least 2MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500V AC (or 1.414 x 1500V DC).

To avoid damage to the electronic devices this test must not be conducted."

#### 9.2 Conditions of use and storage

Humidity: 5 % up to max. 85 %,  
not condensed  
( 40 days/year at 85 %)

Storage temperature: -20 °C up to max. +80 °C

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

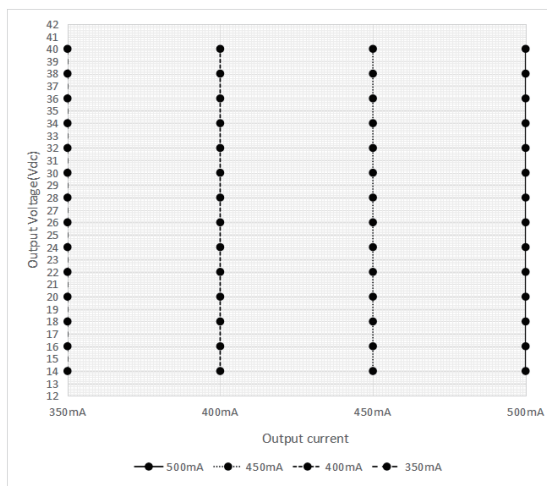
#### 9.3 Maximum number of switching cycles

All LED Driver are tested with 50,000 switching cycles.

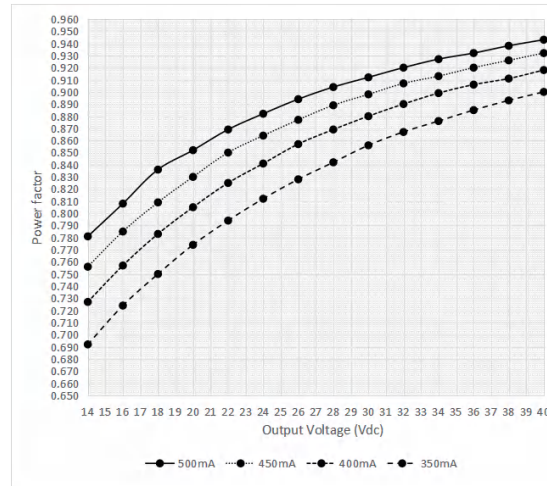
The actually achieved number of switching cycles is significantly higher.

## 10. Electrical values

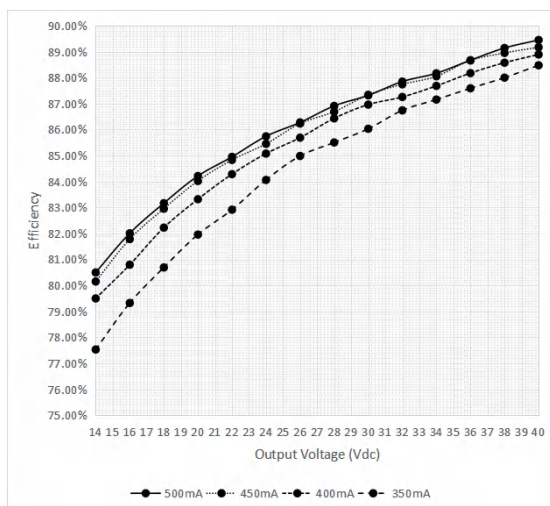
### 10.1 Operating window



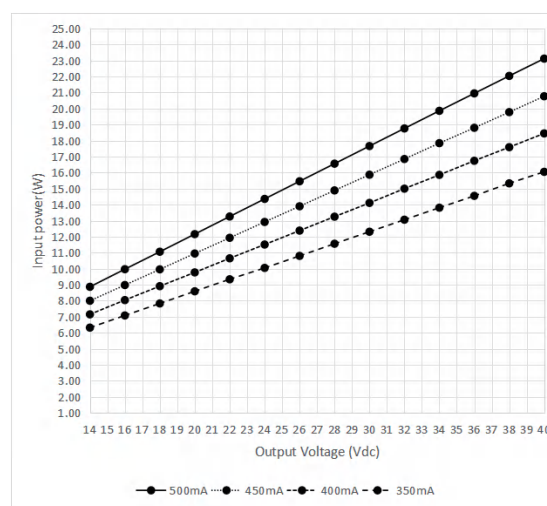
### 10.4 Power factor vs load (@230VAC 50HZ)



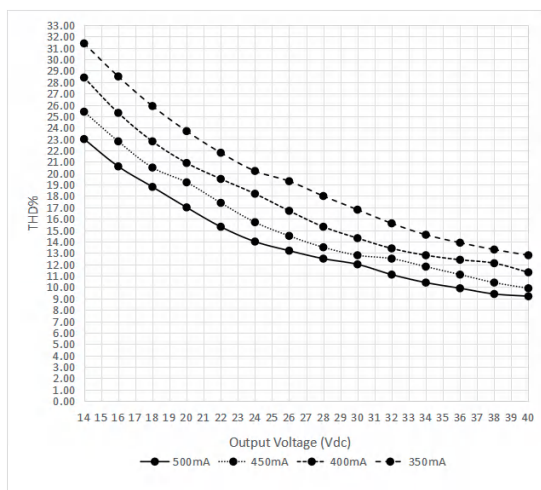
### 10.2 Efficiency vs load (@230VAC 50HZ)



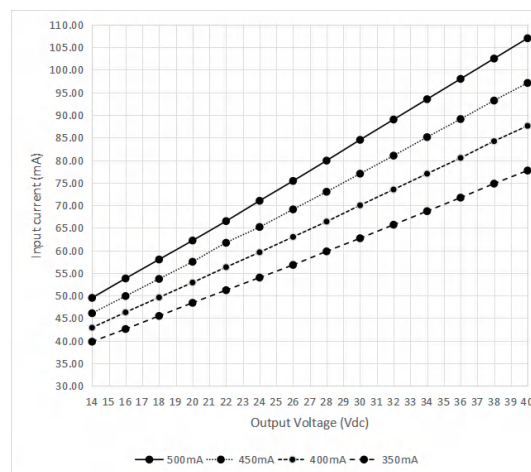
### 10.5 Input power vs load (@230VAC 50HZ)



### 10.3 THD vs load (@230VAC 50HZ)



### 10.6 Input current vs load (@230VAC 50HZ)



[illegible]