



## TALEXconverter LCAI 150W 350mA–1050mA ECO INDUSTRY sl ECO series

### Product description

- Dimmable constant current built-in control gear for LED, particularly suitable for industrial applications
- Output current adjustable between 350 – 1,050 mA
- Max. output power 150 W
- Dimming range 1 ... 100 %
- Nominal life-time of 100,000 h
- 8-year guarantee
- Suitable for mains voltage peaks (burst/surge) up to 4 kV
- Extended temperature range of -40 ... +70 °C



### Properties

- White slim metal casing
- Type of protection IP20

### Interfaces

- DALI DEVICE Type 6
- DSI
- switchDIM (with memory function)
- corridorFUNCTION

### Functions

- Adjustable output current (I-select resistor or eD)
- Power-up fading at AC
- Intelligent Temperature Guard (overtemperature protection)
- Short-circuit proof
- Overload protection
- Constant Light Output function
- Suitable for emergency lighting units acc. to EN50172
- Intelligent Voltage Guard (overvoltage and undervoltage shutdown)



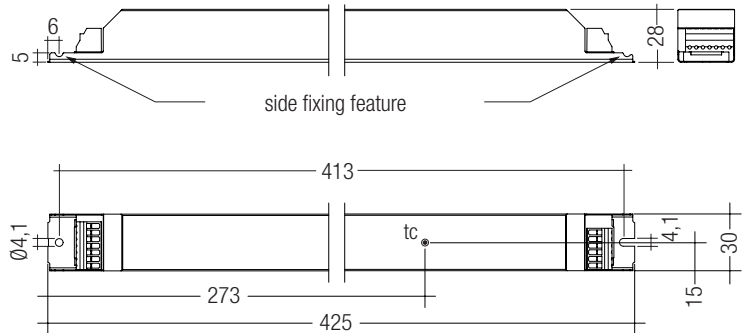
Standards, page 4

IP20        RoHS

## TALEXconverter LCAI 150W 350mA–1050mA ECO INDUSTRY sl ECO 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
Typ. current (at 230 V, 50 Hz, full load) <sup>① ②</sup>	700 mA
Typ. current (220 V, 0 Hz, full load, 15 % dimming level) <sup>②</sup>	150 mA
Leakage current (PE)	< 0,7 mA
Max. input power	160 W
Typ. efficiency (at 230 V, 50 Hz, full load) <sup>②</sup>	95 %
$\lambda$ (at 230 V, 50 Hz, full load) <sup>①</sup>	0,98
Typ. power input on standby <sup>③</sup>	< 200 mW
Typ. input current in no-load operation	75 mA
Typ. input power in no-load operation	< 200 mW
In-rush current (peak / duration)	60 A / 200 $\mu$ s
THD (at 230 V, 50 Hz, full load) <sup>①</sup>	< 10 %
Time to light (at 230 V, 50 Hz, full load) <sup>①</sup>	< 0,6 s
Time to light (DC mode)	< 0,4 s
Switchover time (AC/DC)	< 0,4 s
Turn off time (at 230 V, 50 Hz, full load)	< 50 ms
Output current tolerance <sup>①</sup>	$\pm$ 3 %
Output current ripple	$\pm$ 15 %
Max. output current peak	$\leq$ output current + 18 %
Max. non-repetitive output peak current	$\leq$ output current + 20 %
Max. output voltage (no-load voltage)	420 V
PWM frequency <sup>④</sup>	500 Hz
Dimming range	1 – 100 %
Dimming range (without PWM)	35 – 100 %
Dimensions L x W x H	425 x 30 x 28 mm



### Ordering data

Type	Article number	Packaging carton	Packaging pallet	Weight per pc.
LCAI 150W 350mA-1050mA ECO INDUSTRY sl	28000527	10 pc(s).	480 pc(s).	0.385 kg

### Specific technical data

Type	Output current	Min. forward voltage	Max. forward voltage <sup>①</sup>	Max. output power <sup>②</sup>	Typ. power consumption (at 230 V, 50 Hz, full load)	Typ. current consumption (at 230 V, 50 Hz, full load)	Max. casing temperature t <sub>c</sub>	Ambient temperature t <sub>a</sub> max.	I-select resistor value <sup>③</sup>
	350 mA	126 V	300 V	105 W	110 W	478 mA	95 °C	-40 ... +70 °C	open
	375 mA	126 V	300 V	113 W	118 W	513 mA	95 °C	-40 ... +70 °C	71.50 kΩ
	400 mA	126 V	300 V	120 W	125 W	543 mA	95 °C	-40 ... +70 °C	66.50 kΩ
	425 mA	126 V	300 V	128 W	133 W	578 mA	95 °C	-40 ... +70 °C	61.90 kΩ
	450 mA	126 V	300 V	135 W	141 W	613 mA	95 °C	-40 ... +70 °C	57.60 kΩ
	475 mA	126 V	300 V	143 W	149 W	648 mA	95 °C	-40 ... +70 °C	53.60 kΩ
	500 mA	126 V	300 V	150 W	156 W	678 mA	95 °C	-40 ... +70 °C	49.90 kΩ
	525 mA	126 V	286 V	150 W	156 W	678 mA	95 °C	-40 ... +70 °C	45.30 kΩ
	550 mA	123 V	273 V	150 W	156 W	678 mA	95 °C	-40 ... +70 °C	42.20 kΩ
	575 mA	117 V	261 V	150 W	156 W	678 mA	95 °C	-40 ... +70 °C	38.30 kΩ
	600 mA	113 V	250 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	35.70 kΩ
	625 mA	108 V	240 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	32.40 kΩ
	650 mA	104 V	231 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	28.70 kΩ
	675 mA	100 V	222 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	26.10 kΩ
LCAI 150W 350mA-1050mA ECO INDUSTRY sl	700 mA	96 V	214 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	22.00 kΩ
	725 mA	93 V	207 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	17.40 kΩ
	750 mA	90 V	200 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	15.00 kΩ
	775 mA	87 V	194 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	12.40 kΩ
	800 mA	84 V	188 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	10.00 kΩ
	825 mA	82 V	182 V	150 W	158 W	687 mA	95 °C	-40 ... +70 °C	7.68 kΩ
	850 mA	79 V	177 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	5.36 kΩ
	875 mA	77 V	171 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	3.16 kΩ
	900 mA	75 V	167 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	short circuit (0 Ω)
	925 mA	73 V	162 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD
	950 mA	71 V	158 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD
	975 mA	69 V	154 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD
	1,000 mA	68 V	150 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD
	1,025 mA	66 V	146 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD
	1,050 mA	64 V	143 V	150 W	160 W	696 mA	95 °C	-40 ... +70 °C	eD

① Valid at 100 % dimming level.

② Depending on the selected output current.

③ Depending on the DALI traffic at the interface.

④ ± 10 %.

⑤ At full load.

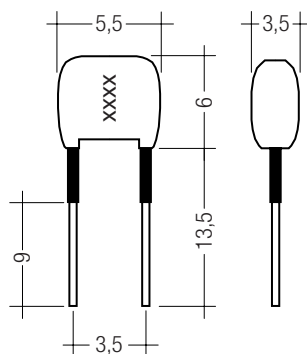
⑥ eD: Can only be set via eD.

ACCES-  
SORIES

### I-SELECT PLUG

### Product description

- Ready-for-use resistor to set output current value
- Resistor is base isolated
- Resistor power 0.25 W
- Resistor value tolerance ± 1 %



### Ordering data

Type	Article number	Colour	Marking	Resistor value	Packaging bag	Weight per pc.
I-SELECT PLUG MAX GR	28000274	Grey	MAX	0 Ω	10 pc(s).	0.001 kg
I-SELECT PLUG 500mA GN	28000277	Green	0500	49.9 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 700mA GN	28000278	Green	0700	22.0 kΩ	10 pc(s).	0.001 kg

### Standards

EN 55015  
 EN 60068-2-27 (shock – test case: 1,000 shocks in 6 directions with 30 g / 18 ms)  
 EN 60068-2-64 (vibration – test case: acc. to table A.1 transport / category 2)  
 EN 61000-3-2  
 EN 61000-3-3  
 EN 61347-1  
 EN 61347-2-13  
 EN 62384  
 EN 61547  
 EN 62386-101 (according to DALI standard V1)  
 EN 62386-102  
 EN 62386-207  
 According to EN 50172 for use in central battery systems  
 According to EN 60598-2-22 suitable for emergency lighting installations

### Overload protection

If the output voltage range is exceeded the LED control gear turns off the LED output. After restart of the LED control gear the output will be activated again. The restart can either be done via mains reset or via interface (DALI, DSI, switchDIM).

### Overtemperature protection

The LED control gear is protected against temporary thermal overheating. If the temperature limit is exceeded the output current of the LED is reduced. The temperature protection is activated approx. +5 °C above  $t_c$  max (see page 3). On DC operation this function is deactivated to fulfill emergency requirements.

### Short-circuit behaviour

In case of a short circuit at the LED output the LED output is switched off. After restart of the LED control gear the output will be activated again. The restart can either be done via mains reset or via interface (DALI, DSI, switchDIM).

### No-load operation

The LED control gear will not be damaged in the no-load operation. A voltage of 320 V DC is permanent at the output. In the first 5 seconds it can even be higher. If a LED load is connected the device has to be restarted before the output will be activated again.

### Hot plug-in

Hot plug-in is not recommend after shutdown due to 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 with mains reset, DALI, DSI or switchDIM.

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 within the specified temperature range ( $t_a$ ) before they can be operated.

### Expected life-time

Type	Output current	$t_a$	40 °C	50 °C	55 °C	60 °C	65 °C	70 °C
LCAI 150W 350mA-1050mA ECO INDUSTRY sl	350 – 1050 mA	$t_c$	65 °C	75 °C	80 °C	85 °C	90 °C	95 °C
		Life-time	>100,000 h	>100,000 h	>100,000 h	100,000 h	70,000 h	50,000 h

### Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current
Installation $\emptyset$	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	$I_{max}$ time
LCAI 150W 350mA-1050mA ECO INDUSTRY sl	8	12	14	20	4	6	7	10	60 A 200 $\mu$ s

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

	THD	3.	5.	7.	9.	11.
LCAI 150W 350mA-1050mA ECO INDUSTRY sl	7	< 3,5	< 3,5	< 3,5	< 3	< 2

### Control input (DA/N, DA/L)

Digital DALI signal or switchDIM can be wired on the same terminals (DA/N and DA/L).

### Digital signal DALI/DSI

The control input is non-polar for digital control signals (DALI, DSI). 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.

### switchDIM

Integrated switchDIM function allows a direct connection of a push to make switch for dimming and switching.

Brief push (< 0.6 s) switches LED control gear ON and OFF. The LED control gears switch-ON at light level set at switch-OFF.

When the push to make switch is held, LED modules are dimmed. After repush the LED modules are dimmed in the opposite direction.

In installations with LED control gears with different dimming levels or opposite dimming directions (e.g. after a system extension), all LED control gears can be synchronized to 50 % dimming level by a 10 s push.

Use of push to make switch with indicator lamp is not permitted.

### corridorFUNCTION

The corridorFUNCTION can be programmed in two different ways.

To program the corridorFUNCTION by means of software a DALI-USB interface is needed in combination with a DALI PS. The software can be the masterCONFIGURATOR.

To activate the corridorFUNCTION without using software a voltage of 230 V simply has to be applied for five minutes at the switchDIM connection.

The unit will then switch automatically to the corridorFUNCTION.

#### Note:

If the corridorFUNCTION is wrongly activated in a switchDIM system (for example a switch is used instead of pushbutton), there is the option of installing a pushbutton and deactivating the corridorFUNCTION mode by five short pushes of the button within three seconds.

switchDIM and corridorFUNCTION are very simple tools for controlling ballasts with conventional momentary-action switches or motion sensors.

To ensure correct operation a sinusoidal mains voltage with a frequency of 50 Hz or 60 Hz is required at the control input.

Special attention must be paid to achieving clear zero crossings. Serious mains faults may impair the operation of switchDIM and corridorFUNCTION.

### Dimming

Dimming range 1 % to 100 %

Digital control with:

- DSI signal: 8 bit Manchester Code  
Speed 1 % to 100 % in 1.4 s
- DALI signal: 16 bit Manchester Code  
Speed 1 % to 100 % in 0.2 s  
Programmable parameter:  
Minimum dimming level  
Maximum dimming level  
Default minimum = 1 %  
Programmable range  $1\% \leq \text{MIN} \leq 100\%$   
Default maximum = 100 %  
Programmable range  $100\% \geq \text{MAX} \geq 1\%$

Dimming curve is adapted to the eye sensitiveness.

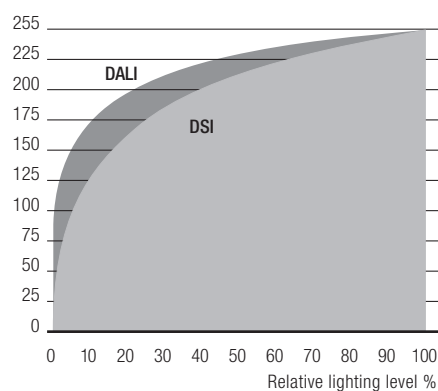
Dimming is realized by a combination of analog amplitude dimming and PWM dimming.

35 ... 100 %: amplitude dimming

1 ... 34 %: PWM dimming

### Dimming characteristics

Digital dimming value



Dimming characteristics as seen by the human eye

### Light level in DC operation

Programmable from 1 – 100 %

Programming by extended DSI or DALI signal (16 bit).

Default value is 15 %

In DC operation dimming mode can be activated.

### Function: adjustable current (I-select)

The output current of the LED control gear can be selected between 350 and 1050 mA. For adjustment there are two options available.

Option 1: „I-select resistor“

Adjustable range	350 – 900 mA
Step width	25 mA (see page 3)
Resistor value range	E96
Resistor value tolerance	≤ 1 %
Resistor power	≥ 0.1 W

If the resistor is connected with wires a max. wire length of 2 m may not be exceeded and possible interferences have to be avoided.  
Resistors for the main output current values can be ordered from Tridonic (see accessories).

Option 2: eD (adjustable between 350 – 1,050 mA)

Adjustment is done by masterCONFIGURATOR (see masterCONFIGURATOR documentation).

### Constant light output (CLO)

The luminous flux of an 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.  
In masterCONFIGURATOR it is possible to select a start value (in percent) and an expected life-time. The LED control gear adjusts the current afterwards automatically.

### Intelligent temperature monitoring (ITM)

The device offers the possibility to connect a silicon based temperature sensor (KTY81-210, KTY82-210) to monitor the LED temperature and protect the module against thermal damages.

If the temperature limit is exceeded the LED output will be dimmed or turned off. If the temperature falls below threshold the device will automatically return to the nominal operation.

The use of a NTC or PTC resistor is not possible.

The device can be operated without a sensor (default setting).

The function can be adjusted via masterCONFIGURATOR.

### Power-up fading

The power-up fading function offers the opportunity to realise a soft start.

The soft start will be applied at turning on the mains and at starts by switchDIM.

The function is programmed as a DALI fade time in the range from 0.7 to 16 seconds and dims in the selected time from 0 % to the power-on level.

By factory default power-up fading is not active (0 seconds).

### Programming

With appropriate software and a USB interface different functions can be activated and various parameters can be configured in the LED control gear. All that is needed is a DALI-USB and the software (masterCONFIGURATOR).

### masterCONFIGURATOR

From version 2.8:

For programming functions (CLO, I-select, power-up fading, corridorFUNCTION) and device settings (fade time, ePowerOnLevel, DC level, etc.). For further information see masterCONFIGURATOR manual.

## Electrical connections

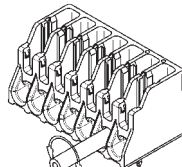
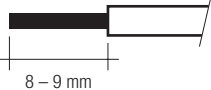
### IDC interface

- solid wire with a cross section of 0.5 mm<sup>2</sup>

### Horizontal interface

- solid wire with a cross section of 0.5–1.0 mm<sup>2</sup> with an insulation diameter up to 2.5 mm
- strip 9 mm of insulation from the cables to ensure perfect operation of the push terminals
- Loosen wire through simultaneously twisting and pulling

wire preparation:  
0.5 – 1.0 mm<sup>2</sup>



Loosen wire through  
twisting and pulling

### Wiring guidelines

- The 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), this applies for LED output as well as for I-select.
- Secondary switching is not permitted.
- The LED control gear has no inverse-polarity protection on the secondary side. Wrong polarity can damage LED modules with no inverse-polarity protection.

### Function of the earth terminal ⊕

Class I luminaires: Earthing via earth terminal or housing required  
Class II luminaires: No earthing required

An earth connection may however improve the following unwanted behaviour:

- poor interference properties
- residual LED glow on standby
- transfer of mains transients to the LED output

For modules that are installed on earthed luminaire components or on heat sinks and which therefore have a high capacitance with regard to earth it is generally recommended that the device be also earthed.  
If an earth connection is used it must be a protective earth (PE).

The device has an increased voltage peak suitability (Burst/Surge) at the output. To avoid damage of the connected LED module it has to be insulated against PE to stand these voltage peaks.

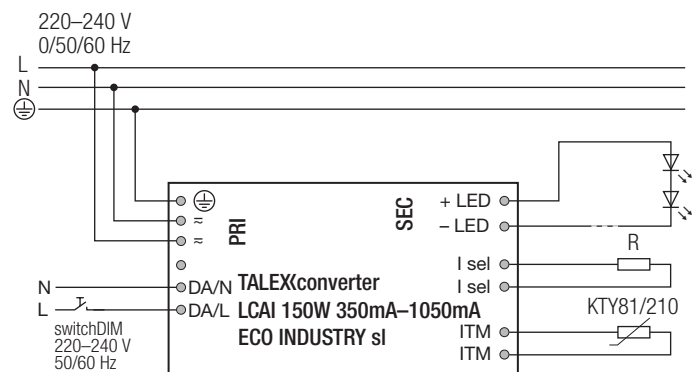
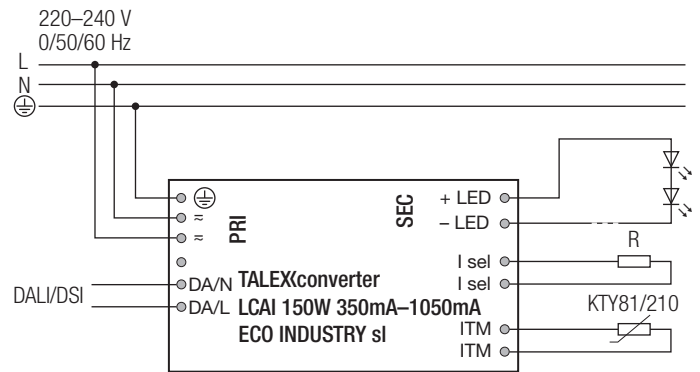
### Additional information

Additional technical information at  
[www.tridonic.com](http://www.tridonic.com) → Technical Data

Guarantee conditions at  
[www.tridonic.com](http://www.tridonic.com) → Services

No warranty if device was opened.

## Circuit diagram



### Isolation and electric strength testing of luminaires

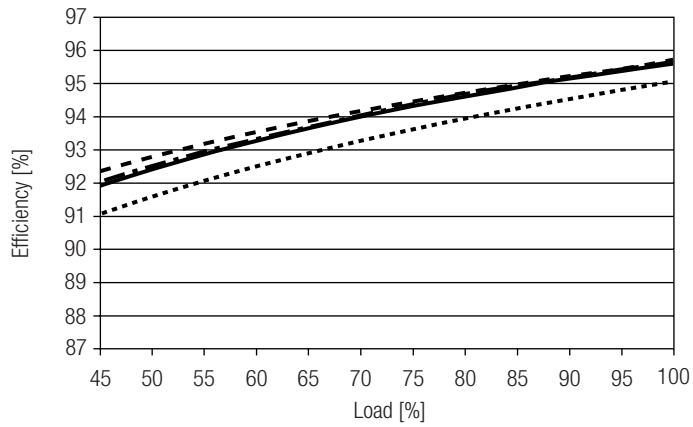
Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

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<sub>DC</sub> for 1 second. This test voltage should be connected between the inter-connected phase and neutral terminals and the earth terminal.  
The isolation resistance must be at least 2 MΩ.

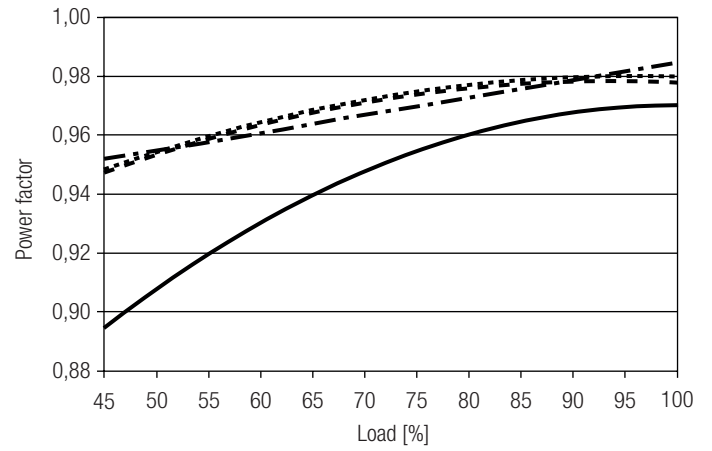
As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V<sub>AC</sub> (or 1.414 x 1500 V<sub>DC</sub>). To avoid damage to the electronic devices this test must not be conducted.

Diagrams LCAI 150W 350mA-1050mA ECO INDUSTRY

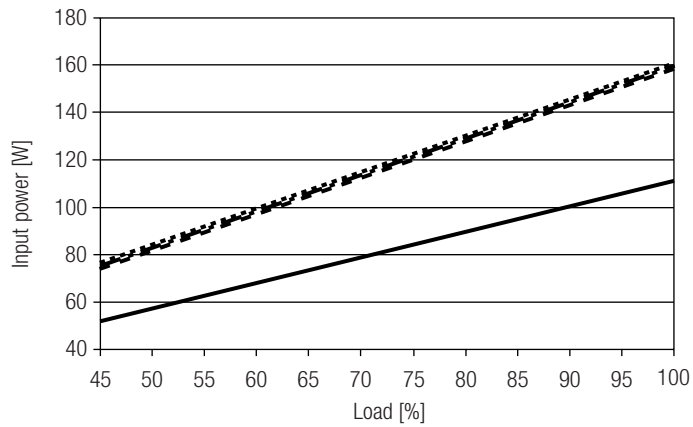
Efficiency vs load



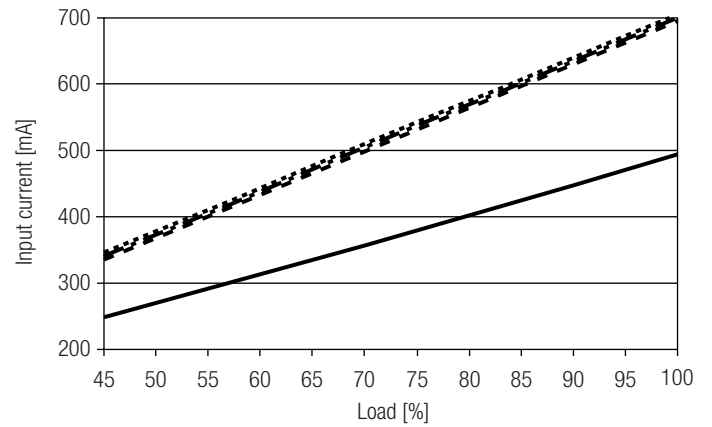
Power factor vs load



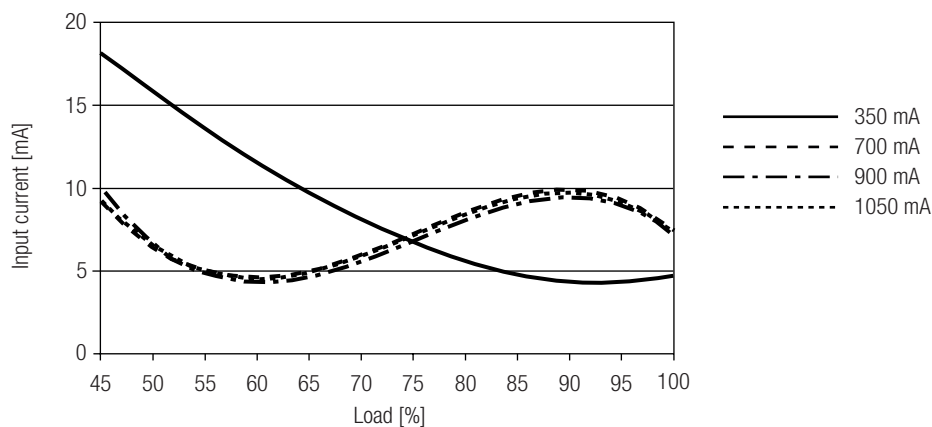
Input power vs load



Input current vs load



THD vs load



- 350 mA
- - - 700 mA
- · - · 900 mA
- · · · 1050 mA

100 % load correspond to the max. output power (full load) according to the table on page 3.