LED Converters

Standard LED converters

Type:
Fully encapsulated voltage transformer without galvanic separation converting the mains voltage into a DC voltage with constant output current. The converters are short-circuit-proof and stable at no load.

Weight: 0.11kg

Connection:
Approx. 500mm insulated Cu wire on primary and secondary side.

C25/300

Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.08 Amp.
Secondary voltage: max. 315 Volt
Secondary current: 25mA constant

C40/300

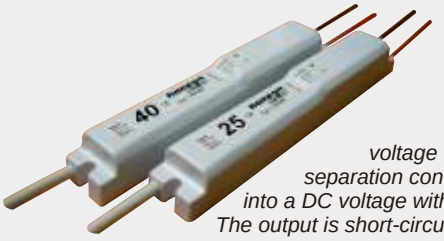
Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.10 Amp.
Secondary voltage: max. 315 Volt
Secondary current: 40mA constant

Type	Article no.	L x W x H (mm)	LED type	No. of LEDs
C25/300	5 2300 005	127 x 19 x 22		1 to 75
C40/300	5 2300 003	127 x 19 x 22		1 to 125

Note: These converter types are not galvanically separated from the mains.

LED converters - with higher output voltage

NEW!



Type:
Fully encapsulated voltage transformer with galvanic separation converting the mains voltage into a DC voltage with constant output current. The output is short-circuit- and open-circuit proof.

Weight: 0.30kg

C25/990

Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.18 Amp.
Secondary voltage: max. 990 Volt
Secondary current: 25mA constant

C40/650

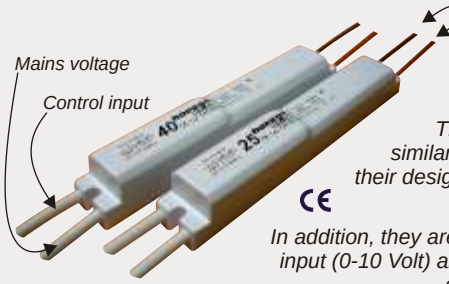
Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.19 Amp.
Secondary voltage: max. 650 Volt
Secondary current: 40mA constant

Type	Article no.	L x W x H (mm)	LED type	No. of LEDs
C25/990	5 2599 000	177 x 29 x 225		1 to 225
C40/650	5 4065 000	177 x 29 x 225		1 to 270

Note: These converters are provided with galvanic separation.

Dimmable LED converters

NEW!



Type:
These converter types are similar to the standard range in their design and electrical function.

In addition, they are equipped with a control input (0-10 Volt) allowing infinitetly variable dimming of the LED light.

Weight: 0.30kg

C25/300D

Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.08 Amp.
Secondary voltage: max. 315 Volt
Secondary current: 25mA constant

C40/300D

Ratings:
Primary voltage: 230 Volt, 50Hz
Primary current: 0.10 Amp.
Secondary voltage: max. 315 Volt
Secondary current: 40mA constant

Type	Article no.	L x W x H (mm)	LED type	No. of LEDs
C25/300D	5 2300 015	177 x 29 x 25		1 to 75
C40/300D	5 2300 013	177 x 29 x 25		1 to 125

Note: These converter types are not galvanically separated from the mains.

Mini and plug-type converter

NEW!

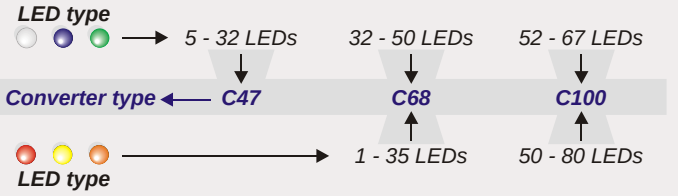
Dimensions:
51 x 34 x 14mm

Plug housing colour: black

Type	Article no.
C47	5 2300 047
C68	5 2300 068
C100	5 2300 100

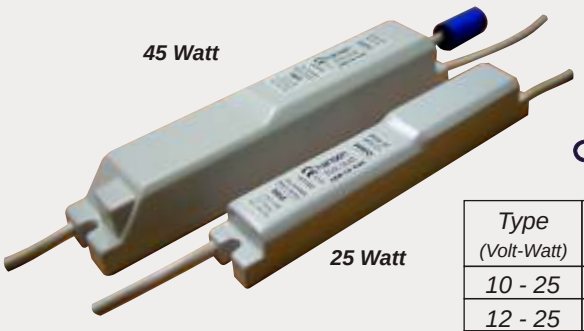
Type	Article no.
C47ST	5 2300 147
C68ST	5 2300 168
C100ST	5 2301 100

These converter types are of an extremely small design.
The table below shows the number of LEDs that can be connected.
The converters are fully encapsulated, short-circuit-proof and stable at no load.



Note: These converter types are not galvanically separated from the mains.

Electronic LED ballasts for extra-low voltages 10...12...24 Volt



Electronic ballast converting the mains voltage into a galvanically separated, stabilised DC voltage.

The electronic components are contained in a compound-filled plastic housing making the converters suitable for outdoor use.

The electronic ballasts are intended for the operation of LED modules.

Flexible, double-insulated leads provide safe connection on the mains and secondary side.

Primary side protected by 1 Amp. fuse.

Type (Volt-Watt)	Article number	Secondary voltage (V)	Secondary current max.(A)	Primary current max.(A)	Dimensions (mm)
10 - 25	5 1025 000	10	2.5	0.14	177 x 29 x 25
12 - 25	5 1225 000	12	2.1		
24 - 25	5 2425 000	24	1.1		
10 - 45	5 1045 000	10	2.5	0,=.25	207 x 39 x 37
12 - 45	5 1245 000	12	2.1		
24 - 50	5 2450 000	24	1.1		

Technical Explanations

LEDtube circuit layout

The LEDtube is a series connection of light emitting diodes (LEDs) with a protective Zener diode connected in parallel to each LED.

The current flowing through the circuit is a direct current of 25mA (for white, blue and green LEDs) or 40mA (for red, yellow and amber LEDs) respectively.

Due to the series connection, the current remains the same (25 or 40mA), no matter whether the circuit contains only a few LEDs or a large number of LEDs (up to 125).
The converter supplies a constant current thus ensuring a uniform brightness of the LEDs.

The series connection makes sure that the LEDs always generate the optimum brightness without being overloaded.

LED converters

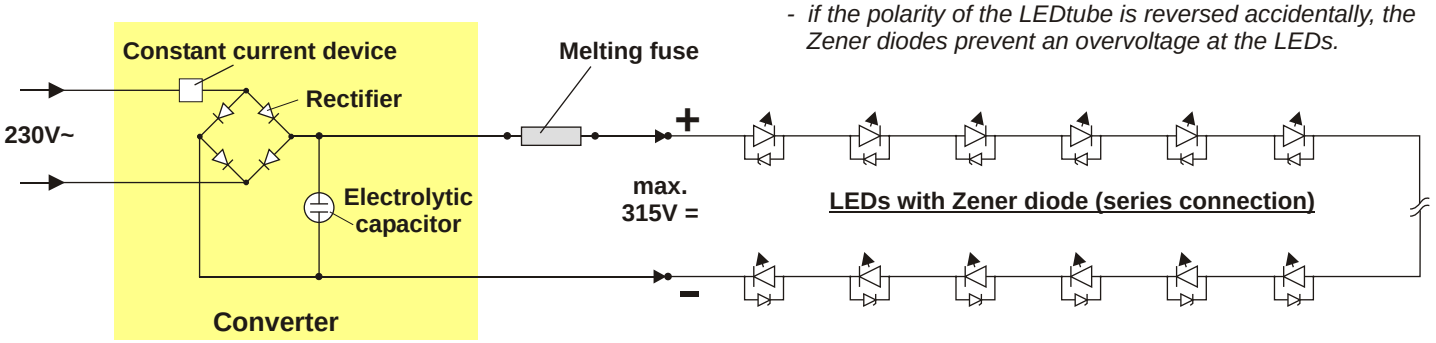
The standard converters generate a constant LED current from the mains voltage. This ensures a uniform brightness within the entire circuit.

The output voltage is variable and automatically adjusts to the number of connected LEDs.

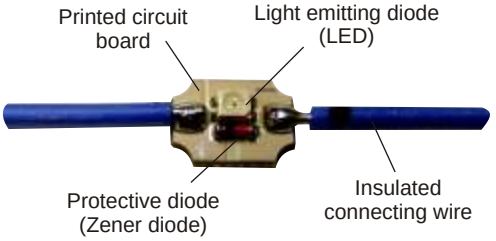
All converters are short-circuit-proof and stable at no load. The output (positive) is equipped with a fuse protecting the circuit against earth fault.

Protective diode

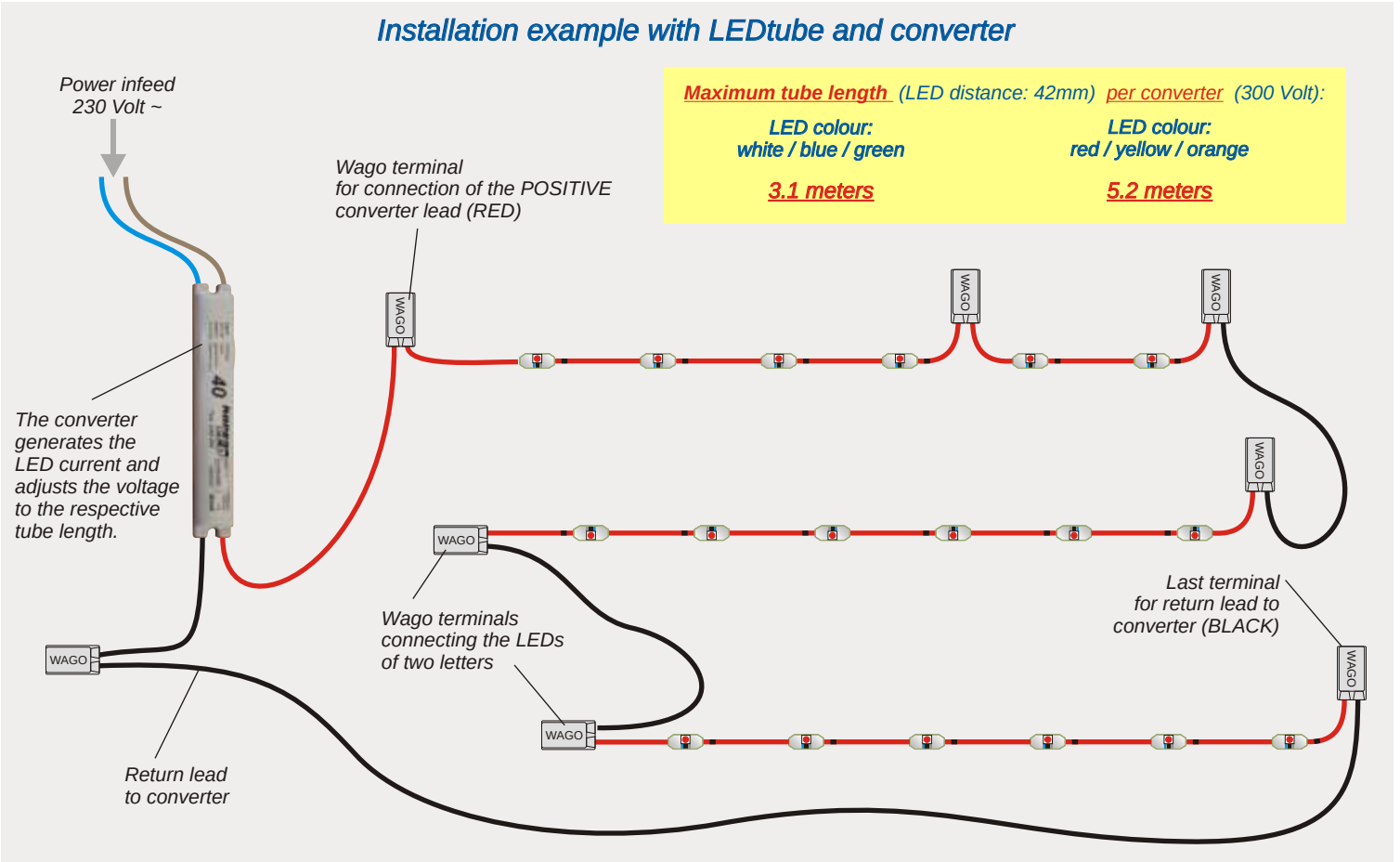
Each LED within the circuit has a Zener diode connected in parallel. This diode performs two tasks:
- *if the LED becomes defective, it will be bypassed by this protective diode so that the circuit remains complete and the other LEDs alight.*
- *if the polarity of the LEDtube is reversed accidentally, the Zener diodes prevent an overvoltage at the LEDs.*



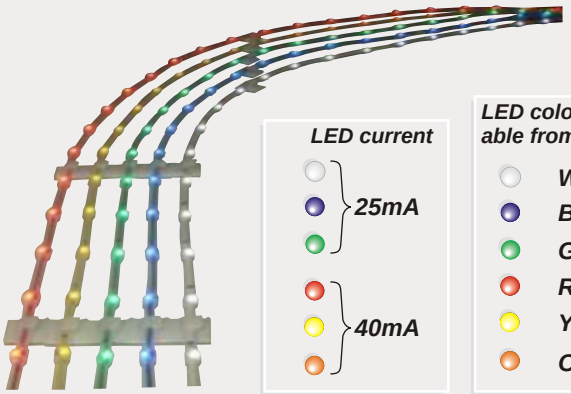
Note:
The converters do not have any galvanic separation, i.e. the same protective and insulation measures are required as on the mains side.
Conductive parts must on no account come into contact with earthed metal. A suitable protection against accidental contact must be provided.



Installation example with LEDtube and converter



LEDtube



LED current

- 25mA: white, blue, green
- 40mA: red, yellow, orange

LED colours available from stock:

- White
- Blue
- Green
- Red
- Yellow
- Orange

LED distance:

The standard distance between 2 LEDs is 42mm (available from stock).This has proved to be appropriate for most applications.

- *If a brighter illumination is required, the LEDtube can be supplied with a shorter LED distance (20 or 30mm).*
- *If a lower brightness is sufficient, a larger distance (50 or 60mm) may be used to reduce costs.*

LEDtube - length:

The LEDtube can be supplied in the following lengths (applicable to all colours):

- *1 meter*
- *completely insulated over it's full length, corresponding to the converter voltage (300 Volt).*
  Example: 3.1m (white) or 2x2.6m (red)
- *individually tailored lengths*

LEDtube - tailoring:

Tailored LEDtubes offer the following advantages:
- *the length can be matched exactly to the real size of the letter*
- *extended connecting wires allow a simple installation*

Tailored LEDtubes are particularly useful for very small illuminated letters or narrow profiles.

Overview of LEDtubes with article numbers:
LED distance: 42mm

Type	Article number		Type
	1 meter/25 LEDs	3.1 meters/75 LEDs	
white	5042 3119-100	5042 3119-310	white
blue	5042 3116-100	5042 3116-310	blue
green	5042 3115-100	5042 3115-310	green
	1 meter/25 LEDs	2.6 meters/62 LEDs	
red	5042 3117-100	5042 3117-260	red
yellow	5042 3114-100	5042 3114-260	yellow
orange	5042 3113-100	5042 3113-260	orange

NEW!

LED colour tester

Dimensions: 290x60x60mm

Electronic device generating LED light in 5 different colours. The light compartment can be covered with white or coloured acrylic glass panes to assess the effect of backlighting acrylic glass with LED light of different colours.
The scope of delivery includes sample acrylic glass panes (made by Degussa-Röhm)

Type	Article number
LED colour tester	5 0009 998

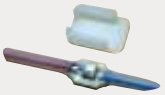
Connecting terminal

- *Make: Wago*
- *plug-in connector*
- *two-pole, 1-2.5 mm²*

For connections between
- *converter and LEDtube*
- *LEDtube and LEDtube*

Type	Article number	Standard pack: 100 units
WAGO 273	50004006	

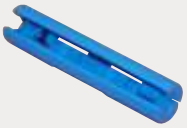
LEDtube holder



Self-adhesive plastic holder, specially designed for the LEDtube.
Material: Nylon 6/6
- *double-sided adhesive tape*
- *easy-to-remove protective foil*

Type	Article number	Standard pack: 100 units
Tube holder	50004002	

Insulation stripper



Insulation stripping tool
for simple and safe stripping of the converter and connecting leads.
With cutting blades at both ends, specially matched to the LEDtube with a Cu conductor diameter of 1 sqmm.

Type	Article number
Insulation stripper	53000100

Description

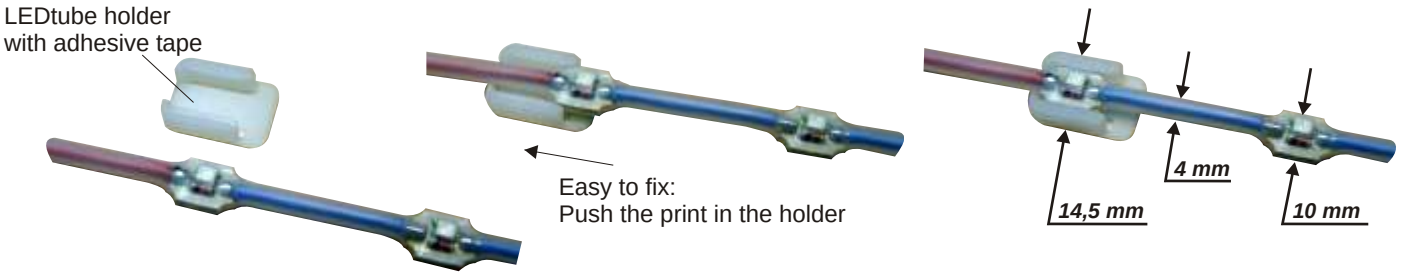
The LEDtube is a flexible chain of light emitting diodes (LEDs). The LEDs are soldered onto a small printed circuit board together with a protective diode.

These small circuit boards are soldered to a copper wire forming a series connection.

The chain of LED boards and pieces of copper wire is enclosed in a one-piece transparent shrink-down plastic tubing.

The LEDtube is available in six standard colours:

The LEDtube can be bent, extended or shortened as required to match any shape of illuminated letter.



Any questions ??
Here are some answers:

Why a series connection of individual LEDs and not a parallel connection of LED modules?
It is the series connection which allows the flexible and variable design of the LEDtube.
A reduced power loss and lower currents are also benefits that are only possible with a series connection.

Why isn't the LEDtube operated at 12 Volt?
A series connection of up to 125 LED requires a much higher voltage. For example, the maximim number of red LEDs which can be operated with 12 Volts is 5.

How does the brightness change when more or less LEDs are connected to the converter?
Not at all. The converter generates a constant LED current which remains the same no matter whether a single LED or the maximum number of 125 LEDs is connected.

What does "galvanically separated" mean?
The converters generate the LED current and voltage from the 230 Volt mains power without any galvanic separation between the mains and the LED circuit. This means that all electrical parts of the LEDtube are at mains potential as normnal for low voltage installations (according to VDE 0100ff).

What happens in the event of a short circuit or open circuit?
In both cases the LEDs will extinguish. However, the converters are short-circuit-proof and stable at no load so that this will not cause any further damage.

Can LEDs with different colours be operated in the same circuit?
Yes, if the maximum current of 25mA for the group of white, blue and green diodes is not exceeded. Mixed colours can also be generated this way.

Benefits

High-level system safety
The LEDtube was developed in close co-operation with people from practice who know what is important in outdoor advertising. They confirm the following for the LEDtube:
- *Excellent protection against moisture thanks to the shrink-down plastic tubing*
- *Simple, safe and quick electrical connection with Wago terminals*
- *No more overloading of cables and contacts by huge currents.*

Fast and simple installation
The construction of the LEDtube is simple and easy to understand even for first-time users.
LEDtube, converter, terminals and tube holders are matched to each other and fit together immediately.
Installing the LEDtube into a letter is easy and done quickly.
All you need is a pair of diagonal cutting pliers and an insulation stripper.

Uniform illumination
The LEDtube was desinged to ensure an absolutely uniform light intensity in illuminated letters of different shapes.
Using the LEDtube, even less accessible corners or serifs can be illuminated with uniform brightness.

Illuminating very small letters
The LEDtube allows the production of letters which up to now could not be realized with illumination.
Subtle, indirectly illuminated writings are possible as well as very small letters with a height of less than 10 cm.
Even the small dot on on the "i" can be illuminated with a single LED.

Reduced letter depth
With LEDs, the depth of illuminated letters can be reduced considerably.
Writings with such letters look more elegant and less clumsy.
Practical tests have shown an optimum depth for lettes of 6 cm.
For indirect illumination, a depth of 2.5 - 3 cm is sufficient.

More light in cold conditions
Having more light at lower temperatures is particularly desireable as illuminated advertisements are mainly switched on in the evening and at night.
One positive feature of LEDs is that their light emiossion increases at low temperatures.

Particularly suitable for outdoor systems
The LEDtube and the converters are designed for use in outdoor systems.
All components are suitable for the harsh environmental conditions on building fascades.

BEST SUPPLY LTD.
Unit 1602, 16/F., Kowloon Buildi ng, 555 Nathan Road, Yau Ma Tei, Kowloon, Hong Kong
Tel: +852-25200086 Fax: +852-25200071 Email: china1@bestsupply.com.hk