




## Application Note

# 1606-XLP50E with DC 24...28V/50W



- Mounted and connected in record time, no tools required
- World-wide approvals (    ) for industry
- Tiny: WxHxD = 45 x 75 x 91mm
- Output voltage adjustable to DC 28V
- 100...240V Wide Range Input (AC 85...264V permitted)
- Exceptional Overload Design (no switch off at overload but up to 1.5 times nominal current)

### • Input

Input voltage	AC 100...240V (Wide Range), 47...63Hz Admiss. limits: AC 85...264V (DC 85...375V)
Input current	<1.0A (@ AC 100V, 50W P <sub>out</sub> ) <0.6A (@ AC 196V, 50W P <sub>out</sub> )
External Fusing	Unit has internal (not accessible) input fuse. No other protection required. In order to meet local requirements, please consult local codes and regulations for proper installation.
Transient immunity	Transient resistance acc. to VDE 0160 / W2 (750V / 1.3ms), over entire load range
Hold-up time (see diagram below)	>171ms bei AC 230V, 24V / 2.1A >97ms @ AC 196V, 24V / 2.1A >17ms @ AC 100V, 24V / 2.1A

### • Efficiency, Reliability

Efficiency	typ. 88.5% (AC 230V, 24V / 2.1A) (see also diagram below)
Losses	typ. 6.8W (AC 230V, 24V / 2.1A)
MTBF (Reliability)	ca. 600.000h acc. to Siemensnorm SN 29500 (24V / 2.1A, AC 230V, T <sub>amb</sub> = +40°C)

Prior to shipment, *every* unit undergoes the following tests in order to isolate any defective units which might suffer an early failure:

- Run-in/ burn-in (Full load, T<sub>amb</sub> = +60°C, on/off cycle)
- Functional test (100%)

### • Construction, Mechanics, Installation

Robust plastic housing (US Patent No. D442, 923S), fine ventilation grid on three housing sides to keep out small parts (e.g. screws), IP20

Dimensions and weight

- B x H x T 45mm x 75mm x 91mm (+ DIN Rail)  
Depth incl. terminals: 98mm (+ DIN Rail)

• Weight

240g

Mounting orientation

 (cf. 'Output')

Ventilation/Cooling

Normal convection, no fan required

• Free space f. cooling

recommended: 25mm on sides with ventilation grid

Easy snap-on mounting onto the DIN-rail (TS35/7,5 or TS35/15).

Unit sits safely and firmly on the rail; no tools required even to remove

Connection

by Spring Clamp terminals; uniformly firm hold, vibration-resistant and maintenance-free:  
2 terminals per output

• Wire strip length

6mm (0.24in) recommended

• Wire Size Input/Output

Stranded 28...12 AWG (0.3...2.5 mm<sup>2</sup>),  
Solid 28...12 AWG (0.3...4 mm<sup>2</sup>)

Design details – for your advantage:

- All terminals are easy to reach as mounted on the front panel.
- Input and output are strictly apart from each other (input below, output above) and so cannot be mixed up
- **Mounting and connection do not require any screwdriver**  
→ Easy, quick, durable and reliable installation

## • Output (incl. Logic)

Output voltage	DC 24...28V, adj. by front panel potentiometer 24.5V
• preset	$\pm 0.5\%$
Voltage regulation	static $0.5\% V_{out}$ , dynamic $\pm 2\% V_{out}$ overall
Ripple/Noise	$< 50mV_{pp}$ (20MHz bandwidth, $50\Omega$ measurement)
Overvoltage prot. (OVP)	$< 40V$
Output noise suppression	Radiated EMI values below EN50081-1, even with long ( $> 2m$ ), unscreened output cables
Rated continuous loading	up to 2.1A (convection cooling) depending on built-in orientation, $V_{in}$ and $T_{amb}$ ; for details see derating diagram below
Overload behavior	No switch-off at overload/short-circuit, instead: up to $1.5 \cdot I_{rated}$ . So you need no oversizing to start awkward loads.
Protection	Unit is protected against (also permanent) short-circuit, overload and open-circuit
Derating	depending on built-in orientation; see diagram below
Power back immunity	35V
Operation indicator	Green LED (DC OK), threshold: $V_{out} = 20V$
DC OK output	To feed a 24V relay ( $R_{coil} > 700\Omega$ ). Relay operates, if output voltage exceeds threshold value Free-wheeling diode for relay is included in the power supply unit
Threshold	$V_{out} = 20V \pm 4\%$

## • Environmental Data, EMC, Safety

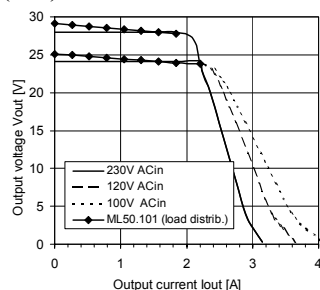
Ambient temperature range (measured 25mm below unit)	
• storage, transport	$-25^{\circ}C \dots +85^{\circ}C$
• operation	$-10^{\circ}C \dots +70^{\circ}C$ (for derating see diagram below)
Humidity	max. 95% (without condensation)
Electromagnetic emissions (EME)	EN 50081-1 (includes EN 50081-2) Class B (EN 55011, EN 55022) incl. Annex A thanks to noise suppression
Electromagnetic immunity (EMI)	EN 61000-6-2 (includes EN 55024)
Safe low voltage:	SELV (EN60950, VDE0100/T.410), PELV (EN50178)
Prot. class/degree:	Class I (EN60950) / IP20 (EN60529)

The PSU complies with all major **safety approvals** for EU (EN 60950, EN 60204-1, EN 50178), USA (UL 60950, E137006, UL508 LISTED, E198865), Canada (CAN/CSA-C22.2 No 60950 [CUR], CAN/CSA-C22.2 No. 14 [CUL]), CB Scheme (IEC 60950).

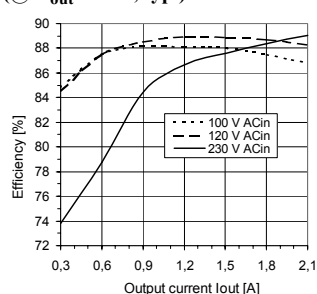
**Operation on IT networks:** The unit is designed to operate on IT networks. The unit may still deliver a hazardous voltage after the fuses are tripped.

## • Diagrams

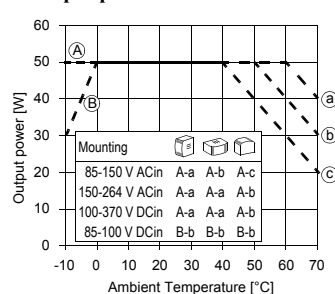
**Output characteristic  $V_{out}/I_{out}$  (min.)**



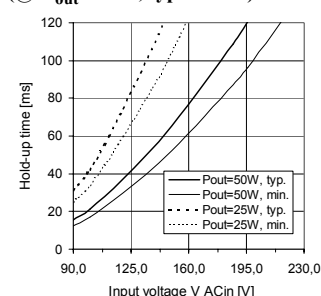
**Efficiency (@  $V_{out} = 24V$ , typ.)**



**Derating of output power**



**Hold-up time with ACin (@  $V_{out} = 24V$ , typ. + min.)**



Specifications valid for 230V AC input voltage,  $+25^{\circ}C$  ambient temperature, and 5 min run-in time, unless otherwise stated. They are subject to change without prior notice.

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