




## Application Note

# 1606-XL240E



- World-wide approvals (    ) for industry, factory mutual rating
- Input: AC 230/115V, DC 240...375V
- Output: 24...28V/240 W

- Power boost up to 288W
- High overload current, no switch-off
- Robust mechanics and EMC

### Input

Input voltage	AC 100...120/200...240V (switchable), 47...63Hz (AC 85...132/176...264V, DC 240...375V)
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Note: At DC input, always leave the switch in the 230V position

Input current	<6A (switch in 115V position) <2.6A (switch in 230V position)
• DCin at open output	8mA (preserves battery sources)
Inrush current	typ. <30A at AC 264V and cold start

If you intend to protect the primary side of the power supply with a fuse or a circuit breaker, a 10 A slow acting fuse (HBC) or a supplementary protector 1492-SPU1C100 is recommended. In order to meet local requirements, please consult local codes and regulations for proper installation.

Transient handling	Transient resistance acc. to VDE 0160 / W2 (750V/1.3ms), for all load conditions.
Hold up time	>25ms at AC 196V, 24V/10A (see diagram)

### Efficiency, Reliability etc.

Efficiency	typ. 90% (AC 230V, 24V/10A)
Losses	typ. 26.7W (AC 230V, 24V/10A)
MTBF	425.000h acc. to Siemensnorm SN 29500 (24V/10A, AC 230V, T <sub>amb</sub> = +40°C)
Life cycle (electrolytics)	The unit exclusively uses longlife electrolytics, specified for +105°C.

### Start / Overload Behavior

Startup delay	typ. 0.1s
Rise time	ca. 5...20ms, depending on load

Overload Behavior	– no disconnection, no hiccup if overloaded
• Special Overload Design (see diagram)	– high overload current (up to 1.6 I <sub>Nom</sub> ), V <sub>out</sub> is gradually reduced with increasing current.
• 20% power boost	– 12A short-term, at 45°C or forced cooling even continuous

#### Advantages:

- High short-circuit current, giving large ‘start-up window’: unit starts reliably even with awkward loads (DC-DC converters, motors).
- No ‘sticking’ such as can occur with fold-back characteristics
- Secondary fuses operate more reliably

### Output

Output voltage	DC 24...28V, adjustable by (covered) front panel potentiometer; preset: 24.5V ±0.5% Adj. range guaranteed
Output noise suppression	Radiated EMI values below EN50081-1, even when using long, unscreened output cables.
Ambient temperature range T <sub>amb</sub>	Operation: 0°C...+70°C (>60°C: Derating) Storage: -40°C...+85°C
Humidity	maximum 95%, non-condensing

#### Rated continuous loading with convection cooling

- T<sub>amb</sub>=0°C...60°C 24V/10A (240W) resp. 28V/8.6A (240W)
- T<sub>amb</sub>=0°C...45°C 24V/12A (288W) resp. 28V/10.3A (288W)  
short-term also at 60°C

Output is protected against short-circuit, open circuit and overload

Derating	typ. 6W/K (at T <sub>amb</sub> = +60°C...+70°C)
Voltage regulation	better than 2% V <sub>out</sub> overall
Ripple / Noise	<30mV <sub>pp</sub> , (20MHz bandwidth, 50Ω measurement)
Overvolt. protection	typ. 35V
Parallel operation	yes, load sharing available on request
Power back immunity	34V
Front panel indicator	Green LED on front panel

## Construction / Mechanics

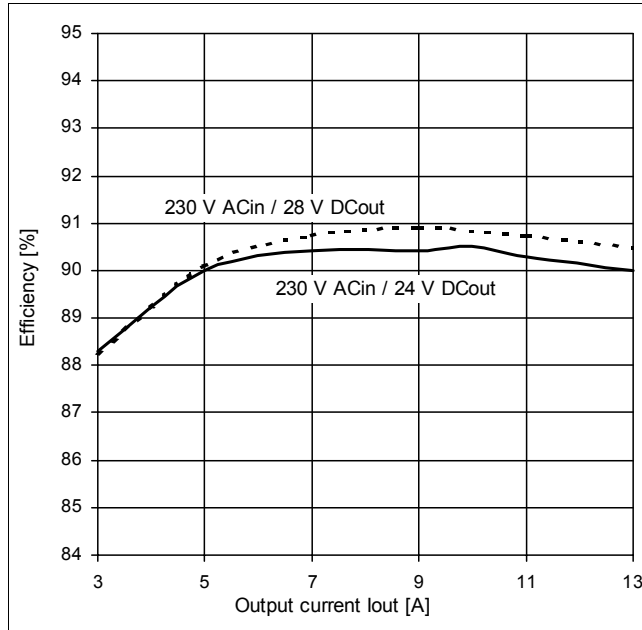
### Housing dimensions and Weight

- W x H x D 120mm x 124mm x 102mm (+ DIN rail)
- Free space for ventilation above/below 25mm recommended  
left/right 15mm recommended
- Weight 980g

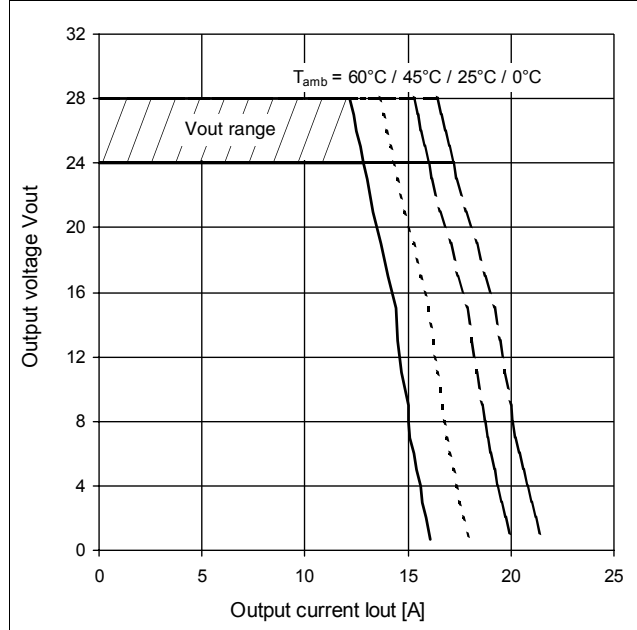
### Design advantages:

- All connection blocks are easy to reach as mounted at the front panel.
- Wire Size Input/Output:
- Stranded 20...10 AWG (0.5...4 mm<sup>2</sup>), Solid 20...10 AWG (0.5...6 mm<sup>2</sup>)
- Tightening Torque: 7 lbs in (0.8 Nm) recommended

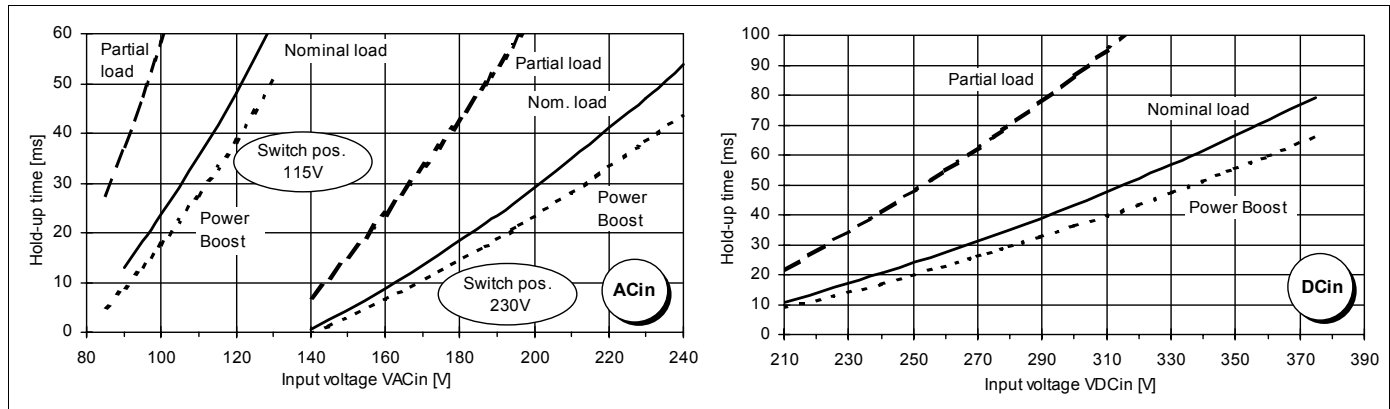
### Efficiency (typ.)



### Output characteristic (min.)



### Hold-up time (typ., at V<sub>out</sub>=24V)



with Partial Load = 120W Nominal Load = 240W Power Boost = 288W

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

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