

Application Note

1606-XL240FP



- World-wide approvals (CE UL UL) for industry
- Input: AC 230/115V, DC 240...375V
- Output: 48...56V/240 W

- Overload Design: Power boost up to 288W; high overload current, no switch-off
- Robust mechanics and EMC

Input

Input voltage AC100...120/200...240V (switchable), 47...63 Hz (AC 85...132/176...264V, DC 240...375V)

Note: At DC input, always leave the switch in the 230V position

Input current <6A (switch in 115V position)
<2.8A (switch in 230V position)

DCin at open output 8mA (preserves battery sources)

Inrush current <30A at AC 264V and cold start

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.

Harmonic current emissions acc. EN 61000-3-2 (PFC) Power factor: better than 0.68 at nominal load

Transient handling Transient resistance acc. to VDE 0160 / W2 (750V/1.3ms), for *all* load conditions.

Hold up time >25ms at AC 196V, 48V/5A (see Diagram)

Efficiency, Reliability etc.

Efficiency typ. >90% (AC 230V, 48V/5A)

Losses typ. 26.7W (AC 230V, 48V/5A)

MTBF 425.000h acc. to Siemensnorm SN 29500 (48V/5A, AC 230V, $T_{\text{amb}} = +40^{\circ}\text{C}$)

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 – high overload current (up to 1.6 I_{Nom}); V_{out} is gradually reduced with increasing current. (see diagram)

- 20% power boost – 6A 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 48...56V, adjustable by (covered) front panel potentiometer; preset: 48.5V $\pm 0.5\%$; Adj. range guaranteed

Ambient temperature range Operation: 0°C...+70°C (>60°C: Derating)
 T_{amb} Storage: -25°C...+85°C

Rated continuous loading with convection cooling

- $T_{\text{amb}}=0^{\circ}\text{C} - 60^{\circ}\text{C}$ 48V/5A (240W) resp. 56V/4.3A (240W)
- $T_{\text{amb}}=0^{\circ}\text{C} - 45^{\circ}\text{C}$ 48V/6A (288W) resp. 56V/5.1A (288W) short-term also at 60°C

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

Derating typ. 6W/K (at $T_{\text{amb}} = +60^{\circ}\text{C}...+70^{\circ}\text{C}$)

Voltage regulation better than 2% V_{out} overall

Ripple / Noise <50mV_{pp}, (20MHz bandwidth, 50Ω measurement)

Parallel operation possible; however, no equal load sharing

Overvolt. protection typ. 59V

Power back immunity 60V

Front panel indicator Green LED on front panel

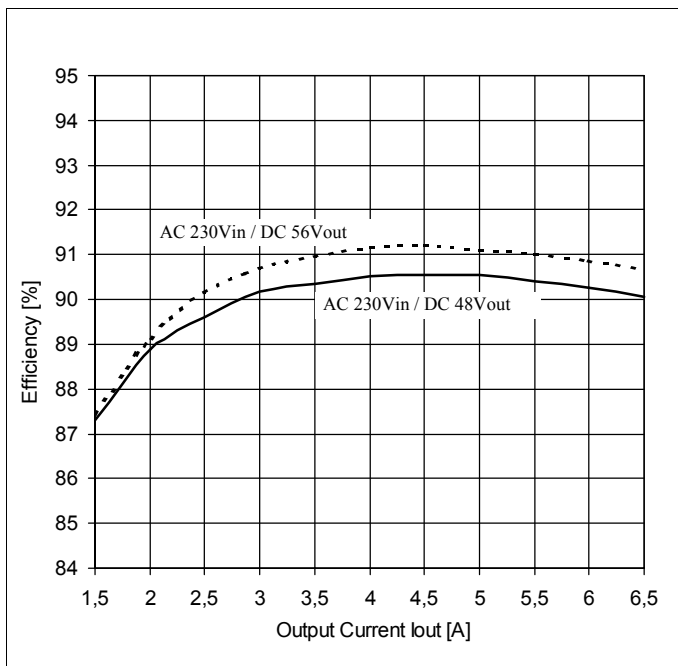
Construction / Mechanics

Housing dimensions and Weight

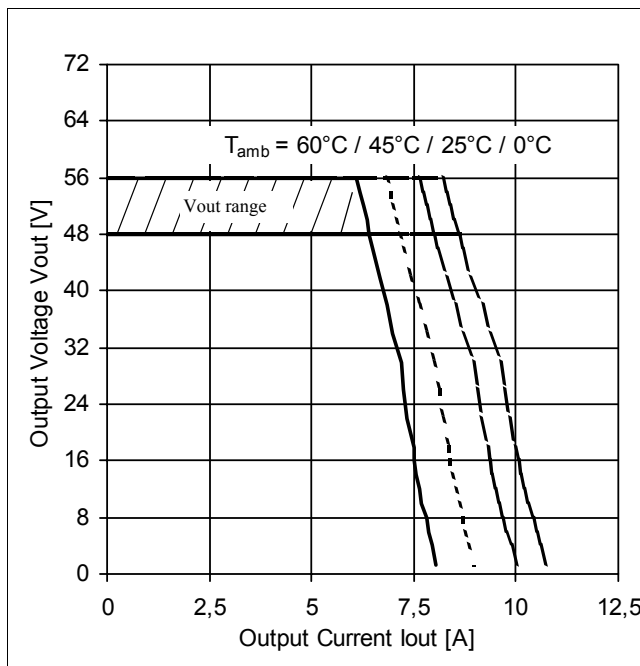
- W x H x D 120mm x 124mm x 102mm (+ DIN rail)
- Free space for ventilation above/below 25mm recommended left/right 15mm recommended
- Weight 980g

Design advantages: All connection blocks are easy to reach at the front panel.
Wire Size Input/Output: Stranded 20...10 AWG (0.5...4 mm²), Solid 20...10 AWG (0.5...6 mm²); Tightening Torque: 7 lbs in (0.8 Nm) recommended

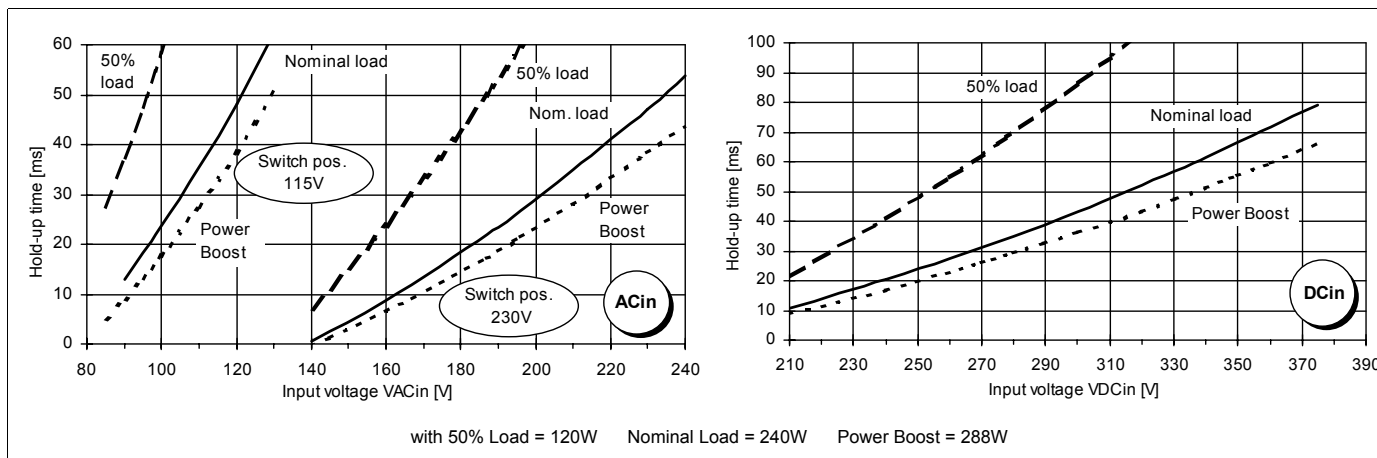
Efficiency (typ.)



Output characteristic (min.)



Hold-up time (typ., at V_{out}=48V)



Specifications valid for 230 V 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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