Allen-Bradley

Application Note

1606-XL240E

- World-wide approvals (CE cULus cULus LISTED) 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)

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_{amb} = +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_{Nom}), Vout 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_{amb}	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_{amb}=0°C…60°C	24V/10A (240W) resp. 28V/8.6A (240W)
• T_{amb}=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_{amb}= +60°C...+70°C)
Voltage regulation	better than 2% Vout overall
Ripple / Noise	<30mV_{PP}, (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

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Construction / Mechanics

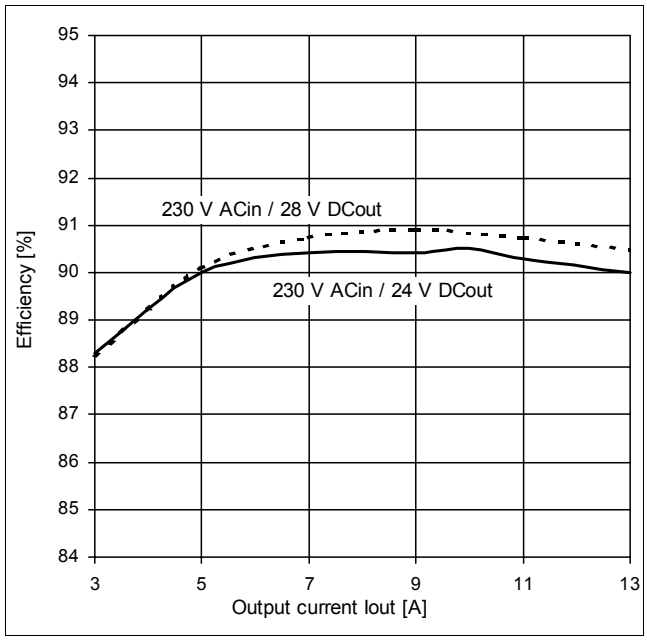
Housing dimensions and Weight
- W x H x D 120mm x 124mm x 102mm (+ DIN rail)
- Free space for ventilation above/below 25mm recommended
  left/right 15mm recommended
- Weight 980g

Design advantages:
- All connection blocks are easy to reach as mounted at the front panel.

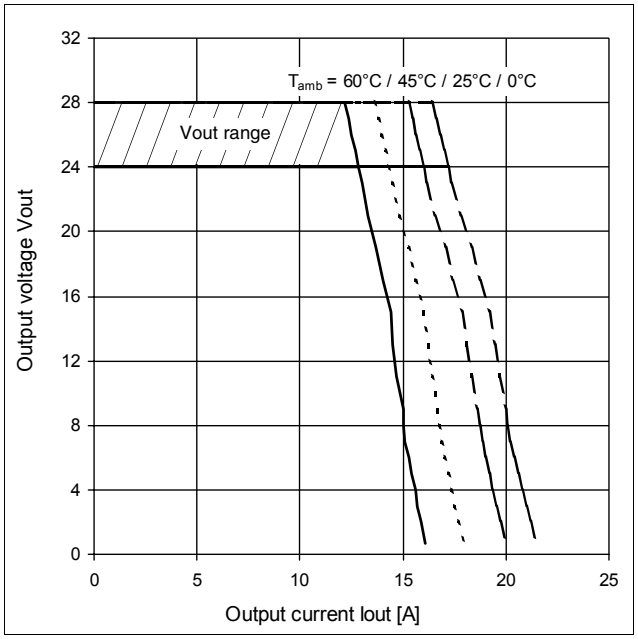
Wire Size Input/Output:
- Stranded 20...10 AWG (0.5...4 mm²), Solid 20...10 AWG (0.5...6 mm²)

Tightening Torque: 7 lbs in (0.8 Nm) recommended

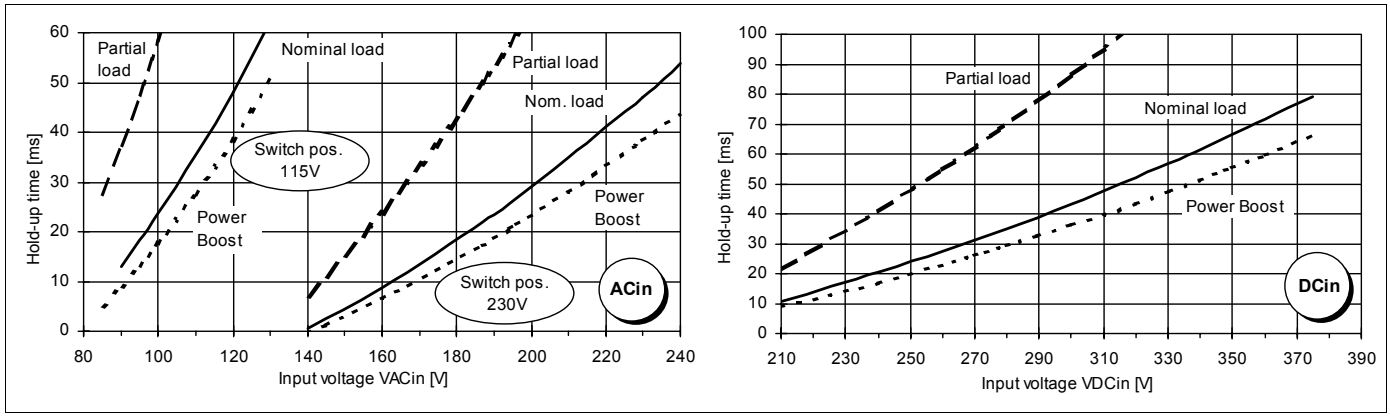
Efficiency (typ.)



Output characteristic (min.)



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