




## Application Note

# 1606-XL240EP



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

- 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) <2.8A (switch in 230V position)
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- DCin at open output 8mA (preserves battery sources)

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

Harmonic current emissions (PFC)	acc. EN 61000-3-2 Power factor: better than 0.68 at nominal load
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Transient handling	Transient resistance acc. to VDE 0160 / W2 (750V/1.3ms), for <i>all</i> load conditions.
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Hold up time	>20ms (at AC 196V, 24V/10A) (see diagram)
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### Efficiency, Reliability etc.

Efficiency	typ. 89% (AC 230V, 24V/10A)
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Losses	typ. 29W (AC 230V, 24V/10A)
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MTBF	225.000h acc. to Siemensnorm SN 29500 (24V/10A, AC 230V, T <sub>amb</sub> = +40°C)
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Life cycle (electrolytics)	The unit exclusively uses longlife electrolytics, specified for +105°C
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### Start / Overload Behavior

Startup delay	typ. 0.1s
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Rise time	ca. 5...20ms, depending on load
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Overload Behavior	– no disconnection, no hiccup if overloaded
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- Special Overload Design high overload current (up to 1.6 I<sub>Nom</sub>), V<sub>out</sub> is gradually reduced with increasing current. (see diagram)

- 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
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Output noise suppression	Radiated EMI values below EN50081-1, even when using long, unshielded output cables.
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Ambient temperature range T <sub>amb</sub>	Operation: 0°C...+70°C (>60°C: Derating) Storage: -25°C...+85°C
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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)
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Voltage regulation	better than 2% V <sub>out</sub> overall
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Ripple / Noise	<30mV <sub>pp</sub> , (20MHz bandwidth, 50Ω measurement)
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Overvolt. protection	typ. 35V
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Parallel operation	yes, current sharing available on request
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Power back immunity	34V
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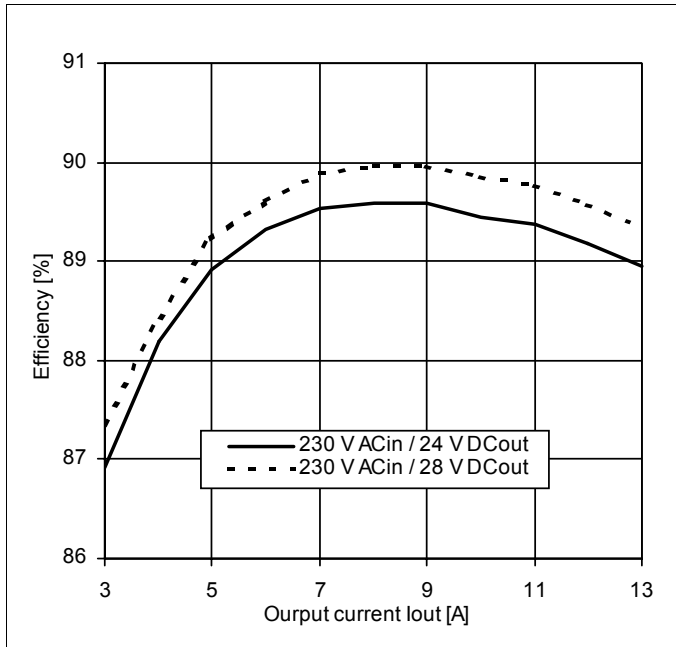
Front panel indicator	Green LED on front panel
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## Construction / Mechanics

### 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 1195g

### Efficiency (typ.)



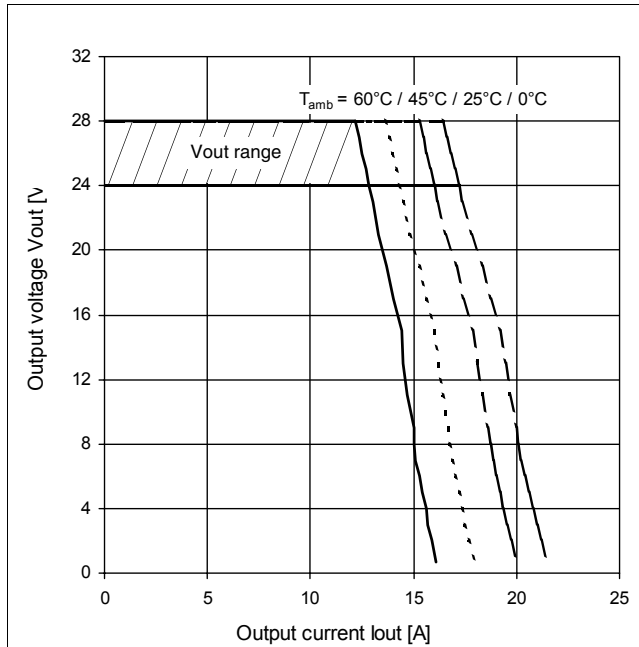
### Design advantages:

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

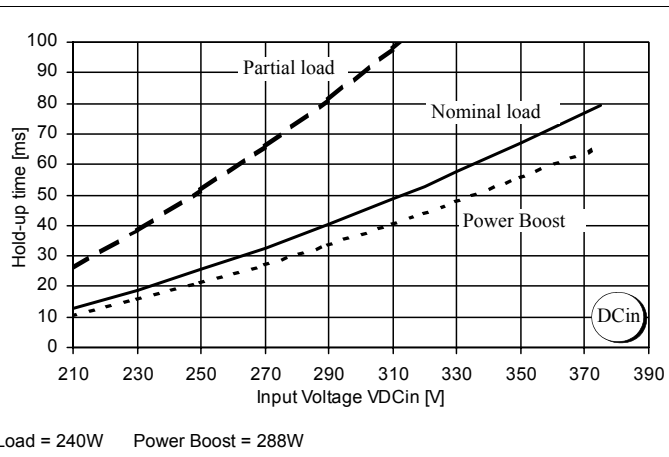
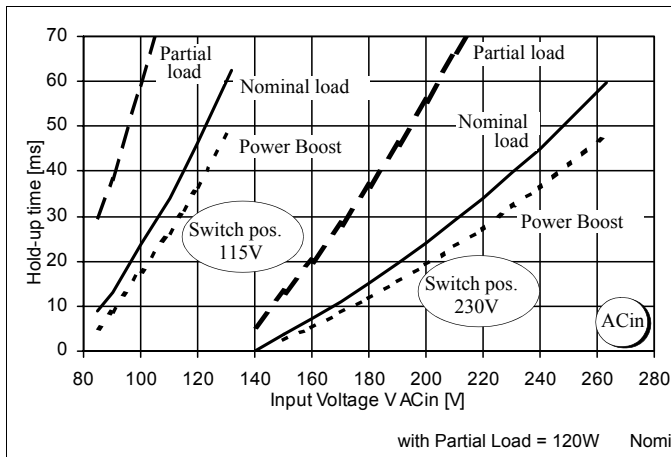
### Wire Size Input/Output:

- 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

### Output characteristic (min.)



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



[www.rockwellautomation.com](http://www.rockwellautomation.com)

### Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53204-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

### Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444  
 Europe: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640  
 Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

### Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433  
 Europe: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 1774  
 Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733

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.