




Application Note

1606-XL240DR



- World-wide approvals (  ) for industry
- Input: AC 230V/115V, DC 240...375V
- Output: 24V/10 A

- High overload current, no switch-off
- N+1 redundancy, RDY relay contact
- Robust mechanics and EMC

Input

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

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

Input current	< 6 A (switch in 115V position) < 2.8 A (switch in 230V position)
DCin at open output	8 mA (preserves battery sources)
Inrush current	typ. < 30 A at 264V AC 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 (750 V / 1.3 ms), for <i>all</i> load conditions.
--------------------	--

Hold-up time	> 25 ms at 196V AC, 24V/10 A (see diagram)
--------------	--

Efficiency, Reliability etc.

Efficiency	typ. 89 % (230V AC, 24V/10 A)
Losses	typ. 26.7 W (230V AC, 24V/10 A)
MTBF	390.000 h acc. to Siemensnorm SN 29500 (24V/10 A, 230V AC, $T_{amb} = +40^{\circ}\text{C}$)
Life cycle (electrolytics)	The unit exclusively uses longlife electrolytics specified for +105°C.

Start / Overload Behavior

Start-up delay	typ. 0.1 s
Rise time	ca. 5...20 ms, depending on load

Overload Behavior

- Special Overload Design – no disconnection, no hiccup if overloaded (see diagram)
- 20% power boost – high overload current (up to 1.6 I_{Nom}); V_{out} is gradually reduced with increasing current.
- 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 reliably

Output

Rated output voltage	24V DC
----------------------	--------

For balanced current sharing during parallel operation:
Soft characteristic (25.2V DC $\pm 2\%$ at no-load, 24V DC $\pm 0.5\%$ at nominal load, almost linear characteristic curve)

Output noise suppression	Radiated EMI values below EN50081-1, even when using long, unshielded output cables.
--------------------------	--

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

Rated continuous loading with convection cooling

- $T_{amb} = 0^{\circ}\text{C} \dots 60^{\circ}\text{C}$ 24V/10 A
 - $T_{amb} = 0^{\circ}\text{C} \dots 45^{\circ}\text{C}$ 12 A
- short-term also at 60 °C

Output is protected against short circuit, open circuit and overload

Derating	typ. 12 W/K (at $T_{amb} = +60^{\circ}\text{C} \dots +70^{\circ}\text{C}$)
----------	---

Voltage regulation	better than 2% V_{out} overall
--------------------	----------------------------------

Ripple / Noise	< 30 mV _{pp} , (20 MHz bandwidth, 50 Ω measurement)
----------------	---

Overvolt. protection	typ. 35V
----------------------	----------

Parallel operation	yes, current sharing via soft characteristic (see diagram)
--------------------	--

Front panel indicator	Green LED
-----------------------	-----------

RDY relay contact

- Type normally open contact
- closes when output voltage > 22.1V $\pm 4\%$
- opens when output voltage < 19.8V $\pm 4\%$
- Electrical isolation 500V DC to output voltage
- Contact rating 1A at 28V DC

Construction / Mechanics

Housing dimensions and Weight

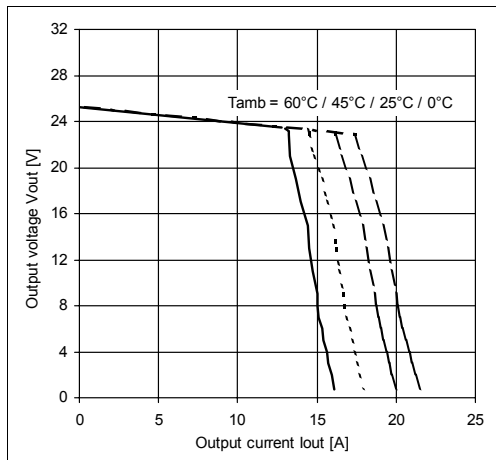
- W x H x D 120 mm x 124 mm x 102 mm (+ DIN Rail)
- Free space for ventilation above/below 25 mm recommended
left/right 15 mm recommended
- Weight 980 g

Design advantages:

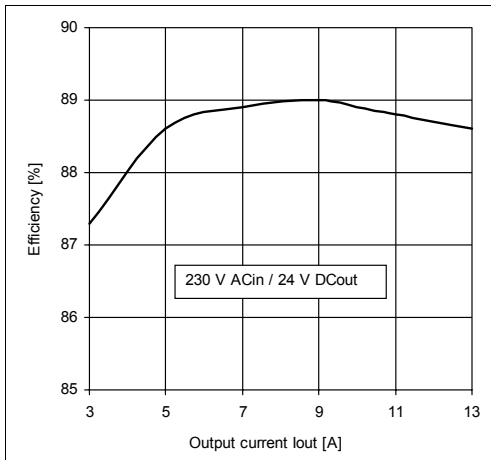
- Input and output pluggable by means of Combicon® plug connector
- Ensure strain relief of the plug connectors when installing the unit.
- Wire Size Input/Output Stranded 22...12 AWG (0.2...2.5 mm²),
Solid 22...12 AWG (0.2...2.5 mm²)
- Tightening Torque 3.5 lbs in (0.4 Nm) recommended (pluggable)



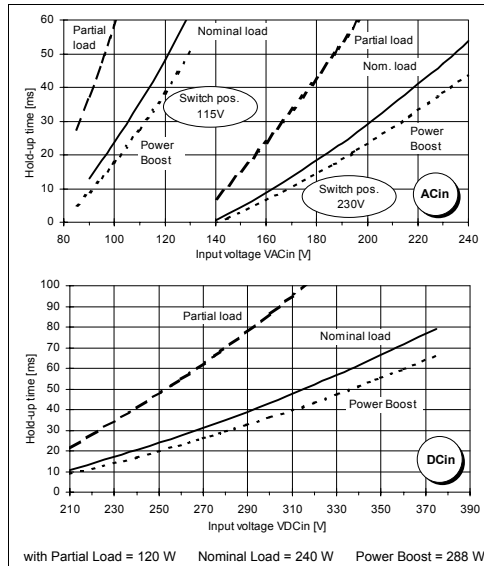
Output characteristic (min.)



Efficiency (typ.)



Hold-up time (typ.)



www.rockwellautomation.com

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 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