




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)
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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.
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Hold-up time	> 25 ms at 196V AC, 24V/10 A (see diagram)
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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) – high overload current (up to $1.6 I_{Nom}$); V_{out} 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 reliably

Output

Rated output voltage	24V DC
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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.
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Ambient temperature range	Operation: $0^{\circ}\text{C}...+70^{\circ}\text{C}$ ($>60^{\circ}\text{C}$: Derating)
T_{amb}	Storage: $-25^{\circ}\text{C}...+85^{\circ}\text{C}$

Rated continuous loading with convection cooling

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

Output is protected against short circuit, open circuit and overload

Derating	typ. 12 W/K (at $T_{amb} = +60^{\circ}\text{C}...+70^{\circ}\text{C}$)
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Voltage regulation	better than 2% V_{out} overall
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Ripple / Noise	< 30 mV _{pp} , (20 MHz bandwidth, 50 Ω measurement)
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Overvolt. protection	typ. 35V
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Parallel operation	yes, current sharing via soft characteristic (see diagram)
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Front panel indicator	Green LED
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RDY relay contact

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

Construction / Mechanics

Housing dimensions and Weight

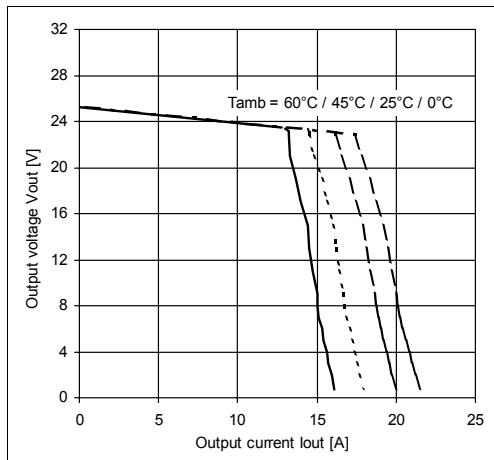
- W x H x D 120 mm x 124 mm x 102 mm (+ DIN Rail)
- Free space for ventilation above/below 25 mm recommended
left/right 15 mm recommended
- Weight 980 g

Design advantages:

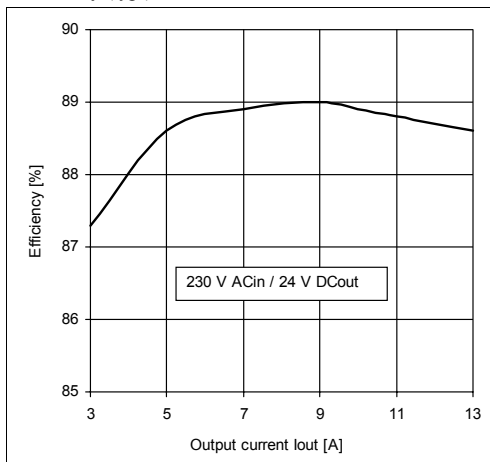
- Input and output pluggable by means of Combicon® plug connector
- Ensure strain relief of the plug connectors when installing the unit.
- Wire Size Input/Output Stranded 22...12 AWG (0.2...2.5 mm²),
Solid 22...12 AWG (0.2...2.5 mm²)
- Tightening Torque 3.5 lbs in (0.4 Nm) recommended (pluggable)



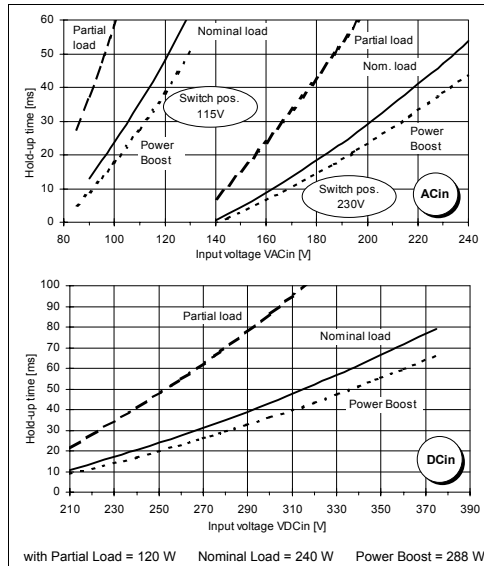
Output characteristic (min.)



Efficiency (typ.)



Hold-up time (typ.)



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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