




Application Note

1606-XL180B



- World-wide approvals (  ) for industry, factory mutual rating
- Input: AC 230/115V, DC 240...375V
- Output: 12...15V/180 W
- Robust overload design: 20% Power boost up to 215W

- High overload current, no switch-off
- Robust mechanics and EMC
- DC ok LED
- Inrush current limiting
- Overtemperature protection

Input

Input voltage	AC 100...120/220...240V (manual select), 50...60Hz (AC 85...132/176...264V, DC 240...375V, 47...63Hz)
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Note: At DC input, always leave the switch in the 230V position

Input current	<5 A (switch in 115V position) <2.3 A (switch in 230V position)
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	AC 100V	AC 120V	AC 230V
Inrush current I_{pk}	37 A	45 A	51 A
Fuse loading I^2t	4.6 A ² s	6.8 A ² s	4.2 A ² s

at $T_{amb} = +50^{\circ}\text{C}$, cold start

Unit is internally fused (fuse not accessible). No other protection is required. In order to meet load requirements, please consult local codes and regulations for proper installation.

Harmonic current emissions (PFC)	AC 100V	AC 120V	AC 230V
	0.67	0.64	0.54

above 98 W > class A

Transient handling	Transient resistance acc. to VDE 0160 / W2 (750V/1.3ms), for all load conditions.
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Hold up time	45.7 / 84.6 / 81.3ms (at AC 100/120/230V, 12V/15 A) (see diagram)
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IT Mains	allowed
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Efficiency, Reliability etc.

Efficiency	>87% (AC 230V, 12V/15 A)
Losses	<26.9 W (AC 230V, 12V/15 A)
Lifetime expectancy (electrolytics)	The unit uses longlife electrolytics

Output

Output voltage	DC 12...15V, adjustable by (covered) front panel potentiometer; preset: 12V \pm 0.5% Adjustment range guaranteed
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Rated continuous loading with convection cooling	
• $T_{amb}=0^{\circ}\text{C}...60^{\circ}\text{C}$	12V/15 A (180 W) resp. 15V/12 A
• $T_{amb}=0^{\circ}\text{C}...45^{\circ}\text{C}$	12V/18 A (215 W) resp. 15V/14.4 A short-term also at 60°C (< 1 min)

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

Short-circuit current	21 A min., 28 A max.
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Ambient temperature range T_{amb}	Operation: $0^{\circ}\text{C}...+70^{\circ}\text{C}$ (>60°C: Derating) Storage: $-40^{\circ}\text{C}...+85^{\circ}\text{C}$
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Derating	typ. 5 W/K (at $T_{amb} = +60^{\circ}\text{C}...+70^{\circ}\text{C}$)
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Voltage regulation	< - 150mV overall
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Ripple / Noise	<50mV _{pp} , (20 MHz bandwidth, 50 Ω measurement)
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Serial operation	not allowed
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Parallel operation	not allowed
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Overvolt. protection	typ. 19V
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Power back immunity	<18V
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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	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
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Connection	Screw terminals, input=3, output=4
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• Wire gauge	0.5...4 mm ² / 20...10 AWG
• Recom. tightening torque	0.8 Nm (7 lb-in.)
• Wire stripping length	7 mm (0.275 in.)

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

Start / Overload Behavior

Startup delay	typ. 0.22 s
Rise time	5...25 ms, depending on load
Overload Behavior	– no disconnection, no hiccup if overloaded
• Special Overload Design (see diagram)	– high overload current (up to 2.2 I _{Nom}), V _{out} is gradually reduced with increasing current.
• 20% power boost	– 18 A short-term, at 45°C or continuous if device is force cooled

Advantages:

- High short-circuit current, giving large 'start-up window': unit starts reliably even with heavy loads (DC-DC converters, motors).
- No 'sticking' such as can occur with fold-back characteristics
- Secondary fuses operate more reliably

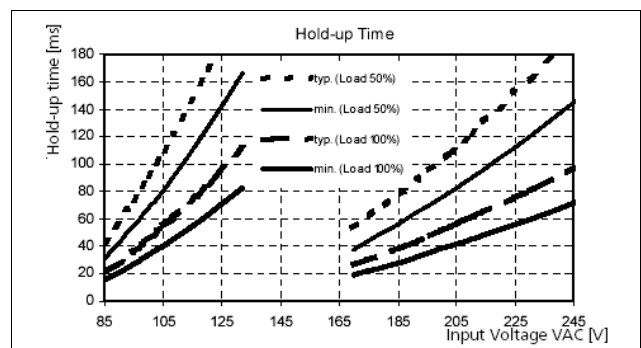
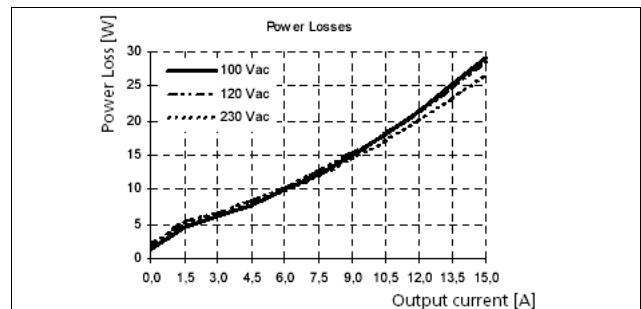
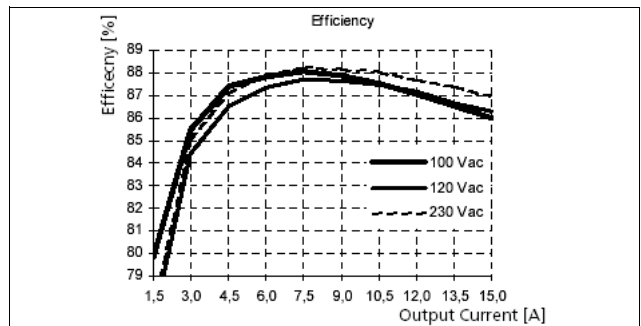
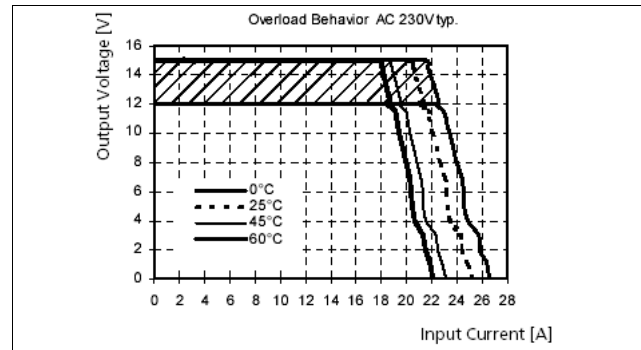
Electromagnetic Compatibility (EMC)

Emissions

- EN 61000-6-4, Class B (EN 55011, EN 55022)
- EN 61000-3-3
- Output power less than 98 W: EN 61000-3-2 Class A and EN 61000-6-3 are fulfilled.
- Output power more than 98W: EN 61000-3-2 Class A and EN 61000-6-3 are **not** fulfilled.

Immunity

• Electrostatic Discharge (ESD)	EN 61000-6-2 (also includes EN 61000-6-1) EN 61000-4-2, Level 4 (15kV; 8kV)
• Electromagnetic radiated fields	EN 61000-4-3, Level 3 (10V/m)
• Burst, coupled to:	EN 61000-4-4,
– AC in-lines	Level 4 (4kV)
– DC out-lines	Level 3 (2kV)
• Surge transients	EN 61000-4-5
– (L -> PE)	Installation class 4 (4kV)
– (N -> PE)	Installation class 4 (4kV)
– (L -> N)	Installation class 4 (2kV)
• Conducted noise immunity	EN 61000-4-6, Level 3 (10V, 150kHz - 80MHz)
• Voltage Dips	EN 61000-4-11
• Transient immunity	Transient resistance acc. to VDE 0160/W2 over entire load range



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