AC/DC Power Supplies

TOP 200 Series, 200 Watt

UL 60950-1

Features

- Highest power density in 5.0" x 3.0" footprint
- Supplies 200 W (convection cooling!)
- Highest efficiency up to 95%
- Operating temperature range –25°C to +70°C
- Universal input 85 – 264 VAC
- Compliance with EN 61000-3-2
- Power Back immunity
- Low leakage current
- Protection class I and class II
- 3-year product warranty

The new TOP-200 Series AC/DC Power Supplies feature the highest power rating in the industry standard 3.0" x 5.0" (76.2 x 127 mm) footprint. They can supply up to 200 W output power with convection cooling over an industrial operating temperature range of –25°C to +70°C. This performance could be realized by a state of the art design providing an extremely high efficiency of >90 % which eliminates the need for a dedicated power supply cooling fan.
Compliance with global safety and EMC standards qualify these power supplies for worldwide markets. Approved for Class I and Class II applications, these switchers are suitable for industrial and IT systems but also for consumer products. High reliability is provided by use of industrial quality grade components and an excellent thermal management. This product offers an interesting power supply solution for many space and cost critical applications in commercial and industrial electronic equipment.

Models

Order Code	Output Power max.	Output Voltage (fixed)	Output Current max.
TOP 200-112	200 W	12 VDC	16 A
TOP 200-115		15 VDC	13 A
TOP 200-124		24 VDC	8.3 A
TOP 200-148		48 VDC	4.2 A

Input Specifications

Input voltage	– nominal – AC input range	120 – 240 VAC (universal input) 85 – 264 VAC with derating at low input see power derating graph 1
Input frequency		47 – 63 Hz
Input protection		T4A / 250 V
Harmonic limits		EN 61000-3-2, class A
Zero load power consumption		3.6 W
Input protection		T4 A internal fuses (line and neutral)
Recommended circuit breaker		6 A (characteristic C) or slow blow fuse. For protection class II use two fuses (line and neutral)

Output Specifications

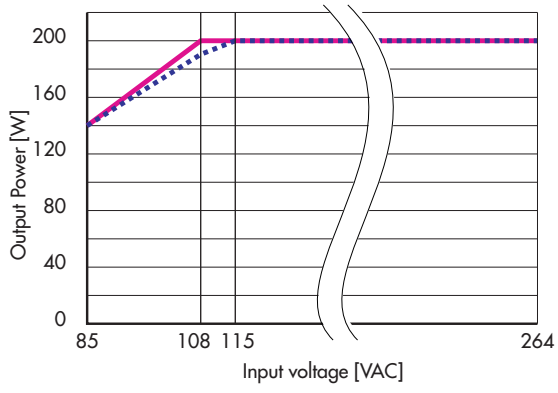
Voltage set accuracy	TOP 200-112: TOP 200-115: TOP 200-124: TOP 200-148:	min. 11.9 V, max. 12.3 V min. 14.9 V, max. 15.3 V min. 23.8 V, max. 24.2 V min. 48.0 V, max. 49.3 V
Regulation – Input and Load variation		1.0 % max.
Ripple and noise (20Mhz Bandwidth)		<120 mVp-p <150 mVp-p for 48 VDC models
Overvoltage protection	12 & 15 VDC models: 24 & 48 VDC models:	>150 % of Vout >125 % of Vout
Power back immunity	12 VDC model: 15 VDC model: 24 VDC model: 48 VDC model:	16 V (18 V for 1 sec.) 20 V (23 V for 1 sec.) 35 V (40 V for 1 sec.) 63 V (68 V for 1 sec.)
Overload protection by current limit		at 120 – 150 % Iout max.
Short circuit protection		foldback (automatic recovery)
Capacitive load	12 & 15 VDC models: 24 VDC model: 48 VDC model:	15'000 µF max. 4'000 µF max. 1'000 µF max.

General Specifications

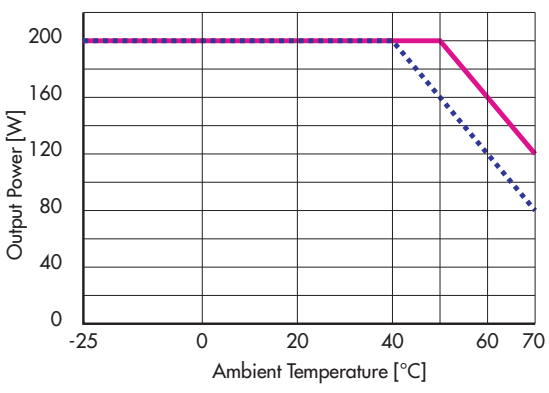
Operating temperature – derating		–25°C to +70°C (convection cooling) see power derating graph 2

Power derating

Graph 1:
In respect to input voltage



Graph 2:
in respect to ambient temperature



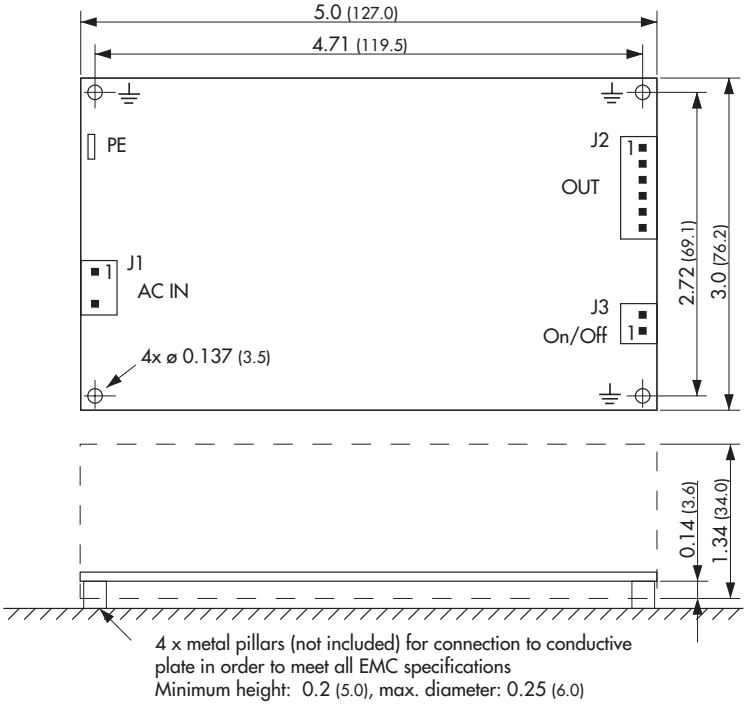
12 & 15 VDC models 24 & 48 VDC models

General Specifications

Humidity (non condensing)			0 – 95 % rel. H max.
Efficiency	– Vin = 115 VAC	12 & 15 VDC models:	88 – 91 %
		24 & 48 VDC models:	90 – 93 %
	– Vin = 230 VAC	12 & 15 VDC models:	90 – 93 %
		24 & 48 VDC models:	92 – 95 %
Switching frequency			100 kHz typ. (pulse width modulation)
Hold-up time			10 ms typ.
Start-up time	– Vin = 115 VAC		<3.0s
	– Vin = 230 VAC		<2.0s
Remote On/Off	– On:		open contacts on J3
	– Off:		see J3 remote On/Off function on last page
Isolation voltage	– Input / Output		3000 VAC
	– Input / Field Ground		1500 VAC
	– Output / Field Ground		500 VAC
Isolation resistance (at 500 VDC)			100 Mohm min.
Earth leakage current			500 µA max.
Reliability, calculated MTBF at +25°C acc. to IEC 61709			www.tracopower.com/products/top200-mtbf.pdf
Safety class (for built in use only)			class I, class II prepared with second fuse
Electromagnetic compatibility (EMC), emissions	– Conducted input RI suppression		EN 55022, class B (conductive plane to be connected to field ground)
	– Harmonic current emissions		IEC/EN 61000-3-2, class A
Electromagnets compatibility (EMC), immunity	– Electrostatic discharge ESD		IEC/EN 61000-4-2
	– RF field immunity		IEC/EN 61000-4-3
	– Electrical fast transients/burst immunity		IEC/EN 61000-4-4
	– Surge		IEC/EN 61000-4-5
	– Conducted RF		IEC/EN 61000-4-6
	– Voltage dip		IEC/EN 61000-4-11
Safety approvals and Certificate	– CB test certificate for IEC/EN 60950-1		www.tracopower.com/products/top200-cb.pdf
	– SIQ certificate (IEC/EN 60950-1)		www.tracopower.com/products/top200-siq.pdf
	– CSA certificate for UL/cUL 60950-1		www.tracopower.com/products/top200-csa.pdf
	– Bureau Veritas for other standards		www.tracopower.com/products/top200-bv.pdf
Environment	– Vibration acc. IEC 60068-2-6;		3 axis, sine sweep, 10 – 55Hz, 0.075 mm
	– Shock acc. IEC 60068-2-27		3 axis, 15g half sine, 11ms
Environmental compliance	– Reach		www.tracopower.com/products/top200-reach.pdf
	– RoHS		RoHS directive 2011/65/EU
Connection			pin connector (Molex)
Weight			315 g (8.93 oz)
Installation instruction			www.tracopower.com/products/top200-inst.pdf

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Dimensions



J1: Molex Series 41791
mates with Molex crimp terminal: 08-52-0072
and terminal housing: 09-50-3031

J2: Molex Series 41791
mates with Molex crimp terminal: 08-52-0072
and terminal housing: 09-50-3061

J3: Molex Series KK
mates with Molex crimp terminal: 08-50-0032
and terminal housing: 22-01-2025

PE: Faston
mates with TAB-6.3 (1/4")

Dimensions in Inch, () = mm

PE to connect to protective earth if used as safety class I unit

J1	
Pin	**Input**
1	AC in L
2	AC in N

J2	
Pin	**Output**
1	+ Vout
2	+ Vout
3	+ Vout
4	– Vout
5	– Vout
6	– Vout

J3	
Pin	**Remote**
1	–
2	+

J3 remote On/Off function:

On: pin 1 & 2 open

Off:
- Pin 1 connected to secondary ground.
  Note: Output voltage may pulse to 20% of nominal output voltage.
- External current source of 10 mA
- External voltage source. Use external serial resistor ($R_{ext.}$) in reference to applied voltage ($U_{ext.}$) as follows:
  TOP 200-112: $R_{ext.}$ [Ohm] = ($U_{ext.}$ – 1.2)/0.01 – 150
  TOP 200-115: $R_{ext.}$ [Ohm] = ($U_{ext.}$ – 1.2)/0.01 – 240
  TOP 200-124: $R_{ext.}$ [Ohm] = ($U_{ext.}$ – 1.2)/0.01 – 430
  TOP 200-148: $R_{ext.}$ [Ohm] = ($U_{ext.}$ – 1.2)/0.01 – 800