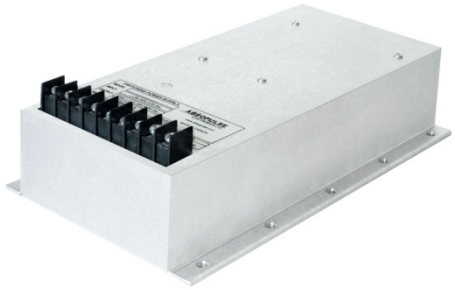
400W, Encapsulated AC/DC Power Supply for Railway and other Heavy Duty Environments
POL 400R Series



- Rugged, field-proven design
- Full encapsulation
- Wide temperature range
- Full electronic protection
- N+1 redundancy by built in diode on request

This fully encapsulated, railway quality AC/DC power supply delivers 400W output power. The design is based on field-proven topology with a track-record in numerous applications. An optional built-in redundancy diode allows for parallel and N+1 operation. This converter is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to shock, vibration and humidity. It is conduction cooled via a base plate to a heat-sinking surface. Low component count, large design headroom, and the use of components with established reliability result in a high MTBF. The unit meets relevant sections of EN50155 for electronic equipment used on rolling stock. It is also suitable for transportation, mining, oilrigs, military and other harsh environments. The converter is manufactured at our plant under strict quality control. Customized versions are also available.

SPECIFICATIONS

Standard Input Voltage & Range
115Vac (97-132Vac) 47-63Hz, or
230Vac (195-264V), 47-63Hz
Consult factory for other voltages and ranges

Input Protection
Inrush current limiting
Varistor
Internal safety fuse
Lower voltage than specified minimum input will not damage unit

Isolation
1500Vdc input to chassis
3000Vdc input to output
1500Vdc output to chassis

Standards
Meets EN60950 and relevant sections of EN50155

Immunity
Meets criteria of relevant sections of EN50155 and EN50121-3-2 including:
EN61000-4-2 (ESD)
EN61000-4-3 (RF Immunity)
EN61000-4-4 (Fast transients)
EN50155 (Surge)
EN61000-4-6 (Conducted Imm.)
EN50155 (Voltage Variations)

EMI
EN55022 Class B and EN50121-3-2
Conducted and radiated

Hold Up Time
Min. 5ms at nominal input for 5% drop of the output voltage

Switching Frequency
55kHz ±3kHz

Standard Output Voltages
12Vdc/33A, 24Vdc/17A,
36Vdc/12A or 48Vdc/9A or
110Vdc/3A
Outputs are floating; either terminal can be grounded
Consult factory for other outputs

Redundancy Diode
Not installed
Available on request

Line/Load Regulation
± 1% combined from zero load to full load on each output

Dynamic Response
Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time

Output Ripple/Noise
Less than 1% peak-to-peak or 0.2% RMS of the output voltage (20MHz BW)

Output Overload Protection
Rectangular current limiting with short-circuit protection (no hiccup)
Thermal shutdown with automatic recovery in case of insufficient cooling

Output Overvoltage Protection
Second regulator loop completely stable and independent of main regulator loop

Efficiency
80 to 90% depending on input/output configuration

Operating Temperature Range
-40 to +70°C cold plate temperature for full specification

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Conduction cooling via base plate to customer chassis or heat-sink

Environmental Protection
Full encapsulation with thermally conductive silicon potting compound with UL94V-0 flammability rating

Shock/Vibration
IEC 61373 Cat 1 A&B

Humidity
5 – 95% non-condensing

MTBF
140,000 hours @ 45 °C
Demonstrated MTBF is significantly higher

Indicators
None
Optional 'ON' LED adapter can be installed on the terminal block.

Control Input
None
Enable or inhibit input as option

Alarm Output
None
Available on request

Package/Dimensions (W x H x L)
P400: 131 x 66 x 232mm
(5.2" x 2.6" x 9.2") including terminal block and flanges
Mounting holes are clear

Weight
2.2 kg (4.9 lb)

Connections
12-pole barrier type terminal block

RoHS Compliance
Fully compliant

Warranty
Two years subject to application within good engineering practice

Terminal Block Pin-out

DC OUTPUT						AC INPUT		
+	+	−	−	NOT USED	NOT USED	GND ⏚	PH ~	N ~
1	2	3	4	5	6	7	8	9

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