



C.M. TECHNOLOGY

A Caspian Technology Company

Designed and Manufactured in Australia

FULL DATA SHEET



www.cmtechnology.com.au

Tel: +61 (2) 9764 5655

Fax: +61 (2) 9764 6566

Unit 15-16, 378 Parramatta Rd,
Homebush, NSW, 2140, Australia

PSTR 24—18V @ 22 AMP 3 RU TRACKSIDE SUPPLY



C.M. Technology—A Caspian Technology Company

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General View showing anodized custom extrusions, poly carbonates front panels, extruded handles and the provision to rack mount. The large heatsink fins allow cool running and therefore a high product MTBF of >60000 hours without the need for fan cooling. The PSTR series has exceeded a combined total of >600000 product hours MTBF in service.



Strong internal construction promotes the essential reliability of the components used together with an overall conservative approach to design.

Note the laser cut stainless steel safety cage. This cage allows free air circulation around the control electronics to keep temperatures low and thus help to raise the MTBF.

The base PCB used has been NATA lab. Tested to IP50 for dust. The MIL C input and output bayonet locking connectors are especially made with railway applications in mind. The polycarbonate label is back screen printed so that it cannot be abraded off in service. .

The daylight visible annunciator LEDS shine through the label, giving a simple field diagnosis for a failed supply. The heavy one piece extruded handle and rack mounting notches are shown.





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1.3 Australian Content:

The power supplies are designed and manufactured in Australia from Australian sourced materials where that is possible. The Australian content is >80% and the units qualify for the Australian made symbol.

2.0 Equipment Electrical Specification:

2.1: Input Voltage:

- Type 24 Min 22 V Max 32V

2.2: Transient Protection:

The supplies are not susceptible to voltage spikes applied to the input terminals with the following characteristics:

- Peak Voltage 5000 Volts
- Rise Time < 0.1 microseconds
- Fall time to 2000V 160 microseconds , RC type time constant
- Energy in Spike <100 joules

2.3: Input-Output Voltage Isolation:

Both input and output terminals float with respect to the metal case, which is grounded.

- Isolation input to case > 1000 V rms AC 50 Hertz for 1 minute
- Isolation output to case > 1000 V rms AC 50 Hertz for 1 minute
- Isolation input to output > 1000 V rms AC 50 Hertz for 1 minute

2.4: Input Noise Immunity:

Power Supply Operation is not affected by the application of 200 mV rms (50 ohms source) at any frequency from DC to 50 M Hz. A multi-pole input EMC/EMI filter is used.





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2.5: Reverse Polarity Protection:

The supplies are input isolated via power MOSFETS. They are not affected by indefinite reverse power within the input voltage limits 0 to 55 V DC. Normal operation is restored immediately upon the correct application of power. Under reverse power, no output voltage is present. The reverse polarity is indicated by a RED daylight visible high brightness LED labeled "POLARITY". Correct polarity DC is shown by a GREEN high brightness "24 v DC" LED, both adjacent to the input DC CR socket.

2.6: Output Voltage:

2.6.1: Nominal:

The nominal output voltage is 18 V DC at 22 amps. Other voltages on request. Output voltage present is shown by a GREEN high brightness LED, "12 V", adjacent to the output DC CIR sockets.

2.6.2: Regulation:

When measured at the back of the output connector (i.e.. not including drops in the output plug itself), the regulation is:

- Over load 0-25 amps (input nominal) < +/- 1%
- Over Input Range (Load 25 amps) < +/- 1%
- Over Temperature (Input Nominal, Load 25 amps) < +/- 1%

2.7: Output Current:

The rated output is **25 amps rms, maximum continuous at 60 Celsius**. The supply has a constant current type of limiting behavior, and allows parallel connection & redundant operation. The **current limit** is 32 amps. The supply is limited by its passive (no fans) heat sink. The supply can be short circuited. The "rms" figure allows duty cycle ratings e.g.:

- 31Amps for 1minute, 25 Amps for 4 minutes cyclic duty at 60°C
- At 50 C, the available current is 32 amps in a free air flow of > 1m/sec

2.8: Output Voltage Ripple & Transients:

The output voltage ripple and transients are less than 100mV for any load.

2.9: Output Noise:

The output noise under all load conditions is <100 mV peak , DC to 100 MHz.





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2.10: Over Voltage Protection:

The output is disconnected if it should exceed an internal preset for 1mS.



Over Volts disconnect 19.1 VDC +/- 3% (Hysteresis 0.6 Volt DC)

No fuses are used. The output cannot reverse under any condition.

2.11: Current Limiting:

The supplies do not require a load for proper operation. The outputs are current limited electronically. No fuses are used. Disconnection and Re-connection of the load during operation will not damage the supplies.

2.12: Parallel Operation:

The supplies are designed for parallel operation, either for load sharing or redundant operation techniques.

2.13: Efficiency:

The efficiency at 25 amps is >75%

2.14: Cooling:

The unit is convection cooled. Provision for free air circulation around the inner case (~75 mm deep) should be made, as up to 140 watts can be dissipated at maximum load. 1 metre/sec of air flow should be provided.

The supply should not be used in a confined space that is not fully ventilated.

2.15: MTBF:

The unit is manufactured using only well specified and qualified components. In particular, the electrolytics are IEC 384-4, long life grade, climatic category IEC 68 (-40 +85) with a life in excess of 60,000 hours at a 60 Celsius ambient and full ripple current. Infant mortality is eliminated with a full load burn in at final test (8Hrs) before dispatch. The MTBF is **predicted** at > 60, 000 hours in normal service.

2.16: Temperature Rating:

The power supplies are specified for operation from -10 to +60°C.





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3.0: Equipment Mechanical Specification:

3.1: General:

The power supplies are designed and manufactured with the rigors of railway application in mind. The major components like electrolytics have multiple terminations into the printed circuit board, which itself is made of 70 micron (twice normal), through hole plated, tinned fibre glass. Critical joints are bolted for extra strength and other components supported with Loctite 480 adhesive. The PCB is also conformal coated to stabilize the minor components and for dust protection. All components mount to the PCB. There are no looms other than short jumper wires from the PCB and soldered to the CIR in-out connectors. The wires used are silicone insulated high temperature grade. The power supplies consist of a 19 inch standard rack mount, extruded aluminium front panel assembly anodized black. To this is bolted a removable inner safety case that is made from laser cut stainless steel. All parts mount to a single PCB screwed at many places to the front panel. A back screen printed lexan label covers the annunciator LEDs, effectively sealing the front panel. The supply is mounted to the rack with 4 front panel screws. All electrolytics are mechanically clamped to the frame independent of the PCB mounts.

3.2: Mechanical Stability:

To provide an independent assessment of the product, the mechanical stability of the unit was tested by the Philips NATA laboratory for the Freight Rail Corporation project. The tests comprised a vibration test at the resonance frequency to the test specifications for Railway based electronic equipment and dust penetration tests to IP50.

3.3: Maintainability and Warranty:

The supplies are manufactured from discrete components soldered to a double sided through hole plated PCB. Complete parts lists (with suppliers), circuit diagrams, overlays, descriptions of operation and calibration details are included in the purchase price.

Within warranty (12 months) return to factory freight paid applies. The unit will be returned freight paid. Outside warranty, the units can be returned freight paid to the factory for maintenance for a fixed fee + freight (if the unit is in good mechanical condition)



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3.4: Revision Notes:

19-5-2008**First release for 30 amp variant of the PSTR24**