

300 SERIES

19" RACK MOUNT 3RU

EUROCARD MODULAR DC-DC CONVERTER

The Benbro 300 Series converters are a range of high efficiency DC/DC Converter modules developed by Benbro for high reliability applications including communication systems, solar installations, process control, industrial electronics, railway rolling stock and mine applications. Up to 6 units (1.8kW) can be housed in a single 3RU 19" subrack enclosure.

The DC-DC Converter converts a single primary DC Voltage to the required single output Voltage.

Nominal inputs available are 110VDC, 48VDC, 24VDC or 12VDC. Nominal outputs available are 12VDC, 24VDC or 48VDC.

The input and output are fully isolated; this enables connection of input and output polarity (earthing/common) as required.

The equipment is housed in a rugged 19" 3RU rack mounting enclosure with the input and output terminals on the rear and the indicators on the front panel.



FEATURES



- Rugged 19" 3RU rack mount enclosure. (6 units per rack).
- Flexible modular construction.
- Keyed to prevent insertion of incorrect Voltage module
- Input, output, over/under voltage (alarm) LED indicator.
- Under voltage/over voltage output alarm. Voltage free contacts.
- Auto resetting over voltage shutdown
- Over current and short circuit protection.
- Fully isolated input to output.
- Hot swappable.
- Output Voltage and current monitor module available.
- Distribution module available (up to 5 circuit breakers)

FUNCTION

The equipment is protected against input reverse polarity by a diode across the input, which causes an internal fuse to trip.

The equipment is fitted with both common mode and differential mode input and output filter to minimize EMI emissions that are produced by switch mode operation.

The switching converter is a current mode. Push Pull configuration operating at approximately 50 kHz.

The output voltage is monitored by the supervisory circuit, which regulates the output voltage and activates converter shutdown and alarm for over voltage and activates the alarm for under voltage conditions.

The alarm outputs are Voltage free relay contacts that can be configured for normally closed (open on alarm) or normally open (close on alarm).

The primary current is monitored by a current transformer, which activates pulse by pulse current limiting in the case of an over current condition (constant current) and shuts down the converter in the case of a short circuit.

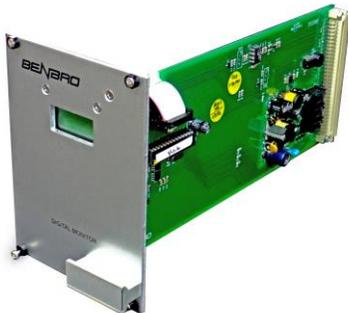
A thermistor is fitted to the heatsink which shuts down the converter if the temperature exceeds the thermal threshold. Indicators display the status of input voltage, output voltage, over/under voltage (alarm) conditions.

The output is fitted with an isolation Schottky diode enabling 2 or more converters to be connected in parallels for load sharing or redundancy applications.

The system is modular and individual modules plug into a 3RU sub-rack frame allowing maximum flexibility. Single or dual input and single and dual output systems can be easily configured as well as polarity change between input and output.



OPTIONS



Output monitor (Uses 1 converter space)

Monitors and displays the output Voltage and current and provides auxiliary alarm inputs as well as 3 Voltage free alarm contact outputs and an audible alarm indication and an alarm LED.

Load distribution (Uses 2 converter spaces)

Up to 5 circuit breakers with a C/B fail output for the monitor (if fitted).

Connector interface PCB

Extends the alarm and I/O connectors to external screw terminals or to Krone connectors (useful for front connection applications).

3 way backplane PCB

Facilitates dual input Voltage and/or dual output Voltage option eg 3x48V-24V converters can be fitted as well as 3x48V-12V converters within the same subrack housing saving rack space. Current shunt is included on PCB.

4 way backplane PCB

Useful when load distribution module is used to allow for 4 converters or 3 converters and monitor (Pictured). Current shunt is included on PCB.

Blanking panels

Covers unused positions.



SPECIFICATIONS

INPUT VOLTAGE	RANGE	OUTPUT VOLTAGE	RANGE	OUTPUT CURRENT	OUTPUT POWER	EFFICIENCY
110VDC	80-130VDC	48VDC	44-56VDC	6.25 Amps	300W	>85% (typ 90%)
110VDC	80-130VDC	24VDC	23-29VDC	12.5 Amps	300W	>85% (typ 90%)
110VDC	80-130VDC	12VDC	12-15VDC	18 Amps	250W	>80% (typ 85%)
48VDC	42-63VDC	48VDC	44-56VDC	6.25 Amps	300W	>85% (typ 90%)
48VDC	42-63VDC	24VDC	23-29VDC	12.5 Amps	300W	>85% (typ 90%)
48VDC	42-63VDC	12VDC	12-15VDC	18 Amps	250W	>80% (typ 85%)
24VDC	21-30VDC	48VDC	44-56VDC	6.25 Amps	300W	>85% (typ 88%)
24VDC	21-30VDC	24VDC	23-29VDC	12.5 Amps	300W	>85% (typ 88%)
24VDC	21-30VDC	12VDC	12-15VDC	18 Amps	250W	>80% (typ 85%)
12VDC	10.5-20VDC	48VDC	44-56VDC	4 Amps	200W	>80% (typ 85%)
12VDC	10.5-20VDC	24VDC	23-29VDC	8 Amps	200W	>80% (typ 85%)
12VDC	10.5-20VDC	12VDC	12-15VDC	12 Amps	200W	>80% (typ 85%)

ELECTRICAL	<p>Line regulation Load regulation Output ripple Output noise Current limit Over voltage alarm/shutdown Under voltage alarm Redundant operation Isolation Indicators</p>	<p><+/-0.02% <+/-0.5% <1mV RMS <+/-20mV set between 100-115% as required shutdown set at 120% set at approx. 80% Output diode option for N+1 applications 1kVDC (5kV available for some models) Input Voltage, under/over Voltage (alarm), output Voltage</p>
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PROTECTION	<p>Output over Voltage Output short circuit Input over current Input polarity Thermal</p>	<p>over Voltage shutdown short circuit shutdown input fuse fitted reverse voltage protection over temperature shutdown</p>
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MECHANICAL	<p>Dimensions (Converter) Dimensions (Subrack frame) Construction Cooling</p>	<p>H: 128mm D: 250mm W: 65.5mm (13HP) H: 133mm D: 275mm W: 483mm 13HP Eurocard format. Convection</p>
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ENVIRONMENTAL	<p>EMC Operating temperature</p>	<p>AS3548, CISPR 22 Class B 0-55°C</p>
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