

1500 Series 19" Rack Mount 1RU



Description

The Benbro 1500 Series converters are a range of high efficiency, smart (microprocessor controlled) 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 1.6kW is housed in a single 1RU 19" rack.

The DC DC Converter converts a single primary DC Voltage to the required single output Voltage. The units can be configured with an optional monitor.

Nominal inputs available are 110VDC, 48VDC, 24VDC or 12VDC. Nominal outputs available are 12VDC, 24VDC or 48VDC (special Voltages are available on request)

The input and output are fully isolated (5kVDC); this enables connection of input and output polarity (earthing/common) as required.

The equipment is housed in a rugged 19" 1RU rack mounting enclosure with the input and output terminals on the rear and the indicators on the front panel.

Function

The unit is a push pull current mode. Microprocessor controlled switching converter operating at a constant frequency of approx. 100kHz. The equipment is protected against input reverse polarity by a diode across the input, causing the internal fuse to trip.

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

The Output Voltage is programmed to the desired level by the internal microprocessor which also provides supervisory functions, alarm settings, and calibration functions. The processor also monitors the internal temperature and controls the cooling.

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

The alarm output is provided using a normally energized relay. Voltage free relay contacts are configured for normally open (close on alarm).

The 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 equipment which is utilized to control the cooling fans and 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 Or-ing MOSFET 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.

Features

- Factory configurations available for alarm settings, fans, temperature compensation
- Rugged 19" 1RU rack mount enclosure
- High power density – up to 1.6kW in a single 19" 1RU rack
- Dual thermostatically controlled fans (can be disabled)
- Input, output, over/under voltage (alarm) LED indicator
- Auto resetting over voltage shutdown
- Over temperature protection
- Over current and short circuit protection
- Fully isolated input to output (5kVDC). Configurable for positive or negative I/P and/or O/P
- Fitted with Or-ing MOSFET for efficient N+1 redundancy applications

Specifications

Product Codes	Input Voltage	Range	Output Voltage	Range	Output Current	Output Power	Efficiency
5100441	110VDC	80-130VDC	48VDC	44-56VDC	30A	1600W	>85% (typ 90%)
5100442	110VDC	80-130VDC	24VDC	23-29VDC	60A	1500W	>85% (typ 90%)
5100443	110VDC	80-130VDC	12VDC	12-15VDC	100A	1200W	>80% (typ 85%)
5100444	48VDC	42-63VDC	48VDC	44-56VDC	30A	1600W	>85% (typ 90%)
5100445	48VDC	42-63VDC	24VDC	23-29VDC	60A	1500W	>85% (typ 90%)
5100446	48VDC	42-63VDC	12VDC	12-15VDC	100A	1200W	>80% (typ 85%)
5100452	24VDC	21-30VDC	48VDC	44-56VDC	30A	1600W	>85% (typ 88%)
5100447	24VDC	21-30VDC	24VDC	23-29VDC	60A	1500W	>85% (typ 88%)
5100448	24VDC	21-30VDC	12VDC	12-15VDC	100A	1200W	>80% (typ 85%)
5100451	12VDC	10.5-20VDC	48VDC	44-56VDC	30A	1600W	>80% (typ 85%)
5100450	12VDC	10.5-20VDC	24VDC	23-29VDC	60A	1500W	>80% (typ 85%)
5100449	12VDC	10.5-20VDC	12VDC	12-15VDC	100A	1200W	>80% (typ 85%)

Electrical

Output Voltage	Factory adjustable
Line regulation	<+/-0.02%
Load regulation	<+/-1% (20% - 100% load)
Output ripple	<10mV RMS
Output noise	<+/-50mV
Current limit	Factory defined
Over voltage alarm/shutdown	Shutdown set at 120%
Under voltage alarm	Set at approx. 80%
Redundant operation	Or-ing with MOSFET for N+1 applications
Isolation	5kV input to output
Indicators	Green LED - Normal / Yellow LED - Fault / Red LED - Alarm

Protection

Output over voltage	Over voltage shutdown
Output short circuit	Short circuit shutdown
Output over current	Current limit (Constant Current)
Input over current	Input fuse fitted
Input polarity	Reverse voltage protection
Thermal	Over temperature shutdown, Dual thermostatically controlled fans

Mechanical

Weight	5.5kg
Construction	Steel 1RU rack mount case (or free standing)
Cooling	Dual thermostatically controlled fans

Environmental

EMC	AS3548, CISPR 22 Class B
Operating temperature	-25-+55°C