Martek Power
150W PMEM Series
Datasheet

DC/DC converter for railway applications

Description

The PMEM series is the intermediate power model in a new range of highly cost-effective, single output converters for chassis mounting. The range is fully compliant with the latest European standards for railway equipment, including EMC and fire and smoke.

Special features include:

- Ultra-wide input voltage range
- Very compact, lightweight and cost-effective
- Very high efficiency
- Fully compliant with rail standards, including EN 50155 (2021) & EN 50121.3.2 (2016)

Part number	Output V_o [VDC]	Output I_o [A]
PMEM 1200	12	11.0
PMEM 1500	15	10.0
PMEM 2400	24	6.3

Input specifications

Parameter		Detail
Input voltage (continuous)		16.8 –137.5V dc
Short term supply under / over voltages (< 2 s)		14.4 -154V dc
Input Ripple		To EN 50155
Input Protection		Reverse polarity protection Surges and transients to EN 50155 (direct and indirect)
Inrush Current		To EN 50155
Efficiency	at 110V input at 24V input	92% typical 89% typical
Supply interruptions		EN 50155 Class S2 (10ms interruptions) with low impedance source (input short)
Input fuse		15A PCB-mounted fuse. Fitted for safe unit protection in the case of catastrophic failure or reverse polarity connection. Factory replacement only

Output specifications

Parameter	Detail
Maximum output power	150W (12V output model de-rated to 132W)
Output versions	Single output only
Output voltage	See table
Setting tolerance	±1.0% at 50% load, 15°C to 25°C
Minimum load	Zero
Start-up delay (typical)	<500ms (at any input voltage)
Remote sensing	Not fitted
Maximum output variation	±1.0% combined line & load regulation
Temperature coefficient	<0.02% / °C
Output ripple	<1% Pk-Pk of Output Voltage
Output noise	<75mV Pk-Pk superimposed (up to 20MHz)
Response time	0.5ms to within 1% (for a 10% -100% load change)
Current limit	Operates at 105 -130% of rated output current
Thermal protection	Shuts down PSU if safe internal temperature is exceeded. Auto recovery
Indicators	Green 'Output OK' LED on cover
Output monitoring	Volt free relay contacts (Normally open, common, normally closed)
Maximum capacitive load (output model dependant)	Output model: 12V 15V 24V Capacitance: 5,000µF 5,000µF 2,000µF
Isolation	Input to Output 2.0kV ac (tested at 3.0kV dc) Input to Case 1.0kV ac (tested at 1.5kV dc) Output to Case 1.0kV ac (tested at 1.5kV dc)

Environmental details

Parameter	Detail
Operating Temperature	EN 50155 class OT4: -40°C to +70°C(no de-rating) (85°C for 10 minutes) Base plate is intended for cold wall mounting and must not exceed 85°C for full power operation (90°C during 10 minute over temperature)
Output power de-rating	Above 70°C: 3.0% / °C;100°C absolute maximum
Storage Temperature	-40°C to +85°C
Cooling	Convection/Conduction Mounting surface should be thermally rated at ≤2.0°C/W. A thermal mass equivalent to 150g of aluminium is required for 10 minutes operation at 85°C
Relative Humidity	95% max
Shock & Vibration	EN 50155 (EN 61373) for mounting in any orientation
Environmental Protection	IP20. PCB is conformal coated

Mechanical characteristics

Parameter	Detail
Construction	Ventilated enclosure: aluminium base, steel cover
Finish	Black powder coat paint
Dimensions (L x W x H)	165 x 96 x 41mm (including mounting flanges)
Weight	535g
Connector	Phoenix contact MSTB 2,5/10-GF-5,08
Fixings	4 x Ø4.8mm clear holes

Applicable norms

Parameter	Detail
EMC	EN 50155 (2021), EN 50121-3-2 (2016)
Fire & Smoke	EN 45545-2 (2020)
Other	EN 50155 (2021)

Outline drawing

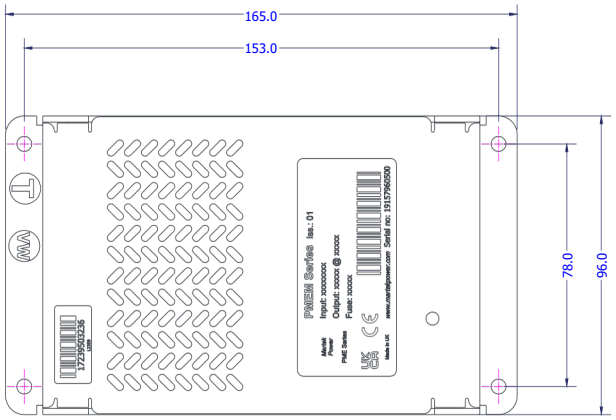
MATERIAL: BASE: AL ALLOY
COVER: STEEL

FINISH: BLACK POWDER COAT (RAL9005)
LOWSMOKE EMI
MATT FINISH (GLOSS LEVEL 30% (±5%))

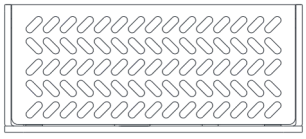
WEIGHT: 535g

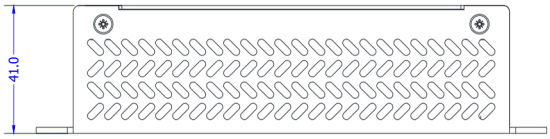
CONNECTOR: PHOENIX MSTB 2,5/10-GF-5,08 (340901)
MATING: PHOENIX MSTB 2,5/10-STF-5,08

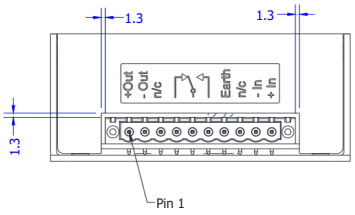
PINOUT:
1: +OUT
2: -OUT
3: Not connected
4: NC
5: CM
6: NO
7: EARTH
8: Not connected
9: -IN
10: +IN



CUSTOMER FIXING HOLES: Ø 4.8mm 4Pos







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