

PB315 Series

500W CONVERTER FOR RAILWAY APPLICATIONS

FEATURES

- 250W and 500W DC/DC converters for railway
- 45-154Vdc input to supply 24Vdc 20.8A or 10.4A
- Natural convection cooling with integral heatsink
- High resistance to pollution
- Wide input voltage range
- High efficiency low thermal stress
- Different input/output connectors
- Input polarity reversal protection
- High tolerance of input ripple
- Input inrush current limiting
- Input overvoltage lockout
- Output overload protection
- Output overvoltage protection

SPECIFICATIONS

INPUT	
Input Voltage	45 - 154Vdc, Complies with power supplied from an accumulator battery with nominal voltage of 72V, 96V or 110Vdc as per EN50155:1996
Input Current	15A
Inrush Current	25A at 110Vdc input
DC Ripple Factor	15% (EN50155 cl. 3.1.1.4)
OUTPUT	
Output Voltage	24Vdc (23.76 - 24.24V)
Output Current	PB315-24*-H: 20.8A PB315-24*: 10.4A
Continuous Power	PB315-24*-H: 500W PB315-24*: 250W See derating curve.
Ripple Voltage	100mVp-p
Line Regulation	0.5% Vnom
Load Regulation	1.13 (1.0 - 1.5%)Vnom. 0% to full load measured before redundancy diode
Efficiency	90% at full load
Power Dissipation	PB315-24*-H: 55W at full load PB315-24*: 27.5W
Redundancy Diode	0.33 (0.2 - 0.7)Vdc Forward voltage at full load.
Hold up time	See technical illustration
ENVIRONMENT	
Operating Ambient Temp	See technical illustrations
Cooling	Natural convection. No cold plate required.
Relative Humidity	5% - 90% Non condensing
Degree of Pollution	PD3 (Per IEC60077-1)



PROTECTION	
Input reverse polarity	Indefinite, series blocking diode on input
Input fusing	15A, 500V (T) HRC ceramic 32 x 6.3mm fuse - internal
Input overvoltage (Shutdown)	Approx 160Vdc, Auto recovery
High input ripple	Indefinite, Series diode on input
Output short circuit	PB315-24*-H: 24Vdc 33A PB315-24*: 12Vdc 16.5A Maintains constant short circuit current. Automatic recovery on removal of short circuit.
Output Overcurrent (Current limit)	PB315-24*-H: 24Vdc 31A PB315-24*: 12Vdc 15.5A Auto recovery on removal of over current
Output overvoltage (shutdown)	30-35Vdc, Input power must be cycled off then on to restart
Over Temperature	110°C internal temperature. Auto restart after cooling down
ISOLATION	
Isolation	Input to Chassis: 2121Vdc Input to Output: 4242Vdc Input to Output (M input connector): 3960Vdc Output to Chassis: 707Vdc
Rated Insulation Voltage	Input: 154Vdc Output: 25Vdc per IEC60077-1
Rated Impulse withstand voltage	Input: 2.5KV Output: 25Vdc per IEC60077-1
Overvoltage Category	Input and Output: OV2 per IEC60077-1

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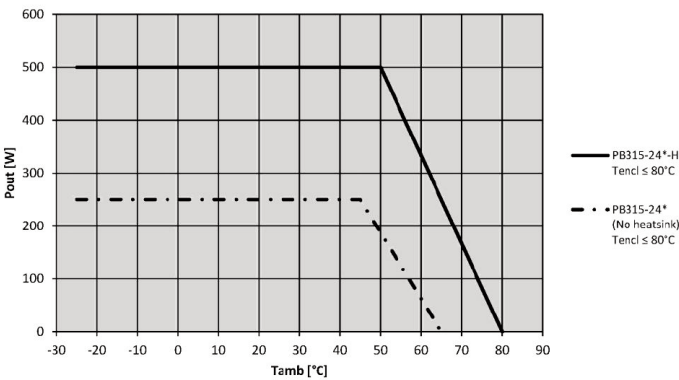
SPECIFICATIONS

ELECTROMAGNETIC	COMPATIBILITY
General	Designed to comply with EN50121-3-2:2000 and EN50155:1996
Conducted Emissions (Input and Output)	150kHz-500kHz: 99dBuV QP 500kHz-30MHz: 93dBuV QP
Radiated Emissions	30MHz-230MHz: 40dBuV/m QP @ 10m 230MHz-1HHz: 47dBuV/m QP @ 10m
Fast Transient Burst Immunity	2KV 5/50nS Tr/Th 5KHz rep frequency
Surge Immunity	Input only per EN50155 Direct Transients 1.8KV waveform 5/50us Source impedance 100ohm
Conducted Radio Frequency Immunity	3Vrms carrier 150KHz to 80MHz 1KHz , 80% AM Source impedance 150ohm
Variations & Interruptions of voltage supply	Input only per EN50155 Unit complies with 45Vdc to 154Vdc (0.6 x 72V to 1.4 x 110V) operation continuously Class S1: No interruptions
Radio Frequency Immunity	10V/Mrms carrier 80MHz to 1 GHz 1KHz 80% AM
Electrostatic Discharge	6KV contact discharge 8KV air discharge

I/O INTERFACE	
Input Output Terminal Code: *	PB315-24 * (-H)
Input and Output: S	5 way screw T/B 40A/600V suitable for M4 ring lugs.
Input and Output: C	7 way cage clamp T/B 20A/300V suitable for 4mm2 wire
Input and Output: F	10 way 6.4mm male QC faston terminals
Input and Output: P	Phoenix contact pn DFK-PC-15/5-STF-10,16 or similar 5W feed through terminal block with screw flanges Mating connector: Phoenix contact pn PC 6/5-STF-10,16 or equivalent 5W pluggable screw terminal block with screw flanges suitable for 6mm2 wire supplied with unit.
Input and Output: M	MS3102E24-22P F80 panel mounted plug. 4 x #8AWG crimp contacts. MS service rating D Mating connector: MS3106E24-22S F80 straight receptacle, supplied with unit.
Ground Terminal	M5 x 12mm stud
"ON LED"	Option L: Green LED mounted on top cover. ON when output voltage is present

MECHANICAL	
General	Chassis mount enclosure suitable for standalone use
Mechanical Outline	L: 321.5L, W: 150mm H: S=86, F=87, H=104mm (without mating connector)
Mounting Centres	305mm x 100mm Suitable for 4 x M6 hardware
Protection Degree	IP40 as per AS1939
Weight	2.5 kg unpacked

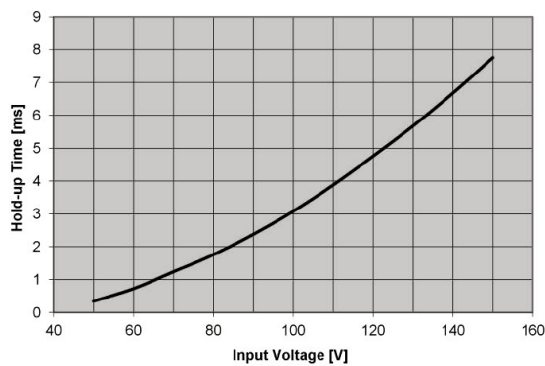
DERATING CURVE - FREE AIR CONVECTION



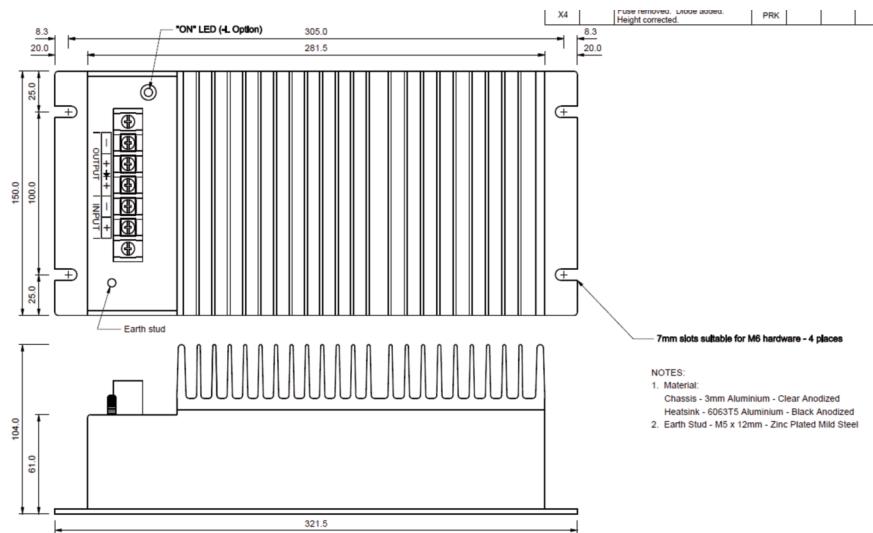
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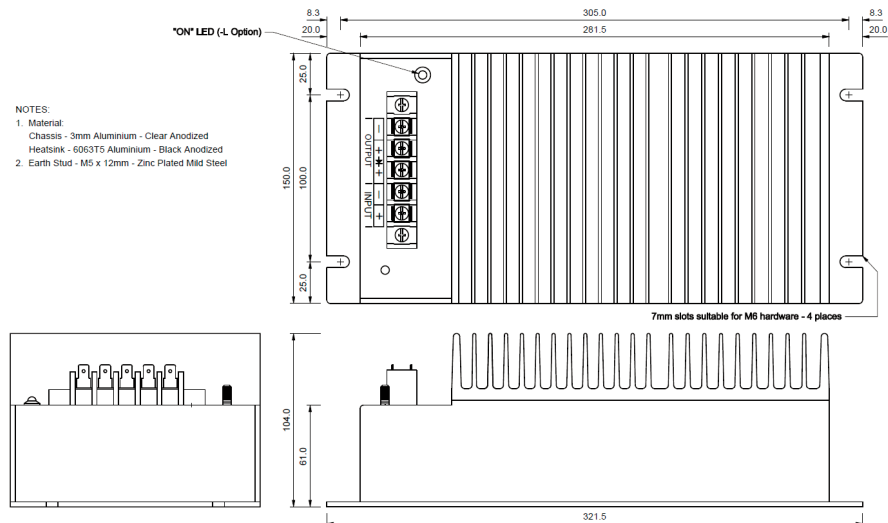
HOLD UP TIME - FULL LOAD



PB315-24S-H(L)



PB315-24F-H(L)



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