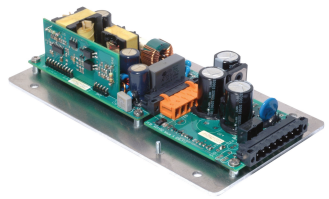
Martek Power
100W VER Series
Datasheet

vitec POWER GmbH

DC/DC converter for railway applications

VER standard version

VER enhanced version



Description

The VER series is a range of cost effective, medium power, single output converters. Featuring a very small footprint, the standard version complies fully with the latest rail specifications and norms for protection and EMC. For applications requiring compliance with class S2 supply interruptions (10ms hold-up time), an enhanced version is available which also adds active inrush current limiting and output health indication.

Special features include:

- Very compact, lightweight and cost effective
- High efficiency
- Each model covers two nominal vehicle battery voltages
- Standard and Enhanced versions available
- Fully compliant with rail standards, including EN50155 & EN50121.3.2

Input specifications

The following input voltages versions are available as standard:

72 / 110V (50.4 - 137.5V) dc (Suffix AD)
24 / 36V (16.8 - 50.4V) dc (Suffix BF)

Options

Code	Detail
E	Enhanced version. Adds 10ms hold-up time, active inrush limiting and output good signal.

Part number	Output V_o [Vdc]	Output I_o [A]
VER 1200	12	8.3
VER 1500	15	6.7
VER 2400	24	4.2
VER 3600	36	2.8
VER 4800	48	2.1

Parameter	Detail	Suffix AD	Suffix BF
Under-voltage switch-off (Customer configurable) (approximate value)	Standard (factory set) configuration	41V	13V
	Alternate configuration	63V	20V
Input Ripple	To EN50155		
Input Protection	Reverse polarity protection by shunt diode (external fuse or circuit breaker required). Surges and transients to EN50155 (direct and indirect)		
Inrush Current	Standard version: limited by source impedance but duration <0.1ms Enhanced version: limited to typically 5 x nominal current (after 0.1ms)		
Efficiency	90% typical		
Hold up time	Standard version: EN50155 Class S1 (no interruptions) Enhanced version: EN50155 Class S2 (10ms interruptions)		
Input Fuse	Not fitted. External fuse or circuit breaker required.		

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Output specifications

Parameter	Detail
Maximum Output Power	100W
Output Versions	Single output only
Output Voltage	Can be specified from 12V to 48V
Setting Tolerance	±1.0% at 50% load, 15°C to 25°C
Minimum Load	Zero
Line & Load Regulation	±1.0% combined
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.
Remote ON/OFF	Connect inhibit pin to negative input to turn off converter.
Output Good signal	Indication by volt free relay contacts [closed=output good] (Enhanced version only)
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)

VER standard version with cover

VER enhanced version with cover

Option

Code	Detail
S	Ventilated steel cover

Environmental details

Parameter	Detail
Operating Temperature	EN50155 class TX: -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 1.5°C/W. A thermal mass equivalent to 450g of aluminium is required for 10 minutes operation at 85°C.
Relative Humidity	95% max.
Shock & Vibration	EN50155 (EN61373) for mounting in any orientation
Environmental Protection	IP20 with optional ventilated steel cover

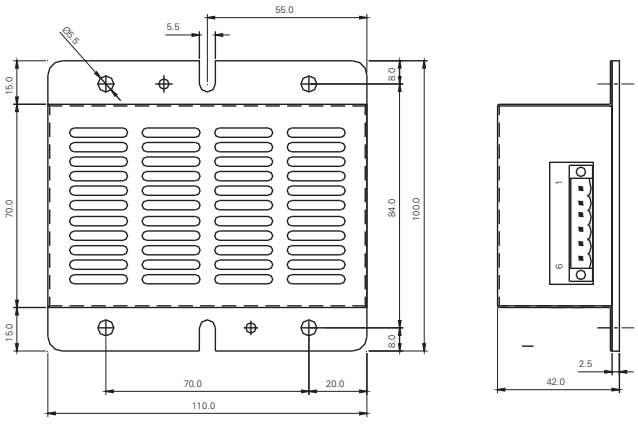
Applicable norms

Parameter	Detail
EMC	EN50155 (2007), EN50121-3-2 (2016)
Other	EN50155 (2007)

Mechanical characteristics

Parameter	Detail	
Construction	Conformal coated PCB with aluminium base plate. Optional ventilated steel cover.	
Dimensions (L x W x H) Note: width is 100mm with flanges	Standard Version 110x70x40mm (42mm with cover)	Enhanced Version 180x70x40mm (42mm with cover)
Weight	250g (330g with cover)	350g (500g with cover)
Connections	6 way PCB mounted connector with screw locks, part number: Weidmüller SL-SMT 5.08/6/90LF	8 way PCB mounted connector with screw locks, part number: Weidmüller SL-SMT 5.08/8/90LF
Fixings	Four ø 5.5mm fixing holes & two 5.5mm slots on base plate	Four ø 5.5mm fixing holes

Outline drawing (standard and enhanced versions with option 'S' cover fitted)



CONNECTOR:

WEIDMULLER
SL - SMT 5.08/06/90L

PIN OUTS:

1 = +VE IN
2 = -VE IN
3 = INHIBIT
4 = N/C
5 = -VE OUT
6 = +VE OUT

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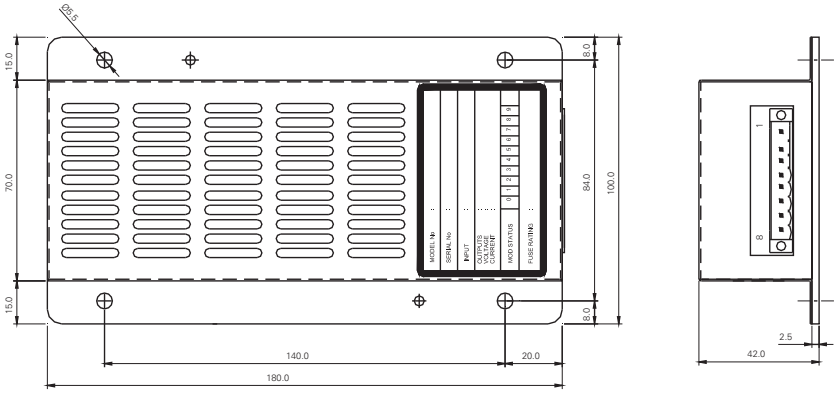

CONNECTOR:

WEIDMULLER
SL - SMT 5.08/08/90L

PIN OUTS:

1 = +VE IN
2 = -VE IN
3 = INHIBIT
4 = N/C
5 = RELAY
6 = RELAY
7 = -VE OUT
8 = +VE OUT

RELAY PINS ARE CLOSED
WHEN PSU OK

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