

EV Source - 500-DCDC-636 Manual



Front



Back

This DC-DC converter is compact and low-cost, making it a great choice for an on-board 12V DC-DC converter.

The converter is configured to output a constant 13.8V. This voltage can be adjusted from about 10V to 15V with a potentiometer accessible from the output side.

It has terminal blocks on the input and output sides making connection simple. A LED on the output side indicates when the converter output is active.

One attractive feature of this DC-DC converter is an automatic smart precharging sequence that keeps the inrush current low.

Features:

- High efficiency up to 89%
- Protections: short circuit / overload / over voltage / over temperature
- Built-in constant current limiting circuit
- Built-in cooling fan ON-OFF control (by load)
- Built with long-life 105C capacitors

Installation:

1. Choose a location that will keep the unit dry. It is not a sealed unit and must be kept from road splash and mist.

2. Secure the unit with the mounting holes provided on the sides and/or bottom. Use M4 bolts. They must not protrude into the device more than 4mm.
3. Slide off the protective cover on the input terminal block. The input to the converter is the three position terminal block on the rear of the device. Connect the input of the converter to your battery pack. USE CAUTION when working around high voltages! You must be qualified to work around high voltages. If you are not, seek someone who is. The input to the device must be fused. A slow-blow 10A fuse is recommended. The fuse must be rated for the maximum voltage that might be applied on the input. For DC input, polarity does not matter. However, this guide will suggest a standard convention of positive to the “L” terminal, and negative to the “N” terminal. For DC input, the ground terminal (marked with the earth symbol) does not need to be connected. When the wires have been connected, it is recommended to reinstall the protective cover.
4. Slide of the protective cover on the putout terminal block. The output of the converter is the 6 position terminal block on the front of the device. Connect the output of the converter to your 12V system. There are three terminals for positive and three for negative. These are internally tied together. The choice of where to connect the loads is a design decision that will be based on the layout and dynamics of your installation. Always ensure that loads are fused as close to the converter as possible and that the wire used is rated for the loads that will be placed on them. When the wires have been connected, it is recommended to reinstall the protective cover.
5. The converter ships with the output voltage at 13.8V. This should be sufficient to maintain most 12V batteries on a float charge. However, if you require a different voltage, it can be adjusted by turning the trimpot on the front of the unit.

Electrical Specifications:

- DC voltage: 13.8V
- Rated current: 53A
- Current range: 0-53A
- Rated power: 636W
- Ripple & noise (max): 120mVp-p
- Voltage adjust range: 10.2-14.5V
- Voltage tolerance: +/-1.0%
- Line regulation: +/-0.3%
- Load regulation: +/-0.5%
- Input: 110-370VDC, 85-264VAC
- Frequency range (on AC): 47-63Hz
- Inrush current: less than 70A
- Leakage current: <1mA

- Overload protection: 105-135% rated output power
- Protection type: constant current limiting, recovers automatically after fault condition removed.
- Overvoltage protection: 14.4-16.8V, shut down output voltage, re-power on to recover.
- Overtemperature: 80C +/-5C detect on heatsink of power transistor, 90C +/-5C detect on heatsink on main power output choke. Shutdown of output voltage, recovers automatically after temperature goes down.

Environmental Specifications:

- Working temperature: -30-70C
- Working humidity: 20-90% relative humidity, non-condensing
- Storage temperature and humidity: -40-85C, 10-95% relative humidity
- Vibration: 10-500Hz, 5G 10min/1cycle, 60min each along X, Y, Z axes

Safety and EMC:

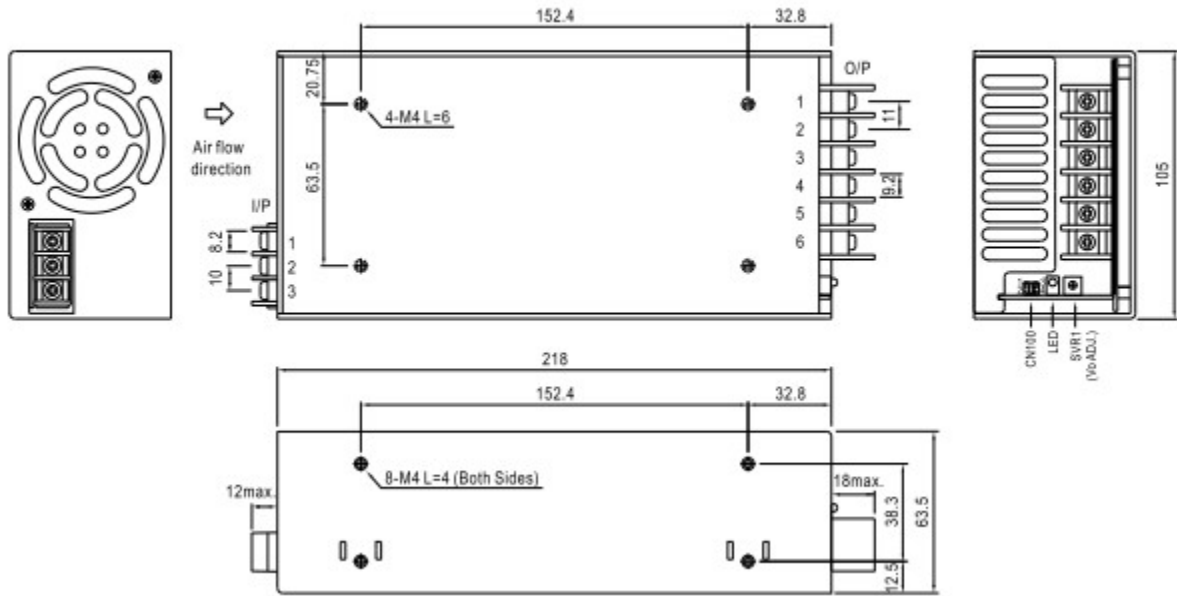
- Standards: UL60950-1, TUV EN60950-1 approved
- Withstand voltage: I/P-O/P: 3kVAC, IP-FG: 1.5kVAC, O/P-FG: 0.5kVAC
- Isolation resistance: I/P-O/P, I/P-FG, O/P-FG: 100MOhms/500VDC/25C/70% relative humidity
- EMI conduction & radiation: Compliance to EN55022 (CISPR22) Class B
- Harmonic current: Compliance to EN61000-3-2,-3
- EMS Immunity: Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2, heavy industrial level, criteria A

Other:

- MTBF: 140.6K hours minimum, MIL-HDBK-217F (25C)
- Dimension: 8.6 x 4.13 x 2.5 in (218 x 105 x 63.5 mm) (LxWxH)
- Weight: 1.5lbs (1.5kg)

Mechanical Specification

Case No. 977A Unit:mm



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG \perp

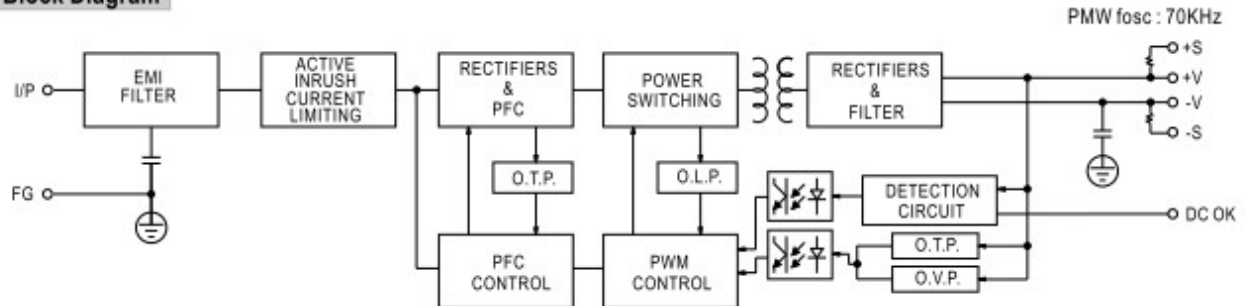
DC Output Terminal Pin No. Assignment

Pin No.	Assignment
1~3	-V
4~6	+V

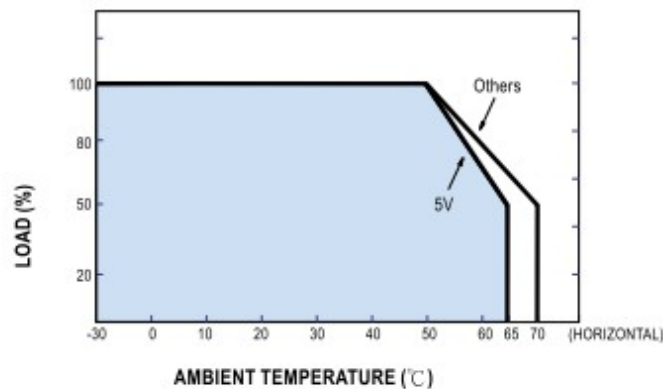
Connector Pin No. Assignment(CN100) : HRS DF11-4DP-2DS or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	DC-OK	HRS DF11-4DS or equivalent	HRS DF11-**SC or equivalent
2	GND		
3	+S		
4	-S		

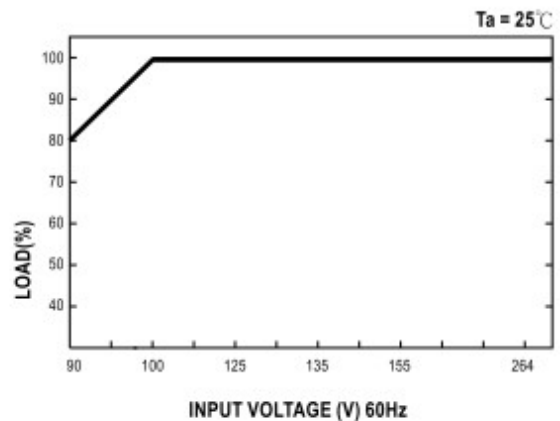
Block Diagram



Derating Curve



Output Derating VS Input Voltage



IMPORTANT DISCLOSURES

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