Model 6948 DC-DC Converter
Rev 4
Owner's Manual

April 1, 2019

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I Introduction

Model 6948 is shipped in fully assembled form. After removing the unit from its packaging and ensuring that it has suffered no damage in shipment, it is important to read this manual and follow its instructions to ensure proper connection and mounting.

Model 6948 is a high power 12 Volt to 48 Volt DC-DC converter capable of delivering 25A to its load. It is designed for mounting in vehicles of all types and is capable of enduring harsh vibration and shock conditions

II Installation

2.1 Mounting

Model 6948 has an overall length of 17.85 inches with mounting flanges included in this dimension. Hole mounting centers are 17.34 x 3.93 (inches)

2.2 Connections

Tools Required - 1 flat blade screw driver (1/4 in. wide)

Figure 1 shows the connection panel view of the 6948.

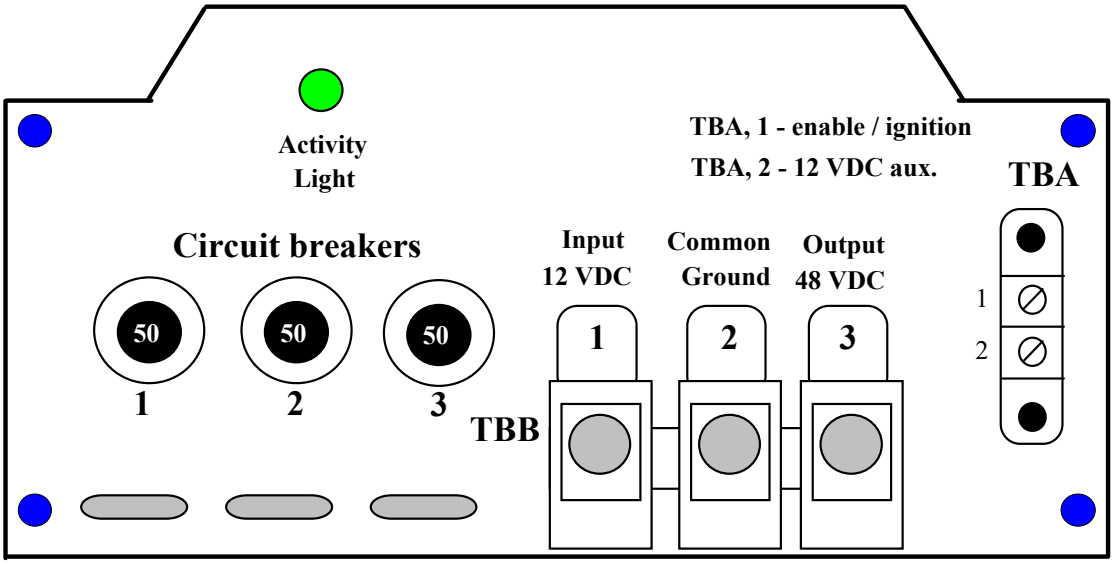


Figure 1

Prior to Main Input Power Connections:

The 6948 comes supplied with 6 (2 supplied as spares) blade terminals intended for crimping on to #2 AWG multi-stranded battery cable. It is important to utilize these terminals in order to realize reliable high current capacity connections between the terminal block and input/output cables.

Prior to hook up to the vehicle power source, the buttons on the three circuit breakers shown in Figure 1 should be pulled out into the OFF position. This position is indicated by the exposure of the white portion of the breaker button shaft. This ensures that there is no sparking from the source of power and also allows a reprieve in case there should be a hook up error. (This error would have to be detected prior to energizing the unit).

Once the breaker buttons are pulled, proceed to make connections as follows:

A) Connect input +12V line to position #1 of TBB.
B) Connect input GROUND to position #2 of TBB.
C) Connect output +48 V line to position #3 of TBB.
D) Connect output GROUND to position #2.

Prior to depressing the circuit breaker buttons, installer should:

1) Ensure that hook up in steps A through D are correct.
2) Select the method of converter activation.

Grounding Stud: The flat side of the unit is equipped with a ground stud which is connected to the 6948 housing. It may be connected to the battery ground of the vehicle at the user's option.

2.3 Methods of Converter Activation

A) Connect terminal #1 to terminal #2 on terminal block TBA permanently**.** (The 6948 is shipped from the factory with a shorting jumper in place between those terminals.) This configuration allows for converter activation by turning the 12V source power ON.

B) Alternately the converter can be switched ON from the vehicle's ignition system. Remove the jumper between terminals #1 and #2 on TBA. To energize the converter, connect terminal 1 to 12 V through the ignition switch or another switch that would enable terminal 1 to access 12 VDC.

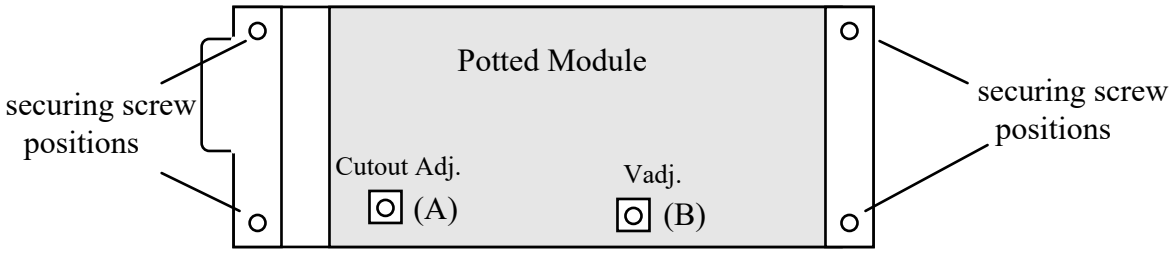
C) Terminal #1 can be connected to terminal #2 thereby activating the converter through a remote ON/OFF switch or relay.

III Internal Adjustments

Varying the adjustments of the Model 6948 requires the technician to have a stable DC power supply variable from at least 10 VDC to 15 VDC.

To access adjustments turn the unit upside down and remove the base plate by unscrewing the 4 securing screws in its corners.

Orient the converter upside down and horizontally with the connection panel to the left as shown in figure #2.



Two potentiometers (A) and (B) can be noticed. Pink sealant compound may need to be removed to gain access. Potentiometer (A) is used to adjust the converter's low voltage cutout point. This point corresponds to the minimum input voltage necessary to keep the converter "ON" or active (maintaining approximately 48V at the output). The low voltage cutout circuit serves to deactivate the converter when the vehicle's battery supply voltage drops below the critical level necessary for engine ignition. The 6948 is shipped from the factory with this setting at 11V. Modification of this setting may be carried out per section 3.2 of this manual.

Potentiometer (B) is used to adjust output voltage in a range of 47.5 - 56.3 VDC. The unit is factory adjusted to 52.8 VDC output.

3.1) Voltage Adjustment

a) Hook up the unit under test as shown in Figure #3

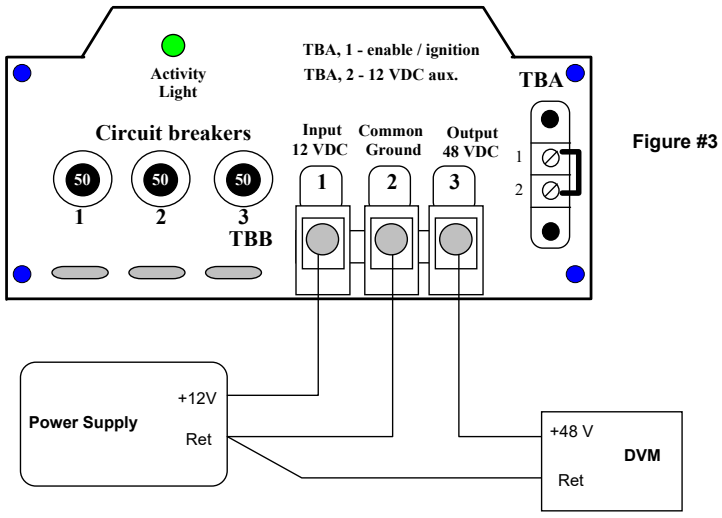


Figure #3

b) Make sure terminals 1 & 2 on TBA are jumpered and that the Power supply is turned off. Set the DVM to the appropriate scale to read 48 VDC at the desired accuracy.

c) Energize power supply and adjust its output voltage to +12 VDC. Adjust Potentiometer (B) to the desired output (between 47.5 VDC and 56 VDC) as read on the DVM.

d) Turn off power supply.

3.2) Low Input Voltage Cutout Adjustment

The Model 6948 is provided with a circuit to protect against destructively deep battery discharges, or discharges beyond the point where the vehicle battery can produce ignition.

6948's are adjusted at factory to a low voltage cutout (LVC) of 11.0 V. When the vehicle voltage is drawn below 11.0 the converter shuts off and automatically disconnects its load. When this occurs an audible click may be heard.

The adjustment set up is as shown in Figure #4.

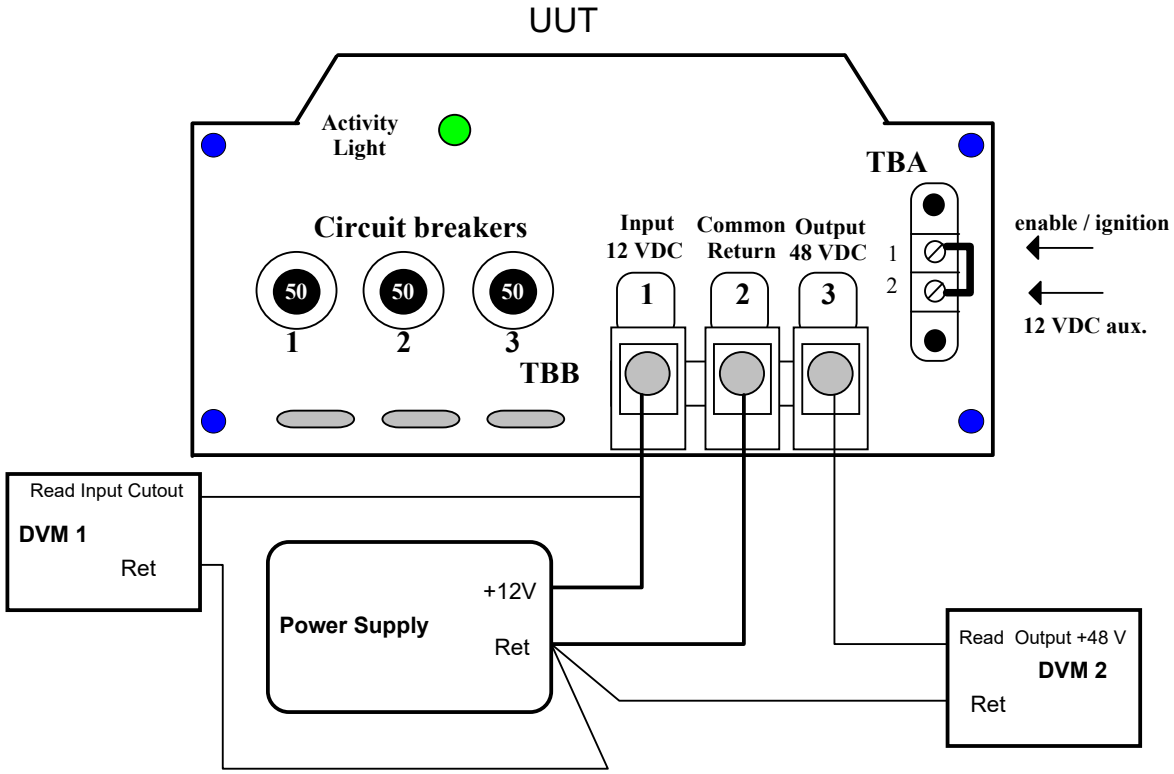


Figure #4

a) Turn pot (A) completely clock wise
b) Activate converter by turning "ON" the power supply and setting it to the desired cutout voltage
c) Very gradually turn pot (A) counter clockwise until a click can be heard and the output voltage simultaneously drops to zero.

There is approximately 0.8 Volts of Hysteresis between the cutout and turn on voltages of Model 6948. e.g. if 11 VDC is selected for cutout, the unit will turn back on when an input of at least 11.8 Volts is applied. This design serves to prevent rapid fluttering when battery voltage recovers with load removal.

IV Warranty and Repair

Should your investigations indicate that your new Model 6948 is defective or damaged and your unit is still under warranty, contact SEC America Corp. at 802-865-8388 and obtain return merchandise authorization for credit or exchange.

If the warranty period has expired or if the warranty has been violated due to operator error or abuse, call:
SEC America Corp. Repair Department, at **802-865-8388** or fax SEC America Corp. at 802-865-8389 to receive authorization for shipment back to factory for analysis and possible repair.

Warranty

The Model 6948 has a 2 year warranty covering parts and labor. The warranty is found on page 6 of this owner's manual.

LIMITED WARRANTY

We warrant each instrument, sold by us, or our authorized agents, to be free from defects in material and workmanship and that it will perform within applicable specifications for a period of two years after original shipment. Our obligation under this guarantee is limited to repairing or replacing any instrument or any part thereof,except fuses and pilot lights, which shall within one year after delivery to the original purchaser, be returned to us with transportation charges prepaid, prove after our examination to be thus defective.

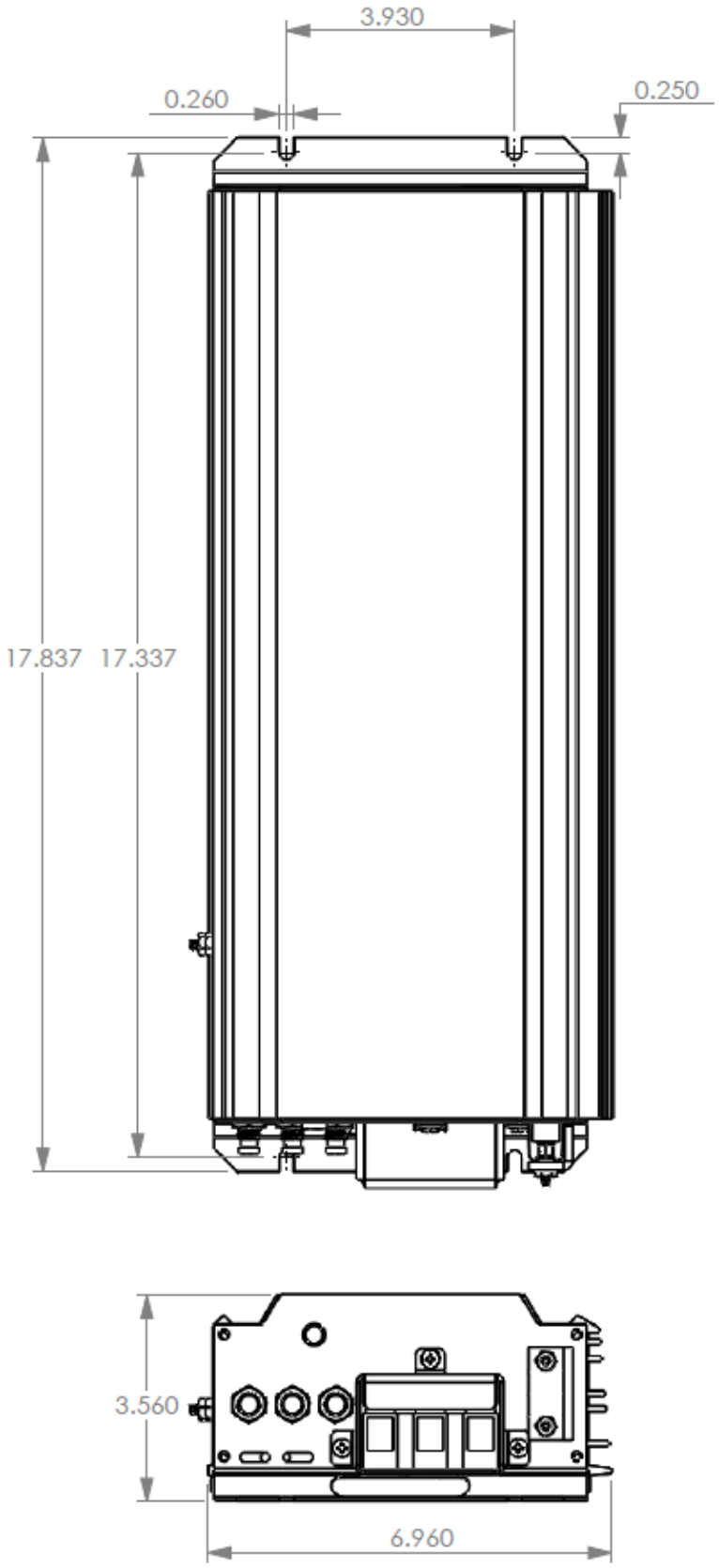
The above limited warranties take the place of all other warranties, expressed or implied, and correction of such defects by replacement or repair shall constitute a fulfillment of all obligations under the terms of the warranties. The warranties do not cover any unit that has been damaged either in transit or by misuse, accident or negligence. No warranty or representation by anyone other than this Company shall be binding on us.

To return a unit send only to the following address:

SEC America Corp.
78 Ethan Allen Drive
S. Burlington, VT 05403

PLEASE RETAIN YOUR ORIGINAL BILL OF SALE. IT MUST BE SUBMITTED WHEN MAKING ANY WARRANTY CLAIM

Mechanical Drawing



VI Electrical Specifications:

Output Voltage:	52.8 Nominal (Internally adjustable)
Output Voltage Adjust Range	47.5 VDC to 56.0 VDC (internally adjustable)
Continuous Max Load Amps:	25 ADC @ 40C ambient (Input 12.5 VDC) 20 ADC @ 60C ambient
Maximum Power Dissipation:	115 Watts @ Full Load (25A, 52.8 VDC out)
Maximum Input Current:	125 A (12 VDC in)
Overload Protection:	Electronically current limited (primary protection) Thermal Circuit Breakers at the Input (secondary protection)
Cooling:	Convection and Forced Air Thermostat Controlled Fan
Output Ripple Voltage:	10 mV RMS (20C to 75C) 50 mV RMS (-30C)
Input Voltage Range:	11 VDC to 16 VDC
Input Output Isolation:	Input and Output returns are Common (non isolated)

Low Voltage Cutout Circuit:

Low Voltage cutout point:	Adjustable from 10.5 VDC to 13 VDC
Low Voltage cutout Hysteresis:	0.8 VDC @ 13.0 V/ 0.7 VDC @ 10.5 VDC

Activation Circuits:

1) The unit may be activated through the command terminal #1 of terminal block TBA which when connected to +12 VDC of the vehicle will turn on the converter.
2) The converter may be turned on in stages by using the circuit breakers on the front panel. Each breaker increases the maximum output current by 33%.

Ambient Operating Temperature:	-30C to + 60C
Maximum Humidity:	100% non condensing
Maximum Elevation:	15000 ft. above sea level

Mechanical Specifications:

Dimensions:	See Drawing on Page 7
Shipping Weight:	13 lb.
Construction:	Aluminum housing with painted steel end panels and base
Mounting Method:	#12 Hardware via front and rear mounting flanges
Mounting Centers:	17.34 x 3.93 (inches)
Hook Up:	3 Position Splicer Terminal Blocks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