OPERATION AND INSTALLATION INSTRUCTIONS

HEAVY DUTY ISOLATED DC CONVERTERS

NEWMAR®

Your NEWMAR Power Converter is the product of a company with 30 years experience in the design and manufacture of power supplies for marine and land based communication and navigation applications.

Constructing power supplies that will survive hostile environments requires special electrical components and engineering techniques that NEWMAR has developed through years of field testing and evaluation. The result is a line of converters that is built to survive heat, humidity, dust, high power demands, and other hostile conditions encountered aboard work boats, offshore platforms, yachts and in heavy equipment used in open pit mining, logging and construction.

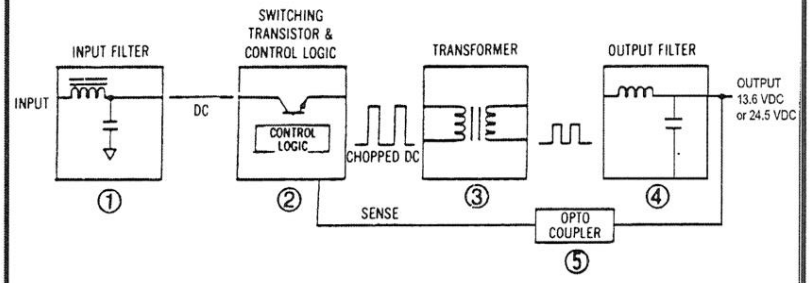
We're confident your NEWMAR Converter will serve you well. Please read the installation instructions and recommendations on the back of this page to assure proper operation of your converter.

FEATURES

- Fully isolated input and output allows use of positive or negative ground equipment on vehicles with positive negative or floating ground battery systems.
- Critical line regulation design maintains DC output voltage within 1% regardless of varying DC input voltages or changing load conditions.
- Automatic thermal overload protection prevents internal damage from high temperatures due to ambient conditions and/or overloads.
- Low output ripple eliminates electronic noise and interference.
- Automatic current limiting eliminates damage from shorts and output overload.
- Maintenance free solid state circuitry assures years of dependable service.
- Conformal coated printed circuit board resists corrosion.
- Rugged, rust and corrosion proof case of anodized aluminum with integral oversized heat sink provides convection cooling of components.
- Integral shock mounts reduce component vibration.
- All components selected for dependable performance in the most hostile environments.
- Each unit thoroughly tested and inspected before shipment.
- Two year limited warranty.

THEORY OF OPERATION

HIGHLY REGULATED, LOW RIPPLE, ISOLATED DC CONVERTER



1. FILTER INPUT FROM REFLECTED SWITCHING
2. REGULATE BY VARYING "ON" TIME
3. STEP UP / DOWN AND ISOLATE
4. FILTER TO PURE DC
5. SENSE AND ISOLATE

ISOLATED SERIES - HEAVY DUTY DC CONVERTERS

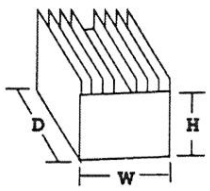
MODEL	INPUT VOLTAGE	INPUT MAX AMPS	13.6 VDC OUTPUT	CASE SIZE REF.	WEIGHT (LBS)	WEIGHT (KG)
12-12-12I	10-16 VDC* Pos. or Neg. Ground	19.2	12 amps intermittent 8 amps cont.	C-8	6	2.7
12-12-35I	10-16 VDC* Pos. or Neg. Ground	56	35 amps intermittent 20 amps cont.	C-9	12	5.5
48-12-6I	20-56 VDC Pos. or Neg. Ground	4.8	7.5 amps peak 6 amps cont.	C-7	4	2.7
48-12-12I	20-56 VDC Pos. or Neg. Ground	9.6	12 amps intermittent 8 amps cont.	C-8	6	2.6
48-12-18I	20-56 VDC Pos. or Neg. Ground	14.4	18 amps 10 amps cont.	C-8	7	3.6
48-12-35I	20-56 VDC Pos. or Neg. Ground	28	35 amps 20 amps cont.	C-9	12	5.5

NOTE: ALL ABOVE-LISTED MODELS CAN BE MODIFIFIED FOR 24 VOLT OUTPUT AND FOR USE AS A BATTERY CHARGER. CONTACT FACTORY FOR DETAILS.

MODEL	INPUT VOLTAGE	INPUT MAX AMPS	24.5 VDC OUTPUT	CASE SIZE REF.	WEIGHT (LBS)	WEIGHT (KG)
12-24-6I	10-16 VDC* Pos. or Neg. Ground	19.2	6 amps intermittent 4 amps cont.	C-8	6	2.7
12-24-18I	10-16 VDC* Pos. or Neg. Ground	56	18 amps intermittent 10 amps cont.	C-9	12	5.5
48-24-18I	20-56 VDC Pos. or Neg. Ground	28	18 amps intermittent 10 amps continuous	C-9	12	5.5

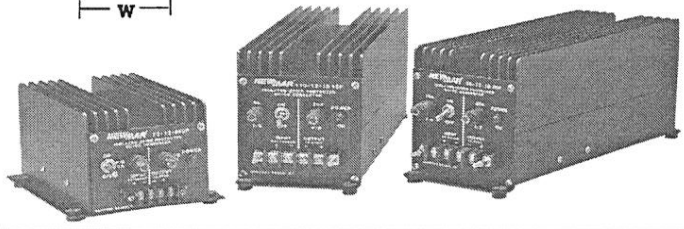
**11.5 VDC minimum start-up voltage, then operates 10-16 VDC from 1 amp minimum to full load*

CASE SIZE



DIMENSIONS

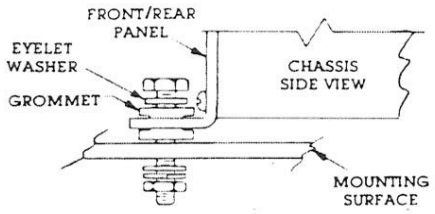
	INCHES H	INCHES W	INCHES D	CENTIMETERS H	CENTIMETERS W	CENTIMETERS D
C-7	4.25	5.9	7.7	10.8	15.0	19.6
C-8	4.25	5.9	14.0	10.8	15.0	35.6
C-9	6.0	6.8	16.5	15.2	17.3	41.9



INSTALLATION

The Converter can be mounted in either a horizontal or vertical position. Heavy duty mounts with integral shock pads assure a secure installation and protect the components from vibration. The Converter should not be mounted near hatches, water or oil pumps, battery vapors or exhaust manifolds. Proper ventilation is necessary and there should be a free flow of air around the Converter.

IMPORTANT: Although the converter is constructed of materials and in a manner which makes it highly resistive to the corrosive effects of moisture in the evironment, it is not waterproof. Do not mount the converter where there is a possibility of water entering the unit. Evidence of water entry into the converter will void the warranty.



Note: To ease installation of grommets, spray with WD-40 or similar lubricant.

A high vibration mounting kit is available for mobile applications subject to extreme shock and vibration. Contact the factory for details.

It is recommended that the Converter be mounted as close to the load as possible to reduce the effect of line loss. See WIRE SIZE TABLE for recommended gauge.

INPUT

These DC Converters are designed to operate from an input range of 10-16 volts or 20-56 volts depending on model. (See reverse for input specifications.) No adjustments are needed to accommodate input voltage within the unit's specified range. The DC Converters may be safely used to power equipment on positive, negative, or floating ground systems.

The input terminals are designated on the terminal block located on the front panel. Remove terminal block cover and verify correct polarity of input wires before attaching.

CAUTION: Even momentary reverse polarity connection may severely damage unit.

OUTPUT

Verify correct polarity (+plus and - minus) to equipment being powered and connect output leads using the ring terminals provided.

Replace terminal block cover to prevent accidental shorting of the terminals.

WIRE SIZE TABLE

The table below may be used to select the proper gauge wire for both input and output connections.

AMPS	CABLE LENGTH (AWG)	
	10'	20'
3-10	#14	#12
11-20	#14	#10
21-35	#8	#6
36-60	#6	#4

OPERATION/TROUBLESHOOTING

The indicator light on the front panel will light when the switch is positioned to "ON" and DC power is available on the output terminals. If the indicator light does not come on check both the input and output fuses.

If the input fuse is blown, this may be the result of a voltage spike or transient from your power source. Turn off the converter and replace the fuse. The correct fuse rating is designated on the front panel above the fuseholder.

A blown output fuse will usally indicate an overload, short, or reverse polarity connection to the output. If this occurs, turn the converter off, remove the overload or short and check for correct polarity to the load.

Always verify that the replaced fuses are of the correct rating. Use standard or fast-blow fuses. Do not use slow-blow fuses.

Repeated blowing of input or output fuses where both source and load have been checked out as satisfactory probably indicates a shorted component within the unit. Return to factory or have a qualified technician perform needed repairs.

The converter is equipped with a fast-acting current limit circuit to double-protect the unit against overloads and shorts. This circuit will automatically drop output voltage to protect internal components. Current limiting is indicated by a flickering or extinguished power light when the power switch is in the "on" position.

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NOTE: Some inductive loads such as **DC** motors require high start-up surge currents which will trigger this protection circuit. In general, it is recommended that the converter is used in applications with resistive loads.

OPERATION AS A CHARGER

If this unit was modified at the factory for battery † charger operation (special modification), it may be wired directly to a lead acid battery without fear of overloading the converter.

If you intend to use this unit for battery charging and it has not been adjusted for such operation, please contact the factory for modification information.

†over-current protection recommended on charging leads.

PERFORMANCE SPECIFICATIONS ALL MODELS

Output:
12 V Models: 13.6 VDC
24 V Models: 24.5 VDC
Note: Internal voltage adjust - contact factory for more information
Ripple:**
12 V Models: 150 mV P-P
24 V Models: 250 mV P-P
REGULATION: 1% Line/Load
DUTY CYCLE RATINGS:
Intermittent - 20 minutes, 20% duty
Continuous - 24 hours, 100% duty
IDLE CURRENT (including power "on" indicator light): Approx. 120 mA
OPERATING TEMP: 0-40 C, Derate Linearly to 50% @ 50 C
Thermal Shutdown @ 70 C Case Temperature
SWITCHING FREQUENCY: 70 kHZ
EFFICIENCY: 85% - Typical.
***Peak to peak ripple monitoring equipment shall have a 60 MHZ frequency response. Output ripple is measured across a .1 mfd. ceramic or mylar capacitor connected directly to the output terminals of converter without using probe group clip (use ground collar on probe pressed against capacitor lead).*

NEWMAR
DC Power Onboard

TYPICAL WIRING