

# HEAVY DUTY DC-DC CONVERTERS

## OPERATION AND INSTALLATION INSTRUCTIONS



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

Constructing power products 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

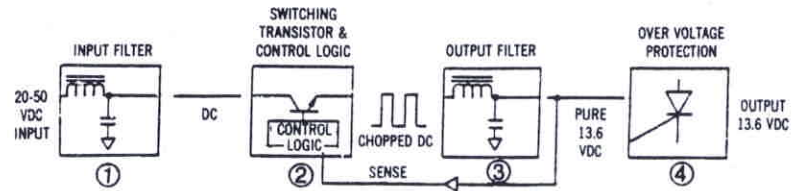
- Critical line regulation design maintains DC output voltage within 1% regardless of varying DC input voltages or changing load conditions.
- Automatic thermal overload protection prevents internal damage from high temperatures due to ambient conditions and/or overloads.
- Low output ripple eliminates electronic noise and interference.
- Overvoltage protection prevents damage to equipment due to line spikes or component failure.†
- 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 assures years of dependable service.
- 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.

† - EXCEPT 3 AMP MODEL

†† - EXCEPT 3 & 6 AMP MODELS

### THEORY OF OPERATION†

#### HIGHLY REGULATED, LOW RIPPLE, DC-DC CONVERTER



1. FILTER INPUT FROM REFLECTED SWITCHING
2. REGULATE BY VARYING "ON" TIME
3. FILTER TO PURE DC AND ELIMINATE RIPPLE
4. PROTECT SENSITIVE LOADS FROM OVERVOLTAGE CONDITIONS

### STANDARD SERIES - HEAVY DUTY DC CONVERTERS

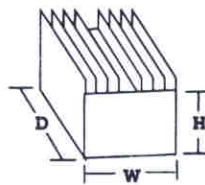
Model	Input		Output		Case Size	Weight	
	VDC (Neg. Gnd.)	Amps* Low Line	VDC	Amps** Int.		(Lbs)	(Kg.)
32-12-3	20-40	3	13.6		C-1	2	.9
32-24-3	32-40	3	24.5	3			
32-12-6	20-50	4.8	13.5		C-10	2.5	1.1
32-24-6	32-50	5.4	24.5	6			
32-12-10	20-50	8.0	13.6		C-2	4	1.8
32-24-10	32-50	9.0	24.5	10			
32-12-15	20-50	12.0	13.6		C-2	5	2.3
32-24-15	32-50	13.5	24.5	15			
32-12-25	20-50	20.0	13.6		C-3	7.5	3.4
32-24-25	32-50	22.5	24.5	25			
32-12-35	20-50	28.0	13.6		C-4	12	5.5
32-24-35	32-50	31.5	24.5	35			
32-12-50	20-50	40.0	13.6		C-5	16	7.3
35-24-50	32-50	45.0	24.5	50			

\*INPUT NOTE: Low Line = 20V for 13.6V output models; 32V for 24.5V output models

Nominal Line = 25.5V for 13.6V output models; 34V for 24.5 output models

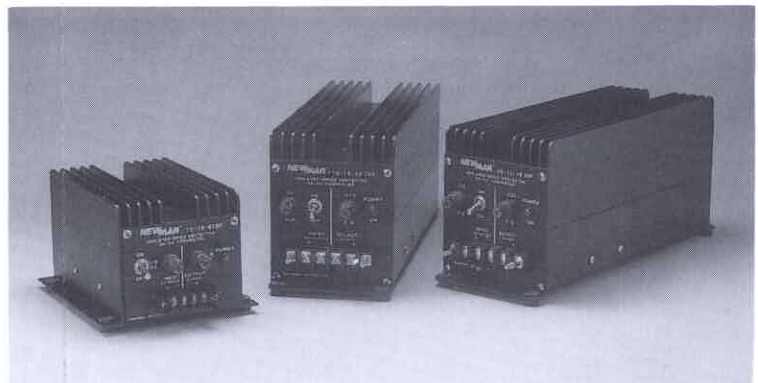
\*\* OUTPUT NOTE: Current Limit set at 105% of intermittent rating

### CASE SIZE



### DIMENSIONS

	INCHES			CENTIMETERS		
	H	W	D	H	W	D
C-1	2.7	4.5	6.0	6.9	11.4	15.2
C-2	4.5	5.9	11	11.4	15.0	27.9
C-3	6.0	4.7	14	15.2	11.9	35.6
C-4	6.0	4.7	16	15.2	11.9	40.6
C-5	6.2	6.8	18.1	15.7	17.3	46
C-10	2.8	4.2	10.4	7.1	10.7	26.4





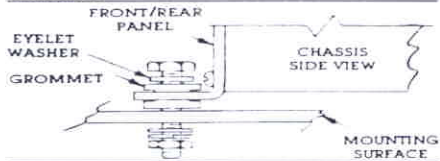
## INSTALLATION

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 make it highly resistive to the corrosive effects of moisture in the environment, 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.

## HOW TO INSTALL GROMMETS FOR ISOLATION AND SHOCK MOUNTING

NOTE: Spray the grommets with WD-40 first to ease installation.



NOTE: Heavy duty mounting kit is available for extreme vibration environments. (10-50 amp models) contact factory.

It is recommended that the Converter be mounted as close to the load as possible to reduce the effect of line loss.

## INPUT

These DC Converters are designed to operate from a wide input voltage range, negative ground. (See reverse for specifications.) No adjustments are needed to accommodate input voltage within this range.

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, otherwise severe damage could occur to the unit.

## WIRING

Using the table below, select the proper wire size for your installation.

INPUT/OUTPUT AMPS	CABLE LENGTH (feet)	
	10'	20'
3-10	14awg(2.5mm)	12awg(4mm)
11-20	12awg(4mm)	10awg(6mm)
21-35	8awg(10mm)	6awg(16mm)
40-60	6awg(16mm)	4awg(25mm)

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.

## OPERATION/TROUBLESHOOTING

Indicator will light when power switch is positioned to "ON" † †. If the DC Converter is overloaded or shorted the output voltage will automatically reduce to protect the internal components. If this occurs turn off the power supply, disconnect the load, and correct the fault.

NOTE: This fast reacting protection circuit will activate if an inductive load is applied where the in-rush current exceeds the unit's surge rating. It is recommended that resistive loads be used during testing and application. Contact factory if intermittent operation is experienced while powering non-resistive loads.

A DC Converter blowing fuses repeatedly usually indicates a shorted component within the DC Converter. Turn off and have a qualified technician perform the repairs or return the unit to Newmar for factory inspection.

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

† † 3 & 6 Amp models do not have power on light. 6 Amp model does not have on/off switch.

If the indicator light is off and the DC Converter feels warm, but there is no output DC voltage, the over-voltage protector may have been activated. Turn the DC Converter off and wait 2 or 3 minutes for it to reset, then turn back on. Occasionally the overvoltage protector can be tripped by voltage "spikes" on the input or the output.

## 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 battery † without danger 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.

## OPERATION AT 24 VDC OUTPUT

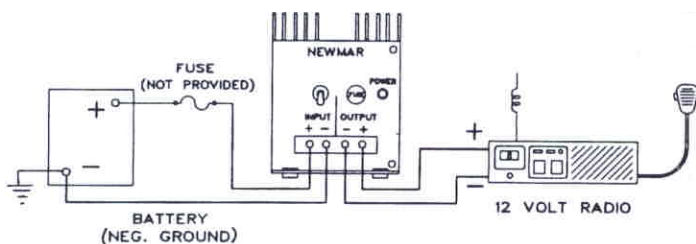
All models can be modified for 24 volt output. (See reverse for specifications, new model designation after modification.) Contact factory for technical assistance.

RATINGS	
Regulation .....	1% line and load
Ripple .....	150 mV P-P**
Efficiency .....	85% typical*
Idle Current .....	50 mA typical
Operating Temp 0-40° C	Derate to 50% load at 60° C
Intermittent Rating	20 minutes on, 20% duty cycle

\*All models except 32-12-3; 50% @ 24 VDC input

\*\*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 the converter/ power supply without using the ground probe clip. (Use the collar on the probe pressed against the capacitor lead.)

## TYPICAL WIRING\*



\* Wiring for 10-50 amp models shown here

# NEWMAR®

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**COMMUNICATION • NAVIGATION**