

<b>USER'S MANUAL</b>		<b><i>Ekyrail enterprises inc.</i></b>	
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<b>Inverter 3000va per channel (2 channels)</b>			

**Installation,  
Operating  
&  
Maintenance  
Manual  
For  
Inverter 3000va per channel (2 channels)  
1020080000**



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## Specification

### 1.1 General:

The system is a 3kVA DC to AC 60Hz true sine wave inverter designed for locomotive mounting. The unit is capable of supplying 3000VA continuous. The unit operates from 64 to 89Vdc drawing 46A (at 74Vdc with nominal load). The system employs a conservatively rated high speed switched power supply with complete isolation from input to output and from input and output to chassis. The unit can operate indefinitely in short circuit condition. The output maximum voltage is factory set to 120Vac  $\pm 5\%$  @ 60Hz  $\pm 1$ Hz sine wave with a total harmonic distortion THD of  $< 5\%$ . The current limit is 27 A rms. The unit will operate under overload or short circuit conditions indefinitely without damage. The sequence is as follows: Cut-off after 2 seconds, automatic reset after 36 seconds.

### 1.2 Operational specifications

#### 1.2.1 Output:

Voltage	117 Vac $\pm 5\%$ over full operating range
Power	3000va nominal, 3100 va (max) per channel (2 channels)
Current limit	27 Amperes rms
Load regulation	5% from no load to max load
Waveform	Sinusoidal (THD $< 5\%$ )
Frequency	60 Hz $\pm 1$ Hz
Load power factor	0.7 lead to 0.7 lag
Efficiency	85% at nominal load

#### 1.2.2 Input:

Voltage	74 Vdc nominal, operating range 63 to 89 Vdc
Current	46A dc @ nominal output 3000 VA load per channel (2 channels)

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### 1.2.3 Protection:

Over current: Cur-off after 2 seconds, (3100va) automatic reset after 36 seconds.

Overload: Output stage thermal shutdown.

Over Temperature: Cutoff at +80°C, restart at +70°C.

Input over voltage: Shutdown at 89 Vdc, restart at 85 Vdc.

Input under voltage: Shutdown at 64 Vdc, restart at 69 Vdc.

DC polarity : Protected

Input protection: Surge suppressor and fuse.

In/out isolation: Transformer isolated floating output.

### 1.2.4 Environment:

Temperature:

Storage: -40°C to +85°C

Operating: -40°C to +70°C

Humidity: 0 to 100% relative

Altitude 0 to 10,000 ft

Shock & Vibration IEC 60571 Standard

EMI IEC801 Standard

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### 1.2.5 Physical:

Dimensions: 18.43" wide by 14.25 high by 9.5 deep

Cooling: Convection **(for horizontal installation require 2 internal fans)**

Weight: less than 108 lbs. (49.09 kg)

### 1.2.6 Indicators:

DC Input: Green – Continuously on for operation voltage in normal range.  
Continuously flashing when the operating voltage is out of range.  
Off – No input voltage or reverse polarity.

AC output: Green – On Output voltage available  
  
Off – No output voltage, Over voltage, over heat or wrong Input.

Fault: Red – On Fuse open

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## **2 Installation**

### **2.1 General**

The unit is designed for installation in a locomotive hood or cabinet

### **2.2 Orientation**

The unit may be mounted on any orientation.

### **2.3 Clearance**

The heat sink shall have a clear area of four inches both below and above the heat sink for the complete depth and area of the heat sink in order to permit adequate air flow for cooling.

### **2.4 Ambient temperature**

The ambient temperature in the mounting location shall not exceed 70°C or be less than -40°C. Direct line of sight to high temperature objects such as exhaust manifolds should be avoided or radiation shields installed outside the radiator clearance requirements.

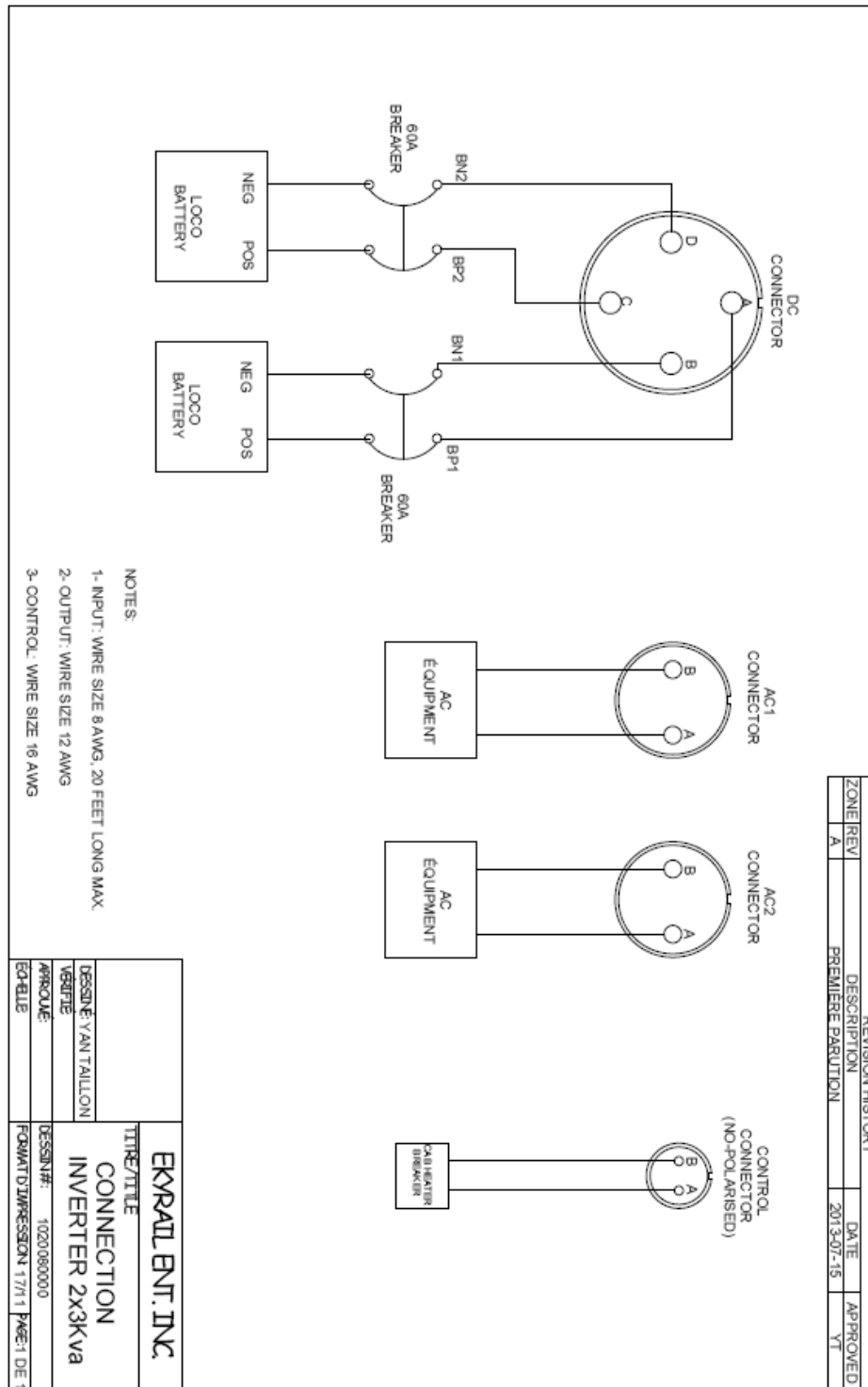
### **2.5 Vibration**

If mounted directly to an engine assembly appropriate anti vibration mounts shall be used. If mounted to the car body structure a solid mount is normally acceptable unless the structure is subject to resonances in the operating range of the prime mover. In such cases the unit may require anti vibration mounts.

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## 2.6 Wiring

The wiring connections are made via terminal connectors.



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### 2.6.1 DC Wiring

The DC wires should be connected positive battery to positive input BP1 (and BP2), negative battery to negative BN1 (and BN2). In order to verify that the polarity is correct, close the supply breaker and apply the battery voltage. If the polarity is correct, the green indicator light (DC IN) will illuminate. If this indicator does not light verify the DC wiring and correct as necessary.

### 2.6.2 AC wiring

The AC output connection is made by 2 connectors (1 for each load). The output is floating to ground.

## 3. Operation

With the DC power properly applied, the green DC IN led will be illuminated.

**When operated an air conditioning system, the inverter will control the lock rotor amperage, the system will limit the current, on initiate start, this function will limit the current for 1/2 second, if the system is shut down and restart before the internal pressure is down, the inverter will limit the current for 2 seconds, shut down and retry after 30 seconds. This feature has been design to protect the compressor.**

**If the compressor is equip with a PTC resistor, a second feature will detect if the PTC is hot, in that condition the equipment is shut down for 4 minutes.**

In the event of an internal fault, the red led FAULT will illuminate. The unit should be returned to Ekyrail for service.

## 4. Maintenance

There is no required maintenance on this unit other than to confirm it is operational and not suffering from mechanical damage during the routine inspection and maintenance of the associated equipment.

If the radiator is very dirty it should be cleaned during the normal maintenance of the associated equipment.

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