

<b>USER'S MANUAL</b>		<b><i>Ekyrail enterprises inc.</i></b>	
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<b>3KVA Sine Wave DC to AC Inverter</b>			

**Installation,  
Operating  
&  
Maintenance  
Manual  
For  
3KVA Sine Wave DC to AC Inverter  
1020090000**



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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	46Adc @ nominal output 3000 VA

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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: 10" wide by 14.25 high by 9.5 deep

Cooling: Hybrid

Weight: less than 50 lbs. (22.68 kg)

### 1.2.6 Indicators:

DC Input: Green – Continuously on for operation voltage in normal range.  
Continuously flashing when operating voltage 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 with the heat sink back plane in a vertical 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**

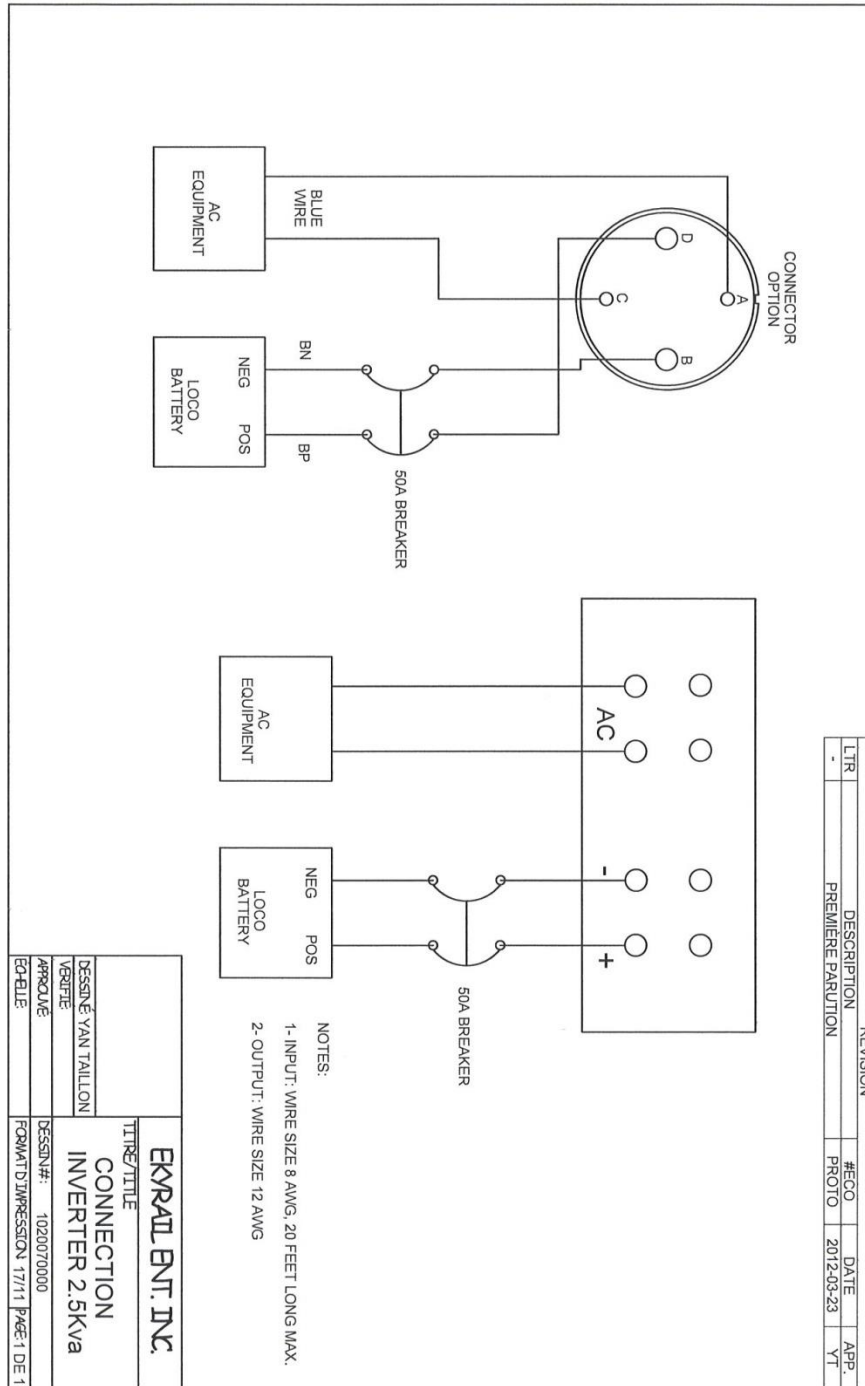
The ambient temperature in the mounting location shall not exceed 70°C or be less than -40°C. Direct line of sight to high temperature objects such as exhaust manifolds should be avoided or radiation shields installed outside the radiator clearance requirements.

### **2.5 Vibration**

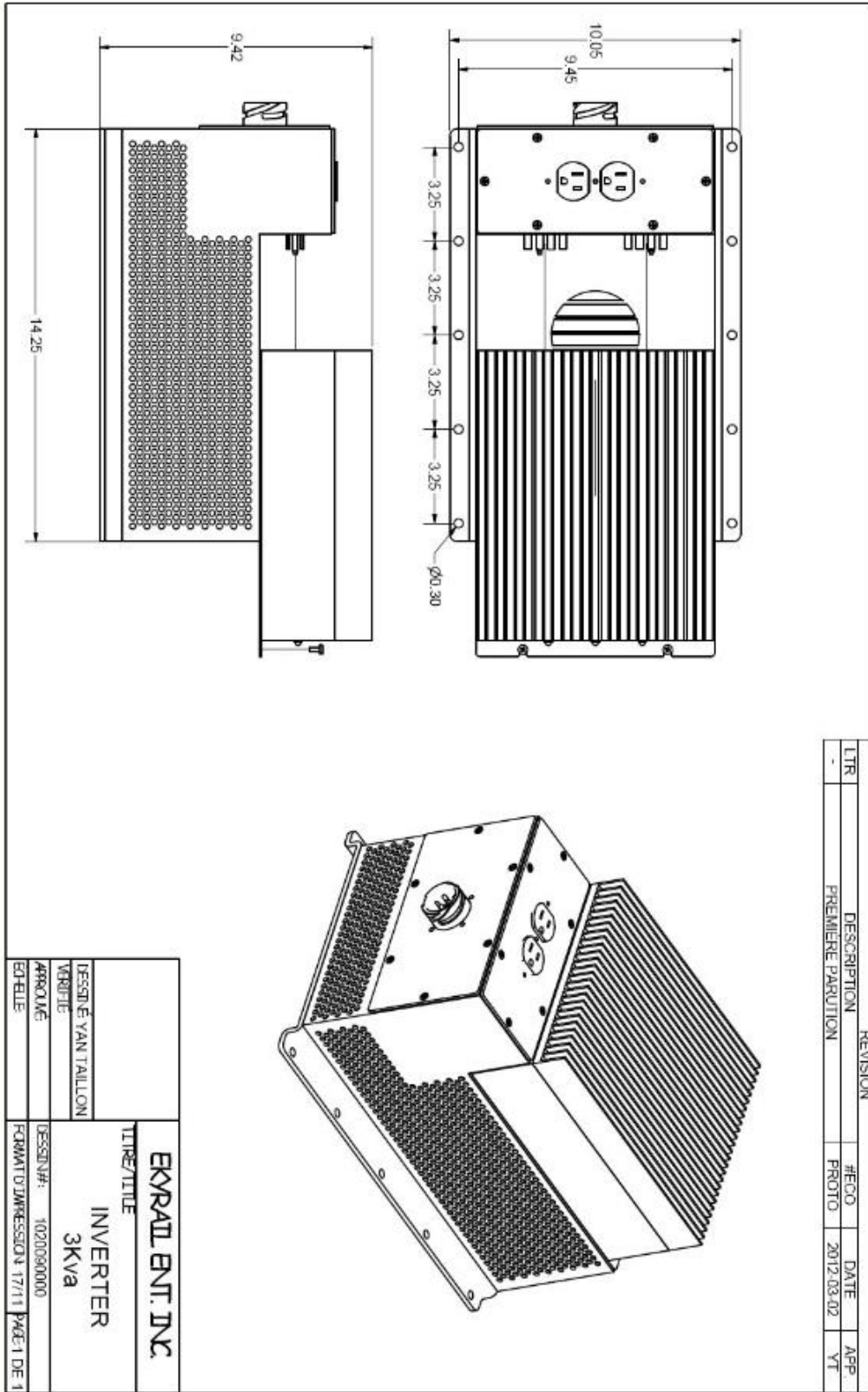
If mounted directly to an engine assembly appropriate anti vibration mounts shall be used. If mounted to the car body structure a solid mount is normally acceptable unless the structure is subject to resonances in the operating range of the prime mover. In such cases the unit may require anti vibration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

## 2.6 Wiring

The wiring connections are made via terminal stud or connector (optional).



**3KVA Sine Wave DC to AC Inverter**



<b>EKRAIL ENT. INC.</b>	
TYPE/TITRE	
INVERTER	
3Kva	
DESIGNÉ YAN TAILLON	DESIGN#:
VERIFIÉ	1020090000
APPROUVE	FORMAT DIMENSION 17/11
ED-FILE	PAGE 1 DE 1

LTR	DESCRIPTION	REVISION	#ECO	DATE	APP
-	PREMIERE PARUTION		PROTO	2012-03-02	YT

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### **2.6.1 DC Wiring**

The DC wires should be connected positive battery to positive input BP, negative battery to negative BN. 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 terminals studs (or Connector). The output is floating to ground.

## **3. Operation**

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

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.