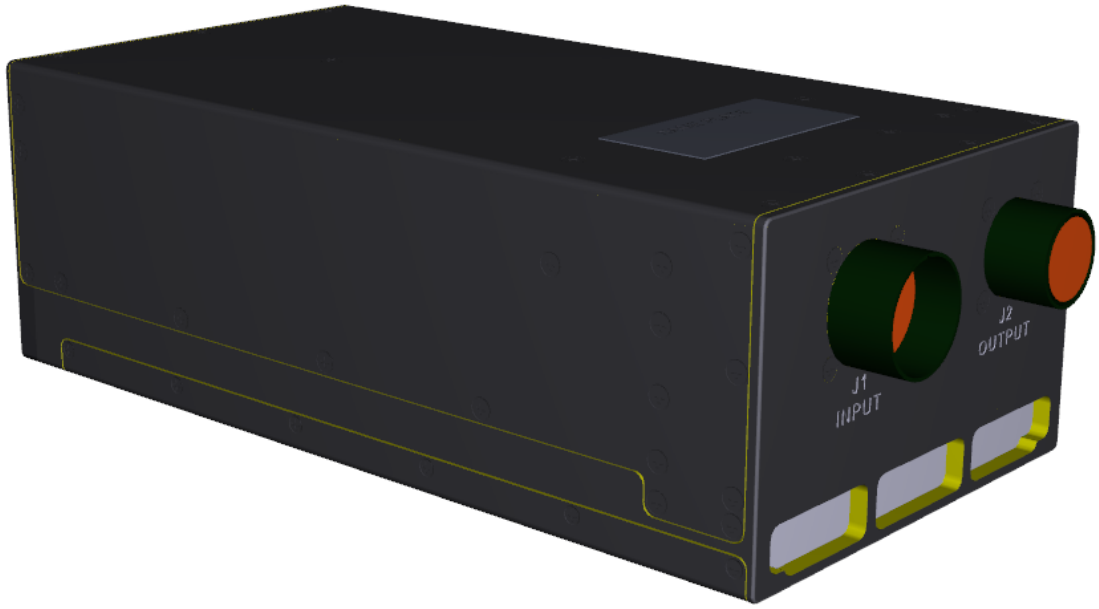
M7032-101

28VDC to 115VAC/400Hz, 750W Inverter

The M7032-101 is a mechanically robust, self-cooled (internal fan), low-weight, high performance DC to AC Inverter, designed for rotary-wing aircraft and high reliability airborne applications. The M7032 converts 28VDC (MIL-STD-704F) to a well-regulated and protected, low-distortion 115VAC 400Hz Sine-wave.



Key features:

- Self-cooled unit. Cooling air confined to a close-channel heatsink.
- Wide operating temperature range (-55°C to +71°C ambient).
- Complies with MIL-STD-704F (28VDC) and MIL-STD-461G.
- Reliably withstands Rotary-wing high-level induced vibration.
- Low weight, 7.3 pounds.
- Clean, low-distortion sine-wave output, even with non-linear load.
- High Efficiency, 88% at full load.
- Enable input, AC-Good and Over temperature output signals.
- Line-contactor's drive output.
- Overtemperature, Overload, Over/Under-voltage and Over/Under-frequency protections.
- Full galvanic isolation between Input, Chassis and Output.
- MIL-DTL-38999 Connectors.
- J-STD-001B and IPC-610A Class-3 workmanship.
- Conformal Coating per MIL-I-46058C and IPC-CC-830.

Specifications:

DC Input	28VDC per MIL-STD-704F Extended steady-state operating range of 19VDC to 33VDC Full performances during Normal Transient per MIL-STD-704F, Figure 13. No damage during Abnormal Over/Under voltage per MIL-STD-704F, Figure 14.		
AC Output	***Voltage***	115VAC ±1%	From No-load to Full-load, over the entire DC Input voltage range and all environmental conditions.
	Frequency	400 ±1 Hz	
	Rating	750W/1000VA continuous, 1KW (Overload) for 5 seconds.	
	Short Circuit Current	11.5±1 Amp RMS for 6±1 seconds	
	Peak Current Capability	15Amp (Crest Factor of 2.3 at 750VA).	
	Distortions	<0.5% with linear load. <3% with non-linear load (see Fig 1)	
	Overload Protection	When overloaded (>1KW) or shorted, will continue to operate for 6±1 seconds and then shutdown. Toggling the Enable input, or recycling the DC input will reset the output.	
	Voltage/Frequency Protections	AC Output is protected from Over-voltage, Under-voltage, Over-frequency and Under-frequency.	
	Fault Clearing	Toggling the Enable input, or recycling the DC input will reset (clear) all faults.	
	Over-temperature Protection	Automatic shutdown with auto-recovery .	
Efficiency	>85% at full load (750W) and any DC Input voltage between 19 to at 33VDC		
Isolation	AC Output is isolated (>20MΩ/500VDC) from DC Input, Chassis GND and all other signals. DC Input is isolated (>20MΩ/100VDC) from Chassis GND. The AC-Good and Overtemp Signals are Isolated (>20MΩ/100VDC) from Chassis GND and all other signals. The Enable Input and Line-contactor Drive refer to the 28V RTN Input.		
EMI **MIL-STD-461G**	CE102, CS101 CS114 (Curve #5,10 kHz to 200 MHz), CS115, CS116, CS117 (All Equipment Installation, Internal), CS118, RE102, RS101 and RS103 (2MHz-18GHz, 200 V/m, 18GHz-40GHz, 60 V/m).		

Specifications (Cont.):

Control & Indications	***Enable Input***	Short (V<5V @ 1mA) to the 28VDC RTN enables the AC Output. Open (I<0.05mA) disables the AC Output. Internally limited to 15VDC.
	AC- Good Output	Opto-isolated (open-collector) BIT signal. Active low (V<0.8V @ 1mA) indicates that the AC output voltage and frequency are within limits. Open (I<0.05mA @ 5V) indicates a fault.
	Over-temp. Output	Opto-isolated (open-collector) signal. Normally Open (I<0.05mA @ 5V). Active low (V<0.8V @ 1mA) indicates an Over-temp condition.
	Line-contactor Drive Output	A 28VDC/0.5Amp drive for an external (optional) Line-contactor. Activated only when the AC output voltage and frequency are stable and within range. In case of an AC Overload, remains active (to allow fault clearing).
Environment	***Ambient Temperature***	**Not Operating**: -57°C to +85°C **Operating** (Full performances): -55°C to +71°C.
	Altitude	**Not Operating**: Up to 40,000 ft (transportation) **Operating** (Full performances): Up to 20,000 ft.
	Humidity	MIL-STD-810H, Method 507.6, Proc. II (Aggravated)
	Explosive Atmosphere	MIL-STD-810H, Method 511.7 Proc. I
	Salt Fog	MIL-STD-810H, Method 509.7
	Sand and Dust	MIL-STD-810H, Method 510.7, Proc. I (Blowing Dust)
	Mechanical Shock	MIL-STD-810H, Method 516.8, SRS per Figure 516.8, Proc I (Functional) and Proc V (Crash Hazard), Flight Equipment.
	Vibration	MIL-STD-810H, Method 514.8, Proc I, Cat 14 (Rotary wing aircraft) Sine-on-Random, General.
	Acceleration	MIL-STD-810H, Method 513.8, Proc II (Operational), 6G all directions.
	Contamination by Fluids	MIL-STD-810H, Method 504.3 (Exposure a. Occasional Contamination). **1) Lubricating oils synthetic, aircraft turbine engines, transmissions NATO O-156** **2) Aircraft cleaners, Ground equipment, Aircraft interior/exterior MIL-PRF-87937** **3) De-icer, Ethylene or Propylene Glycol mixtures.** **4) Aviation turbine fuels, Kerosene, JP-8 (NATO 504.3).**
	Fungus	Does not support fungus growth, in accordance with the guidelines of MIL-STD-454, Requirement 4.
Reliability	MTBF >20,000 at +71°C and A_{RW} Environment (MIL-HDBK-217F)	
Weight	Less than 7.5 Lbs.	

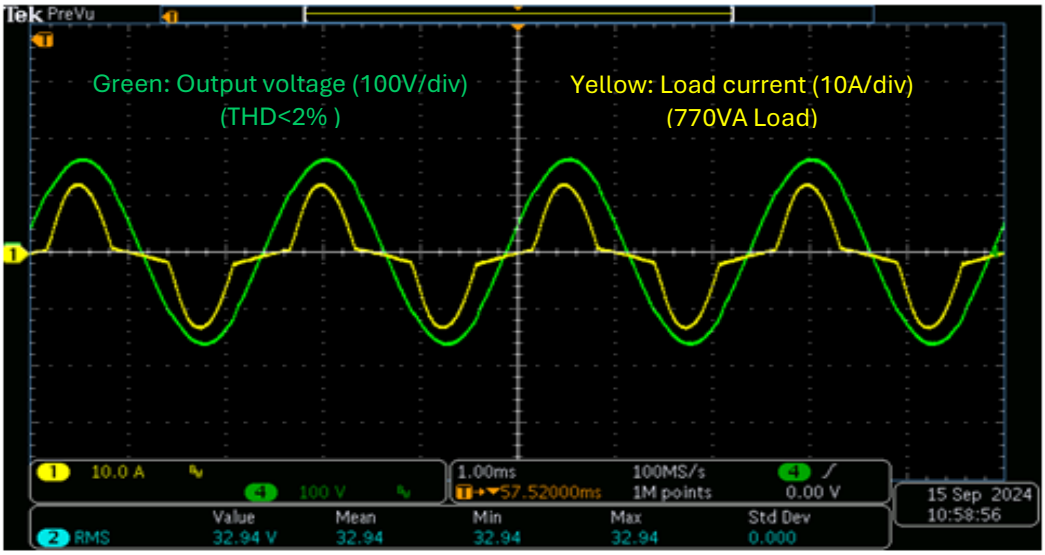


Figure 1: Output waveform with Non-Linear Load

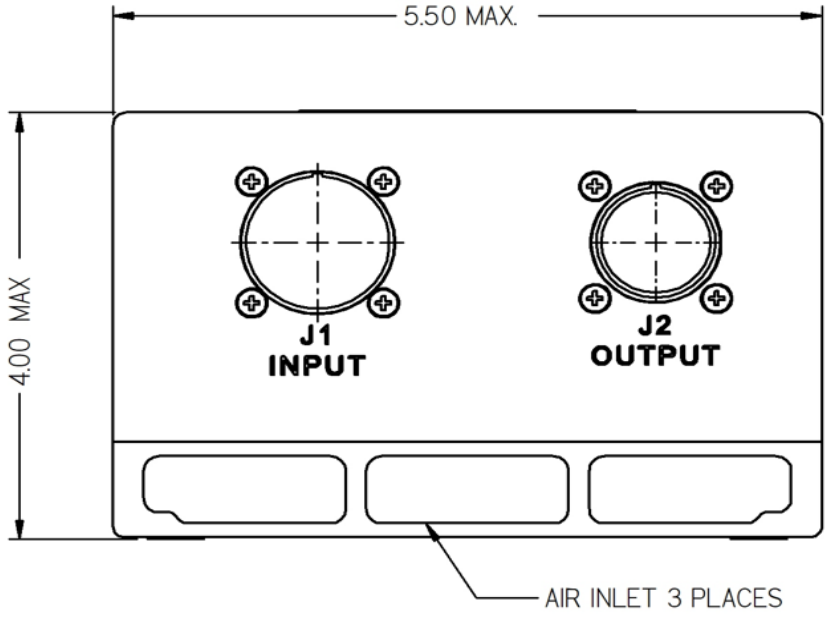


Figure 2: Front Panel View

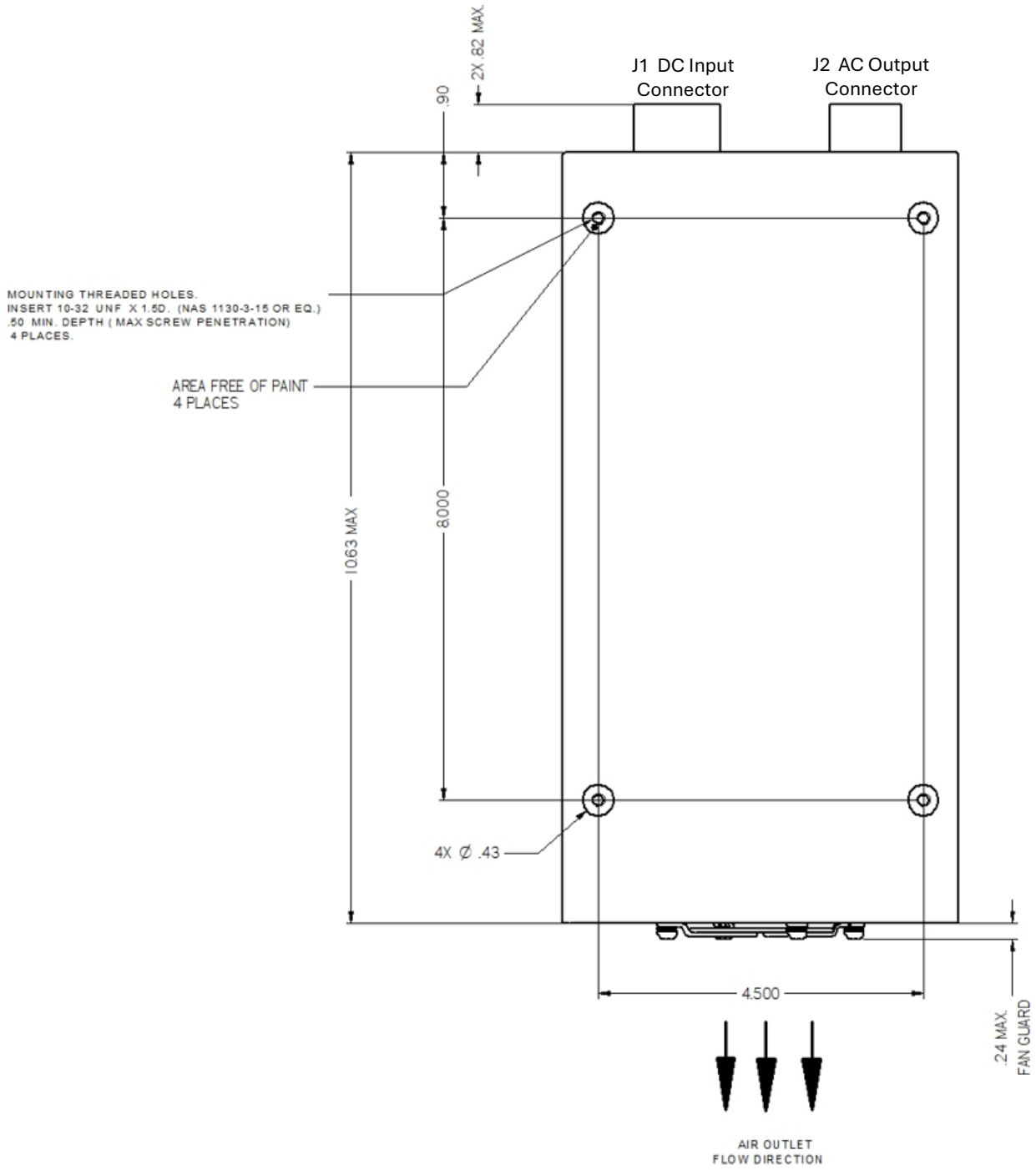


Figure 3: Bottom View

I/O Connectors and Pin-out

J1 DC Input D38999/20WE6PN			
#	Name	I/O	AWG
A	28V RTN	I	#12
B	28V RTN	I	#12
C	N.C.	N/A	#12
D	28VDC	I	#12
E	28VDC	I	#12
F	N.C	N/A	#12

J2 AC Output D38999/20WD18SN				
#	Name	I/O	AWG	Notes
A	**115VAC Phase**	O	#20	
B	Reserved	N/A	#20	
C	Reserved	N/A	#20	
D	**115VAC Neut**	O	#20	
E	Reserved	N/A	#20	
F	Chassis GND	O/I	#20	
G	Enable RTN	I	#20	Internally connected to 28V RTN
H	Over-temp	O	#20	
J	SIG RTN	O	#20	Return signal for Over-temp and AC-Good
K	AC-Good	O	#20	
L	**115VAC Phase**	O	#20	
M	Line-contactor Drive	O	#20	28VDC drive to the high-side of the relay's coil. Connect the low-side to 28V RTN.
N	Reserved	N/A	#20	
P	Reserved	N/A	#20	
R	**115VAC Neut**	O	#20	
S	Enable	I	#20	
T	Reserved	N/A	#20	
U	Reserved	N/A	#20	