



NOVA ELECTRIC



POPULAR OPTIONS

- Ruggedization Against High Shock, Vibration And Humidity
- MS Connector Mates
- 19" Rack Mounting Kit
- Wall Mount Plate
- External Transfer Switch
- Custom Enclosures
- Custom Markings
- Power Distribution Units (PDUs)
- Environmental Stress Screening Services

CONTACT

100 School Street,
Bergenfield, NJ 07621 USA
(201) 385-0500
novaelectric.com
info@novaelectric.com



NGL Series RTCA/DO-160 Qualified 4.5 KVA / 4 KW 270 VDC Nominal Input Pure Sine Wave DC-AC Inverters



GENERAL OVERVIEW

Nova's Lightweight NGL-Series DC-AC Inverters are high-reliability power sources specifically designed for demanding applications in extreme shock, vibration, humidity, temperature and EMI environments in compliance to RTCA/DO-160 Environmental and MIL-STD-461F EMI standards. This unit's compact freestanding chassis measures 7" high x 8" wide x 14.77" deep, and weighs only 25.7 pounds. It features an aircraft power input of 270 VDC nominal, and an output of 120 VAC, 60 hz, single-phase, 4.5 KVA / 4 KW. Other voltages and frequencies are available optionally. Flexible design architecture allows this unit to be tailored to many different types of applications, including:

- Military Applications: Including Aircraft, UAV, Submarine, HMMWV, Shipboard, Mobile Power Units, Shelters, Transportable Systems, Tactical Systems, Ground Support, and more.
- Heavy-Duty Industrial Applications
- Demanding Commercial Applications
- Communications Systems

Combining 3 inverters to form a 3 phase power system is optional. In this configuration, a 3 phase and neutral line is generated with precise synchronization.



The Leader In Rugged Power Conversion Technology Since 1966

Some optional equipment shown. Specifications subject to change without notice.



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SPECIFICATIONS

Electrical

INPUT VOLTAGE	270 VDC Nominal, 250-280 VDC Operating Range (Other Ranges Available)
OUTPUT VOLTAGE	120 VAC (115 And 230 VAC Optional)
FREQUENCY	50 / 60 / 400 Hz. Available
VOLTAGE REGULATION	± 2% NL to FL
FREQUENCY REGULATION	± 0.5% NL to FL
HARMONIC DISTORTION	5% THD, 3% Typical
REACTIVE LOAD	0.75 Lead to 0.75 Lag
EFFICIENCY AT FULL LOAD	85% @ Full Load Typical
CONNECTIONS	MS Connector (Mates Opt.)

Standards Indicators

OVER TEMPERATURE (RED)
OVERLOAD (RED)
OUTPUT ON (GREEN)
SUMMARY FAULT (RED)

Protective Features

OVERLOAD
THERMAL
INPUT UNDERVOLTAGE
INPUT OVERVOLTAGE PROTECTED

Environmental

OPERATING TEMP.	-20° to +55°C (Extended Ranges Optional) Per RTCA/DO-160G Section 4.5.1-4.5.4, Category AI
STORAGE TEMP. RANGE	-55° to +85°C Per RTCA/DO-160G Section 4.5.1-4.5.4, Category AI
HUMIDITY	To 95% (+/-4%) RH Non-condensing Per IAW RTCA/DO-160G Section 6, Category A. All Boards Conformal Coated With Acrylic MIL-I-46058 Type R.
ALTITUDE	To 15,000 Ft. (4,572m) Operating Per RTCA/ DO-160G, Section 4.6.1, Category AI - 40,000 ft. (12,192m) Non-operating
FUNCTIONAL SHOCK	Per RTCA/DO-160G Section 7.2.1
CRASH SHOCK	Per RTCA/DO-160G Section 7.3.1
AUDIBLE NOISE	Less Than 55 dbA At 5 ft.
MTBF	100,000+ Hours Per Field Data @ +25C Ambient Ground-Fixed
MTTR	30 Minutes By Qualified Personnel

Standard Remote Contacts / Communications

ALARM CONTACTS (OT, OL, REMOTE ON/OFF, AND SUMMARY FAULT)
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PARTIAL STANDARD PRODUCT LISTING

MODELS	OUTPUT VAC	OUTPUT FREQ. (Hz)	CONT. OUTPUT POWER	WEIGHT (LB)	SIZE IN. (H x W x L)
60 HZ MODELS					
NGL4.5K60-270-120	120	60	4.5 KVA / 4 KW	25.7	7 x 8 x 14.77
50 HZ MODELS					
NGL4.5K50-270-220	220	50	4.5 KVA / 4 KW	25.7	7 x 8 x 14.77
400 HZ MODELS					
NGL4.5K400-270-115	115	400	4.5 KVA / 4 KW	25.7	7 x 8 x 14.77

PARTIAL THREE PHASE MODEL SELECTION LOWER CAPACITIES AVAILABLE - CONSULT FACTORY

3 PHASE MODELS	OUTPUT VAC	OUTPUT FREQ. (Hz)	CONT. OUTPUT POWER	APPROX. WEIGHT (LB)	SIZE IN. (H x W x L)
NGL13.5K3/6-270	120/208	60	13.5 KVA / 12 KW	C/F	C/F
NGL13.5K3/5-270	220/380	50	13.5 KVA / 12 KW	C/F	C/F
NGL13.5K3/4-270	115/200	400	13.5 KVA / 12 KW	C/F	C/F

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SYSTEM COMPLIANCE

Environmental: The Inverter was Environmentally Tested per RTCA/DO-160G for the following: Operational Temp / Storage Temp / Temp Variation, Altitude, Decompression, Humidity, Acceleration, Vibration, Functional Shock, and Crash Safety Shock.

Additional Ruggedization to meet RTCA/DO-160 Environmental Standards:

The Inverter's construction is extremely robust, and ruggedized throughout. All components and modules within the unit are mounted using additional steel brackets and heavy-duty stainless-steel hardware, which is then further secured using Loctite and RTV where required. All boards are conformal-coated (Acrylic MIL-I-46058 Type R) for maximum resistance to potential condensation and fungus growth.

Temperature

- Operating: -15°C to +55°C (-5°F to +131°F)
- Non-Operating/Storage: -55°C to +85°C (-67°F to +185°F)
- Test IAW RTCA/DO-160G Section 4.5.1-4.5.4, Category A1

Temperature Variation

- 2°C per minute rate
- -15°C to +55°C
- Test IAW RTCA/DO-160G Section 5, Category C
(For equipment in a temperature-controlled internal section of the aircraft)

Altitude

- 15,000 ft
- Test IAW RTCA/DO-160G, Section 4.6.1, Category A1

Decompression

- Decompression altitudes from 8,000 ft to 45,000 ft in 15 seconds
- Test IAW RTCA/DO-160G Section 4.6.2, Category A1

Humidity

- 95±4% RH at 50±2°C
- Test IAW RTCA/DO-160G Section 6, Category A

Sustained Acceleration Loads

Limit Loads: The Inverter shall perform as specified when subjected to the following sustained acceleration limit load conditions:

- 4.68 G in all orientations per RTCA/DO-160G Section 7.3.3

Ultimate Loads: The Inverter shall withstand the following sustained acceleration ultimate conditions:

- 9 G in all orientations per RTCA/DO-160G Section 7.3.3

Operational Vibration

- Test IAW RTCA/DO-160G Section 8, Table 8-1, Category S, Curve C
- Fixed Wing, 1 Hr/Axis Random Vibration at Performance Level.

Operational Shock

- Functional Shock, terminal peak saw tooth, A=6.0 G, D=11 ms, 3 pulses in each direction of the three orthogonal axes for a total of 18 pulses
- Test IAW RTCA/DO-160G Section 7.2.1

Crash Shock

- Crash Hazard, terminal peak saw tooth, A=20.0 G, D=11 ms, 1 pulse in each direction of the three orthogonal axes for a total of 6 pulses
- Test IAW RTCA/DO-160G Section 7.3.1

Internal EMI Reduction Package to meet

MIL-STD-461 and RCTA/DO-160G: The design of this unit is specifically focused on reducing EMI emissions. The Inverter contains substantial internal filtering to minimize EMI emissions. Inputs which may be susceptible to transients are protected by several methods. The compact chassis is specifically treated with low surface resistivity finishes on the interior. All aluminum parts are treated with clear irridite. The steel parts are treated with zinc plate, followed by a clear chromate. Paint method is designed to assure excellent bonding of mating sheet metal parts. All input and output ventilation filters include mesh filters.

MIL-STD-461F (using Fixed Wing Internal limits specified in each test, as appropriate): CE102, RE102, CS101, CS114, CS115, CS116, RS103

RTCA/DO-160G: Section 21, Category M Radio Frequency (RF) Energy Emission Requirements and Section 25, Category A Electrostatic Discharge (ESD) Requirements.

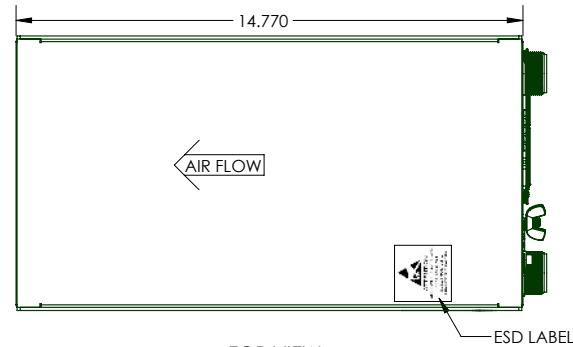


Front View

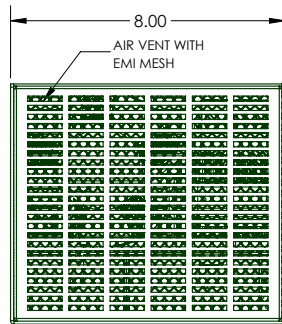
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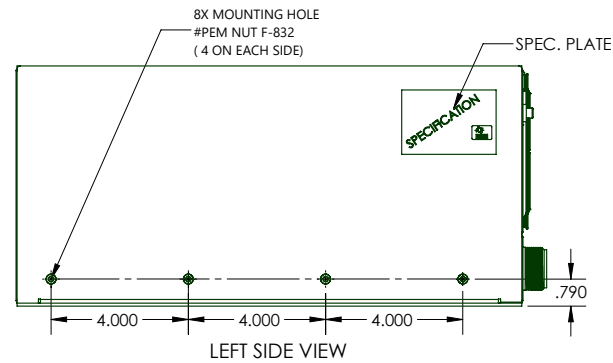
NGL SERIES MIL-QUALIFIED 4.5 KVA 270 VDC NOMINAL INPUT PURE SINE WAVE DC-AC INVERTER OUTLINE DRAWING



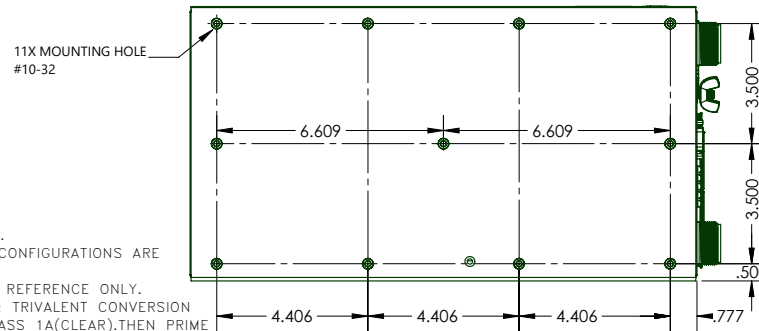
TOP VIEW



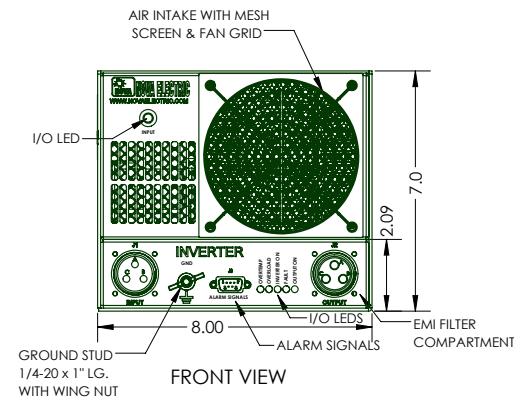
REAR VIEW



LEFT SIDE VIEW



BOTTOM VIEW



FRONT VIEW

CONNECTOR PIN DESIGNATIONS

J3 ALARM SIGNAL

DB9-S
1
2
3
4
5
6
7
8
9

J1 DC INPUT

MS3102R20-19P	
A	DC+
B	DC-
C	GROUND

J2 AC OUTPUT

MS3102R20-19S	
A	LINE
B	NEUTRAL
C	GROUND

- NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
 2. ALL UNDIMENSIONED PICTORIAL CONFIGURATIONS ARE FOR REFERENCE ONLY.
 3. FRONT AND REAR MASKING FOR REFERENCE ONLY.
 4. FRONT AND REAR PANEL FINISH: TRIVALENT CONVERSION AS PER MIL-DTL-5541, TYP II, CLASS 1A (CLEAR), THEN PRIME & PAINT. FRONT SURFACE AND ALL EDGES—BLACK SEMI-GLOSS #27308 AS PER FED-STD-595B MEDIUM TEXTURE. ALL OTHER SURFACE ARE IRRIDATED (ALUMINIUM)
 5. SILK-SCREENED IN WHITE EPOXY INK.
 6. APPROXIMATE : 26.0 LBS MAX.

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TOLERANCES UNLESS OTHERWISE SPECIFIED	NOVA ELECTRIC A DIV. OF TECHNOLOGY DYNAMICS INC. 100 SCHOOL STREET BERGENFIELD, N.J. 07621-2915												
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Registered
to ISO 9001



RUGGED AC POWER SYSTEMS



SELECT UNITS QUALIFIED TO MIL-STD-810, MIL-S-901, MIL-STD-1399, MIL-STD-461, MIL-STD-167, MIL-STD-740, RTCA/DO-160, AND MORE

RUGGED TRUE ONLINE UPS



500 W – 500+ KW

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

50, 60, and 400 Hz.

PURE SINEWAVE DC-AC INVERTERS



100 W – 500+ KW

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

50, 60, and 400 Hz.

SOLID-STATE FREQUENCY CONVERTERS



100 W – 500+ KW

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

50, 60, and 400 Hz.

POWER DISTRIBUTION UNITS (PDUs)



Basic, Switched, Auto-Transfer Switching, and Metered Configurations

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

CUSTOM EMI FILTERS



For MIL-STD-461 Compliance

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

RUGGED PORTABLE TRANSFORMERS



100 W – 500+ KW

Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

EXTERNAL MAINTENANCE BYPASS SWITCHES (MBSSs)



Rack Mount, Bulkhead Mount, and Freestanding

Single and Three Phase

CUSTOM DESIGNS



Designed & Built to Spec

Integrated AC & DC Capabilities

Multiple Outputs

RELIABLE AC POWER WHEN AND WHERE YOU NEED IT SEVERE ENVIRONMENT PRODUCTS



- AIRBORNE
- SHIPBOARD
- MOBILE
- RACK MOUNT & FREESTANDING

- 50, 60, AND 400 Hz
- AIR & WATER COOLED
- SINGLE AND THREE PHASE
- LIGHTWEIGHT DESIGNS

