



# NAVY GALAXY SERIES 5 KVA RUGGED TRUE ONLINE UPS

Power Factor Corrected & Galvanically Isolated

*Fully Qualified to MIL-STD-1399, MIL-STD-461, MIL-S-901,  
MIL-STD-810, and MIL-STD-740*



**These units are suitable for applications such as:**

- *Submarine Applications*
- *Shipboard Applications*
- *Ground Support*
- *Airborne Applications*
- *Mobile Systems*
- *Military Ground Vehicles*
- *Tactical Systems*
- *Military Shelters*



NOVA ELECTRIC



## POPULAR OPTIONS

- Power Distribution Units
- MS Connector Mates and Multiple Output Outlets
- Chassis Slide Guides
- Internal Transfer Switch
- Custom Enclosures
- Additional Run Time via External Batteries
- 400 Hz Input and / or Output
- CAD Free Connectors
- Non-PVC wiring
- 28 VDC Input
- High IP Protection for Front / Rear Panels
- AUX DC Outputs
- Environmental Stress Screening Services

## CONTACT

100 School Street,  
Bergenfield, NJ 07621 USA

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# NAVY GALAXY SERIES

*Rugged True Online UPS*

## GENERAL OVERVIEW

This rugged UPS is specifically designed for submarine and shipboard applications in compliance to MIL-STD-1399, MIL-STD-461, MIL-S-901, MIL-STD-810, and MIL-STD-740. It provides very high quality pure sinewave output (2% THD) and is capable of driving non-linear loads such as non-PFC Switching Power Supplies.

## SPECIFICATIONS

### Electrical

<b>OPTIONAL INPUT VOLTAGES AVAILABLE (SELECT)</b>	115 VAC L-L, 50/60 Hz per MIL-STD-1399 Section 300 Type I (Other Voltages Available Optionally)
<b>OPTIONAL INPUT FREQUENCIES AVAILABLE (SPECIFY)</b>	50, 60 or 400 Hz
<b>OPTIONAL OUTPUT VOLTAGES AVAILABLE (SPECIFY)</b>	115, 120, 208, 220, 230, or 240 VAC 1Ø
<b>OUTPUT FREQUENCY (SPECIFY)</b>	50, 60 or 400Hz
<b>VOLTAGE REGULATION</b>	± 2% NL to FL
<b>FREQUENCY REGULATION</b>	0.1%
<b>HARMONIC DISTORTION</b>	2% THD Typical 5% Max
<b>INPUT POWER FACTOR</b>	0.99
<b>EFFICIENCY AT FULL LOAD</b>	82% Typical
<b>OVERLOAD</b>	125% for 5 Minutes

### Environmental

<b>OPERATING TEMP</b>	-20 to +50°C per MIL-STD-810D
<b>STORAGE TEMP RANGE</b>	-30° to +60°C
<b>HUMIDITY</b>	to 95% Non-Condensing
<b>ELEVATION</b>	Operating: 15,000 Ft. (4,572 m)  Non-Operating: 40,000 Ft. (12,192 m)
<b>AUDIBLE NOISE</b>	Less than 55 dbA at 5 ft.
<b>COOLING</b>	Forced air (Exhaust at Rear) Airflow 200 CFM Maximum
<b>EMI</b>	per MIL-STD-461B/E
<b>VIBRATION</b>	per IEC 68-2-6 Type I
<b>SHOCK</b>	20g for 20ms Half Sinewave per MIL-STD-901C Grade A
<b>STRUCTUREBORNE NOISE</b>	MIL-STD-740B Grade A
<b>MTBF</b>	30,000 Hours
<b>MTTR</b>	30 Minutes

### Protective Features

<b>AC &amp; DC INPUT CIRCUIT BREAKERS</b>
<b>LOW BATTERY SHUT OFF</b>
<b>OVERLOAD</b>
<b>THERMAL PROTECTION</b>
<b>EPO</b>
<b>AUDIBLE ALARM WITH SILENCE SWITCH</b>

### External Batteries

External 96 VDC nominal rack mount battery drawer (3.5" High x 19" Wide x 24.125" Deep / 120 Pounds) containing sealed maintenance-free, user-replaceable premium wide-temp batteries rated for 8-10 years lifetime. Additional run time available optionally.

### Alarms & Diagnostics

<b>SYSTEM STATUS</b>	Green / Red
<b>UTILITY OFF</b>	Red
<b>UPS OFF</b>	Red
<b>LOW BATTERY</b>	Red
<b>LOGIC FAULT</b>	Red
<b>UPS OVERLOAD</b>	Red
<b>OVER TEMP.</b>	Red
<b>LOAD ON UTILITY</b>	Red with XFR SW Option
<b>ALARM CONTACTS</b>	Standard
<b>RS 232 OR SNMP</b>	Optional

MODEL	KVA / KW	INPUT	OUTPUT	UPS LBS	RUNTIME	BATTERY LBS
NGRS11-5K60-115(D)-115	5 / 2.5	115VAC L-L	115VAC	125	10 Min	120 lbs



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## SYSTEM COMPLIANCE

**MIL-STD-1399 Section 300B:** For Type I apparatus

**Additional Ruggedization to meet MIL-STD-901 and MIL-STD-810:** This true online UPS System'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.

**MIL-STD-901C for Grade A, Class II Equipment:** Shock test with half sinewave, 20ms duration, 15g peak acceleration shock pulse.

**IEC 68-2-6 for Type I Testing:** Between 3-10 Hz amplitude to be 0.5mm. Between 10-50Hz acceleration to be 2 m/s<sup>2</sup>

**MIL-STD-810D:** Operating Temperature Tests including High Temperature Test per Procedure II, Method 501.2, Table 501.2-II Ambient Air, 4 Cycles @ 24 Hours per cycle, Low Temperature Test per Procedure II, Method 505.2, Table 505.2-I Region CO, 4 Cycles @ 24 Hours per cycle, and Temperature Shock Test per Procedure I, Method 503.2, between 0-40 degrees Celsius, 4 Cycles @ 24 Hours per cycle.

**MIL-STD-740B for Grade A Type III Equipment:** Structureborne and Airborne Noise

**Internal EMI Reduction Package to meet MIL-STD-461:** The design of this true online UPS system is specifically focused on reducing EMI emissions. The true online UPS contains substantial internal filtering to minimize EMI emissions. Inputs which may be susceptible to transients are protected by several methods, including MOVs. All internal magnetics are shielded with copper and mu-metal to further minimize emissions. The compact rack mount 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. All exterior portions (except for mating surfaces) are then painted with glossy ANSI-61 gray to assure excellent bonding of mating sheet metal parts. All input and output ventilation filters include metal honeycomb-style filters.

**MIL-STD-461B Part VI for EMI Class A5:** CE01, CE03, CS01, CS02, CS06, CS09, RE01, RE02, RS01, RS02, RS03.

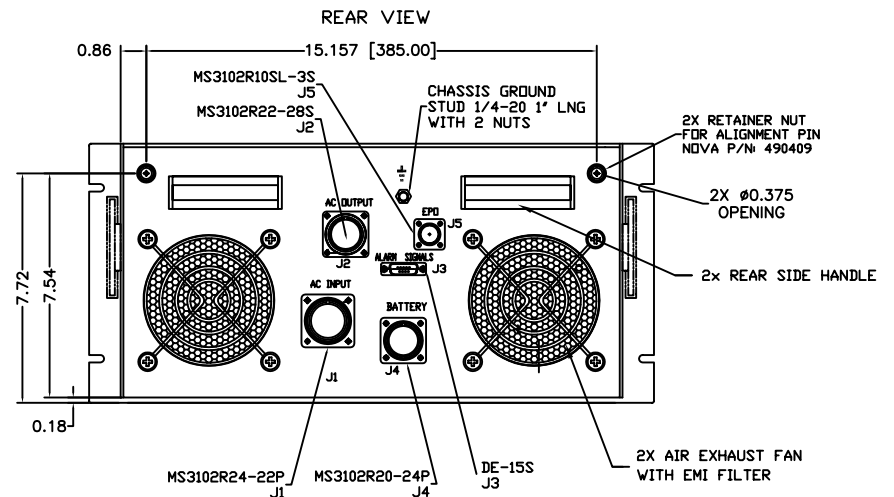
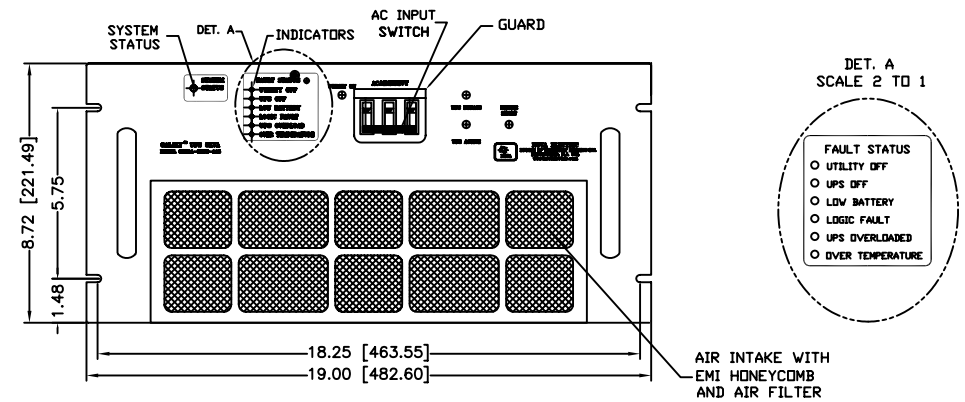
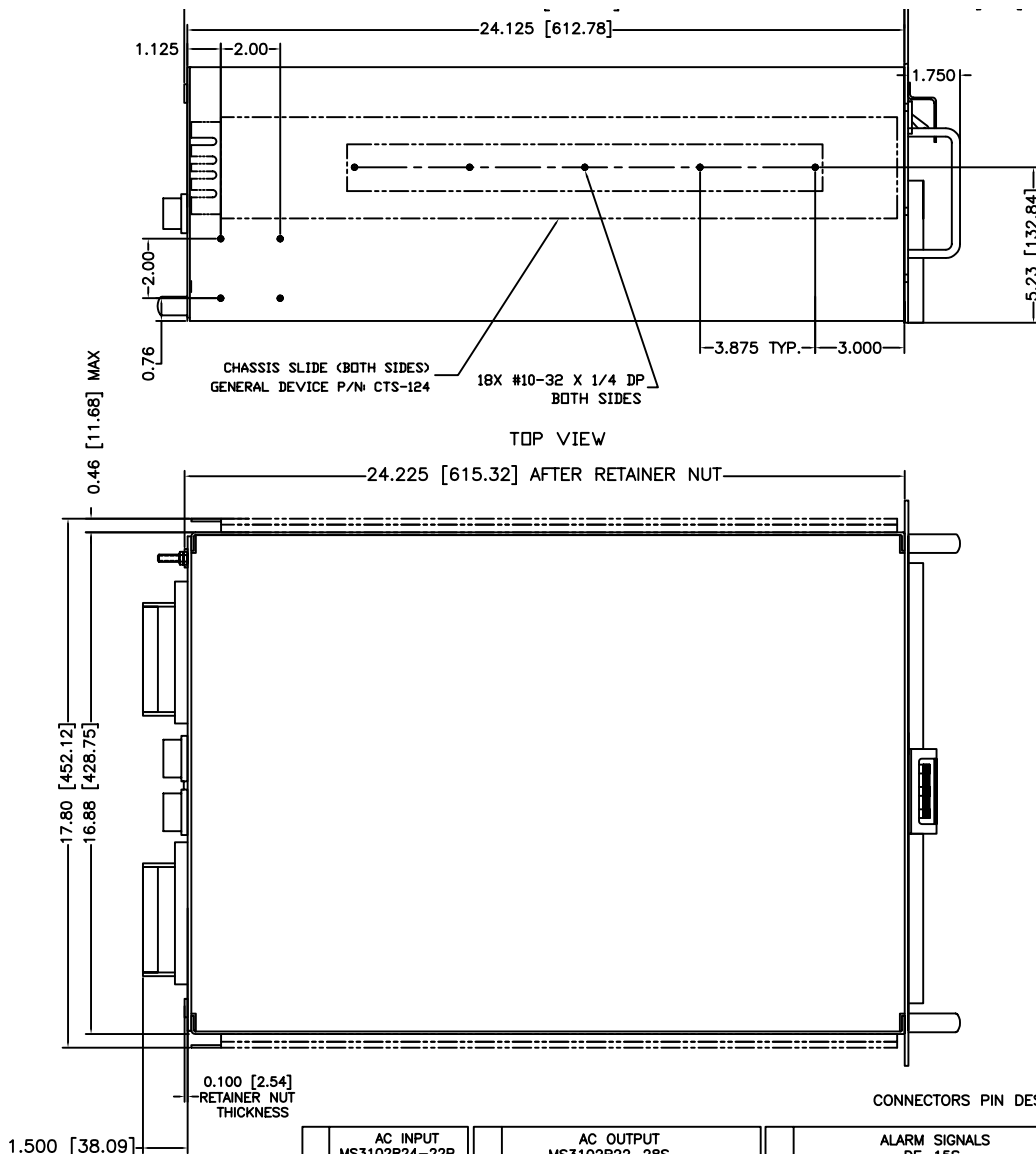
**Super-Rugged, Long Life Hawker Energy Batteries:** Internal Hawker Energy sealed, maintenance free batteries provide 10 minutes back up time at full load. These batteries are extremely resistant to shock, vibration, and wide temperature ranges. Also, they have a very long service life (8-10 years measured at 25 degrees Celsius ambient temperature) for a minimum of maintenance. The batteries are user replaceable.

**Pressure Tests for Submarine Usage:** The Navy Galaxy Series true online UPS System was tested to atmospheric pressure within the range of 750-1250 millibars, and maintained standard operation to specification to the following test pressures for 1 hour:

250 millibars above ambient (*applied within 30 seconds and released within 30 seconds*)

250 millibars below ambient (*applied within 30 seconds and released within 30 seconds*)

Ambient pressure of 1000 millibars



#### CONNECTORS PIN DESIGNATION

AC INPUT MS3102R24-22P	
PIN A	PHASE A
PIN B	PHASE B
PIN C	PHASE C
PIN D	GND

AC OUTPUT MS3102R22-28S	
PIN	DESCRIPTION
A	AC OUTPUT LOAD 1
B	LOAD 1 RETURN
C	AC OUTPUT LOAD 2
D	LOAD 2 RETURN
E	AC OUTPUT LOAD 3
F	LOAD 3 RETURN
G	SAFETY GROUND

ALARM SIGNALS DE-15S	
PIN	DESCRIPTION
1 & 2	SHORT FOR EPO
3 & 4	SHORT WHEN OVERHEAT
5 & 6	SHORT FOR BATTERY SHORT
7 & 8	SHORT FOR BATTERY LOW
9 & 10	SHORT IF AC INPUT FAILS
11 & 12	SHORT WHEN OVERLOAD
13 & 14	SHORT WHEN OUTPUT ON TRANSFER

BATTERY MS3102R20-24P	
PIN A	TEMP SENSE
PIN B	BATTERY +
PIN C	TEMP SENSE
PIN D	BATTERY -

EPO MS3102R10SL-3S	
PIN A	+ PULSE
PIN B	RET
PIN C	

#### NOTES:

- FRONT PANEL COLOR ANSI #61 GRAY SEMI-GLOSS. ALL OTHER SURFACES ARE IRRIDATED.
- ESTIMATED WEIGHT - 125 LBS.

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TITLE: NGRS11- 5K60-115(D)-120 5KVA UPS OUTLINE DWG		REV. -	
DATE: 04/28/04	DATE: 04/28/04	SIZE: D	980986
APPROVED: AL	DATE: 04/28/04	SCALE: 1/1   CAGE: 29019   SHEET 1 OF 1	







# 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

