

POWER CONVERSION



ADVANCED POWER SYSTEMS

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Aerosphere
Power &
Navigation™

POWER SYSTEMS & INERTIAL NAVIGATION PRODUCTS



Aerosphere Power & Navigation

Aerosphere Power & Navigation (APN) is a aerospace and defense technology provider delivering mission-critical power conversion, navigation, and sensing solutions for customers operating across land, sea, air, and space. Our systems support some of the world's most demanding applications—where reliability, precision, and performance are non-negotiable.

APN was established as a standalone operating unit within Velocity One through the strategic combination of two highly complementary technology portfolios: the Power Conversion product line from Cartridge Actuated Devices and EMCORE's Space & Navigation division. By bringing these capabilities together under a single organization, APN was created to provide customers with a more focused, agile partner capable of delivering integrated solutions for complex aerospace and defense systems.

➔ Our Core Values

- **Trust & Integrity:** We operate with unwavering transparency and ethical conduct, building lasting relationships through reliability and moral accountability.
- **Customer Focus:** We prioritize our customers by actively listening and delivering tailored solutions that exceed their expectations.
- **Quality:** Our commitment to rigorous quality standards ensures every product and process reflects excellence and earns lasting trust.
- **Precision Engineering:** We apply meticulous attention to detail and cutting-edge technology to deliver high-performance, enduring solutions.
- **Innovation:** We foster a culture of curiosity and collaboration that drives breakthrough ideas and continuous advancement.

➔ Get in Touch

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information



High-Reliability Power Systems. Custom-Engineered. Performance-Driven.

A LEADER IN THE DESIGN, TEST, AND
MANUFACTURING OF AEROSPACE
ELECTRICAL POWER SYSTEMS



Power System Solutions

Aerosphere Power & Navigation (APN) delivers high-reliability power conversion technologies designed for aerospace, defense, and mission-critical platforms. Our power systems convert, regulate, and distribute electrical energy with the precision and reliability required for modern aircraft and demanding operating environments.

Key Markets

Engineered for performance in harsh conditions, Aerosphere Power & Navigation power systems support:

- ✓ Military
- ✓ Commercial Aviation
- ✓ Special Mission
- ✓ Medical Air Transport
- ✓ Business Aviation
- ✓ Custom Designs



Commercial Aviation

Commercial aerospace power conversion and static inverters deliver stable, reliable power for aircraft systems and avionics.



Medical Air Transport

Delivers reliable power for critical care systems and life-saving medical equipment in flight.



Military Transport

Ensures dependable power for transport aircraft systems and mission-critical operations.



Military & Civil Rotorcraft

Provides stable, high-reliability power for rotorcraft avionics and mission systems.



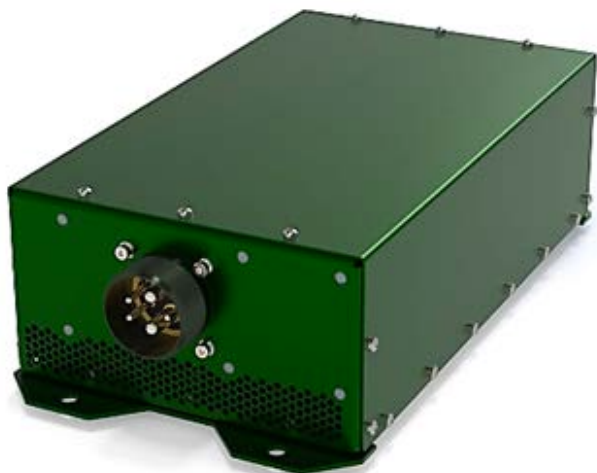


STATIC INVERTER 60Hz

500VA to 1200VA
28VDC → 115VAC
60Hz

Input Voltage

Nominal: 28VDC
Normal: 22-30.3VDC
Abnormal: 20.5-36.4VDC
Emergency: 18V



Output Characteristics

Single phase, 115VAC $\pm 3\%$, 60Hz ± 0.5 Hz
Power: 1200 VA continuous
1320 VA continuous @Sea Level
Overload: 1800 VA for 5 minutes
Power factor: > 0.75
Power quality: per MIL-STD-704F
Waveform: true sinewave, THD: $< 0.5\%$
Efficiency: 92% at nominal power

Environmental

Altitude: 55,000ft
Ambient Temperature: -55°C to 71°C
Temperature shock
Humidity: 10 days @ 95%
Vibration, Shock
Emission of RF Energy
Induced lightning transients
Flammability

Dimensions & Weights

10.6" $\times$ 6.34" $\times$ 3.5" (L $\times$ W $\times$ H)
6.25 lbs max (2.83 kgs)

Reliability, MTBF

$> 20,000$ HRS



Electrical Interface

MS3102A24-12P
Includes Remote ON/OFF



Protection

Output overvoltage & under voltage
Output over-frequency (> 65 Hz)
Output under-frequency (< 55 Hz)
Overload (> 7 sec)
Internal overtemperature



Qualification & Certification

RTCA DO-160G
FAA TSO-C73



60Hz Static Inverter: Competitive Performance Comparison

	APN	Company A	Company B
Input Voltage, VDC	18 – 36.5	20 – 36.5	20 - 36
Output Voltage	115 VAC $\pm$ 2%	115 VAC $\pm$ 2.5%	115 VAC $\pm$ 3%
Output Frequency	60Hz $\pm$ 0.5Hz	60Hz $\pm$ 0.6Hz	60Hz $\pm$ 0.6Hz
Power Factor	+0.8 to -0.75	+0.8 to -0.8	+0.8 to -0.8
Output Power			
Continuous	1200VA 1320VA @ Sea Level	1200VA	1200VA
Overload	1800VA for 5 min., 2kVA (Current limit) for 5 sec	1320VA for 2 hrs. 1800VA for 5 min.	1800VA (Current limit)
THD	0.50%	0.5% (nominal)	< 3%
Operating Temperature	-55°C to 71°C	-55°C to 71°C	-55°C to 70°C
Efficiency (nominal)	92%	87%	88%
Protections	Inrush Current Output OV and UV Input OV and UV Output OF (>65Hz) and UF (<55Hz) Short Circuit (> 7 sec) Internal OT	Input OV and UV Short Circuit (2-15 sec) Internal OT	Input transient, overload and short-circuit
Qualification and Certification	RTCA DO-160G FAA TSO-C73 EASA ETSO-C73	DO-160C Env. Cat. F3ZBB, FAA TSO-C73	FAA TSO-C73 EASA ETSO-C73 RTCA DO-160G
Weight	6.25 lbs (2.83kg)	7.7 lbs (3.5kg)	7.3 lbs (3.31kg)

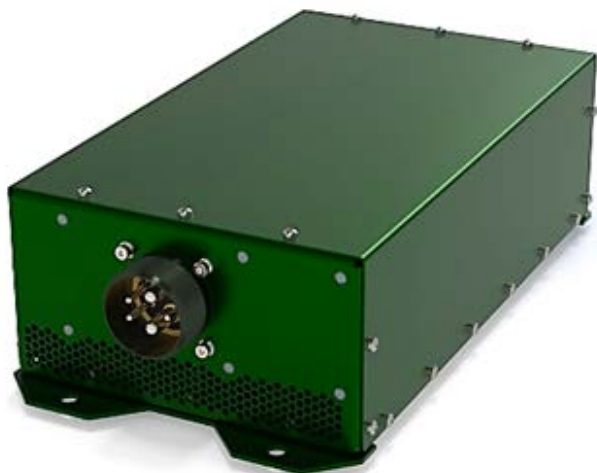
Major Differentiators of APN 1200VA Static Inverter

- **High Efficiency: 92% efficiency is achieved by using the following methods**
 - Converter input side uses low RDS(on) MOSFETs with a lossless switching control topology
 - High efficiency power transformer (planar design)
 - High voltage converter side employs synchronous rectification that reduces the rectification losses by a half
 - Output inverter employs an interleaved, GaN based topology that operates at 40kHz
- **Low Weight**
 - Higher efficiency results in lower heatsink weight and ability to operate with a single fan
 - Operating at a high frequency reduces the power transformer and the output inductors' weight
- **Protection (additional protective functions)**
 - Output Overvoltage (OV) and output Under voltage (UV) protects the loads from damaging OV events
 - Output Frequency out of range (Over frequency – OF and Under frequency – UF) protects the loads
 - Internal Overtemperature (OT) protects the inverter from overheating in case the external temperature is too high or in case of fan failure
- **Ability to run higher loads continuously**
 - 1320VA – 1400VA throughout temperature range at sea level



STATIC INVERTER 50Hz

500VA to 1200VA
28VDC → 230VAC
50Hz



Input Voltage

Nominal: 28VDC
Normal: 22-30.3VDC
Abnormal: 20.5-36.4VDC
Emergency: 18V

Output Characteristics

28VAC to 230VAC, 50Hz
Power: 1200 VA continuous
1320 VA continuous @Sea Level
Overload: 1800 VA for 5 minutes
Power factor: > 0.75
Power quality: per MIL-STD-704F
Waveform: true sinewave, THD: <0.5 %
Efficiency: 92% at nominal power

Environmental

Altitude: 55,000ft
Ambient Temperature: -55°C to 71°C
Temperature shock
Humidity: 10 days @ 95%
Vibration, Shock
Emission of RF Energy
Induced lightning transients
Flammability

Dimensions & Weights

10.6" × 6.34" × 3.5" (L×W×H)
6.25 lbs max (2.83 kgs)

Reliability, MTBF

>20,000 HRS



Electrical Interface

MS3102A24-12P
Includes Remote ON/OFF



Protection

Output overvoltage & under voltage
Output over-frequency (>65Hz)
Output under-frequency (<55Hz)
Overload (> 7 sec)
Internal overtemperature



Qualification & Certification

RTCA DO-160G
FAA TSO-C73

50Hz Static Inverter: Competitive Performance Comparison

	APN	Company A	Company B
Input Voltage, VDC	18 – 36.5	20 – 36.5	20 - 36
Output Voltage	230 VAC ± 2%	230 VAC ± 2.5%	230 VAC ± 3%
Output Frequency	50Hz±0.5Hz	50Hz±0.6Hz	50Hz±0.6Hz
Power Factor	+0.8 to -0.75	+0.8 to -0.8	+0.8 to -0.8
Output Power			
Continuous	1200VA 1320VA @ Sea Level	1200VA	1200VA
Overload	1800VA for 5 min., 2kVA (Current limit) for 5 sec	1320VA for 2 hrs. 1800VA for 5 min.	1800VA (Current limit)
THD	0.50%	0.5% (nominal)	< 3%
Operating Temperature	-55°C to 71°C	-55°C to 71°C	-55°C to 70°C
Efficiency (nominal)	92%	87%	88%
Protections	Inrush Current Output OV and UV Input OV and UV Output OF (>65Hz) and UF (<55Hz) Short Circuit (> 7 sec) Internal OT	Input OV and UV Short Circuit (2-15 sec) Internal OT	Input transient, overload and short-circuit
Qualification and Certification	RTCA DO-160G FAA TSO-C73 EASA ETSO-C73	DO-160C Env. Cat. F3ZBB, FAA TSO-C73	FAA TSO-C73 EASA ETSO-C73 RTCA DO-160G
Weight	6.25lbs. (2.83kg)	7.7 lbs. (3.5kg)	7.3 lbs. (3.31kg)

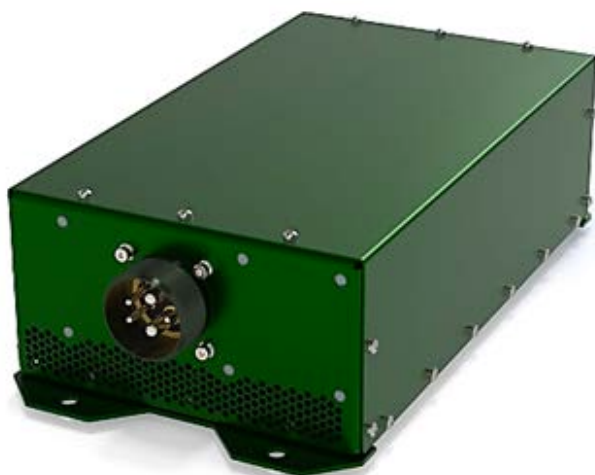


STATIC INVERTER 400Hz

500VA to 1200VA
28VDC → 115VAC
400Hz

Input Voltage

Nominal: 28VDC
Normal: 22-30.3VDC
Abnormal: 20.5-36.4VDC
Emergency: 18V



Output Characteristics

Single phase, 115VAC $\pm 3\%$, 400Hz ± 3 Hz
Power: 500VA-1200 VA continuous
1320 VA continuous @Sea Level
Overload: 1800 VA for 5 minutes
Power factor: > 0.75
Power quality: per MIL-STD-704F
Waveform: true sinewave, THD: $< 1\%$
Efficiency: 90% at nominal power

Environmental

Altitude: 55,000ft
Ambient Temperature: -55°C to 71°C
Temperature shock
Humidity: 10 days @ 95%
Vibration, Shock
Emission of RF Energy
Induced lightning transients
Flammability

Dimensions & Weights

10.6" $\times$ 6.34" $\times$ 3.5" (L $\times$ W $\times$ H)
6.25 lbs max (2.83 kgs)

Reliability, MTBF

$> 20,000$ HRS



Electrical Interface

MS3102A24-12P
Includes Remote ON/OFF



Protection

Output overvoltage & under voltage
Output over-frequency ($> 65\text{Hz}$)
Output Under-frequency ($< 55\text{Hz}$)
Overload (> 7 sec)
Internal overtemperature



Qualification & Certification

RTCA DO-160G
FAA TSO-C73
EASA ETSO-C73

400Hz Static Inverter: Competitive Performance Comparison

	APN	Company A	Company B
Input Voltage, VDC	18 – 36.5	20 – 36.5	20 - 36
Output Voltage	115 VAC ± 2%	115 VAC ± 2.5%	115 VAC ± 3%
Output Frequency	400Hz±3Hz	400Hz±3Hz	400Hz±3Hz
Power Factor	+0.8 to -0.75	+0.8 to -0.8	+0.8 to -0.8
Output Power			
Continuous	500VA to 1200VA 1320VA @ Sea Level	1200VA	1200VA
Overload	1800VA for 5 min. 2kVA (Current limit) for 5 sec	1320VA for 2 hrs. 1800VA for 5 min.	1800VA (Current limit)
THD	< .5%	0.5% (nominal)	< 3%
Operating Temperature	-55°C to 71°C	-55°C to 71°C	-55°C to 70°C
Efficiency (nominal)	90%	87%	88%
Protections	Inrush Current Output OV and UV Input OV and UV Output OF (>405Hz) Output UF (<395Hz) Short Circuit (>7 sec) Internal OT	Input OV and UV Short Circuit (2-15 sec) Internal OT	Input transient, overload and short-circuit
Qualification and Certification	RTCA DO-160G FAA TSO-C73 EASA ETSO-C73	DO-160C Env. Cat. F3ZBB FAA TSO-C73	FAA TSO-C73 EASA ETSO-C73 RTCA DO-160G
Weight	6.25 lbs (2.83kg)	7.7 lbs (3.5kg)	7.3 lbs (3.31kg)



FREQUENCY CONVERTER

IN DEVELOPMENT

4000W AC-to-AC Frequency Converter



Aerosphere Power & Navigation's 4000W AC-to-AC Frequency Converter delivers reliable, high-efficiency power conversion for demanding applications. It accepts a wide 3-phase input (115/200 VAC, 320–800 Hz) and provides flexible single-phase outputs of 115 VAC at 60 Hz or 230 VAC at 50 Hz. With 93.5% efficiency and a pure sine wave output (<3% THD), it ensures clean, stable power for sensitive equipment, while remote on/off control adds operational convenience.

Dimensions

15.0" × 7.0" × 5.0" (L×W×H)

Weight

18.0 lb max (8.16 kg)



Temperature

-40°F to +167°F
(-40°C to +75°C)



Protection

Short circuit, under-voltage, over-voltage, overload (up to 150% for 5 minutes without damage), DC offset



Qualification & Certification

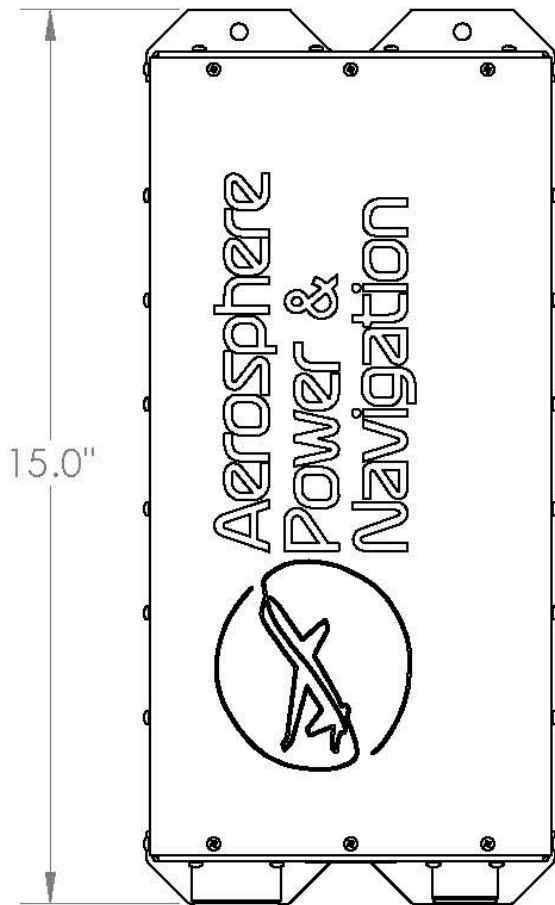
RTCA DO-160G
FAA TSO-C230



Aerosphere
Power &
Navigation™

4000W AC-to-AC Frequency Converter

TECHNICAL SPECIFICATIONS



INPUT VOLTAGE

3-Phase 115VAC L-N
320 to 800Hz

OUTPUT VOLTAGE

115VAC/60Hz
or
230VAC/50HZ

OUTPUT POWER

-0.8 to +0.8

EFFICIENCY

93.50%

WEIGHT

18.0 lb max (8.16 kg)

DIMENSIONS

15.0" × 7.0" × 5.0"
(L×W×H)

ALTITUDE

55,000 feet

TEMPERATURE

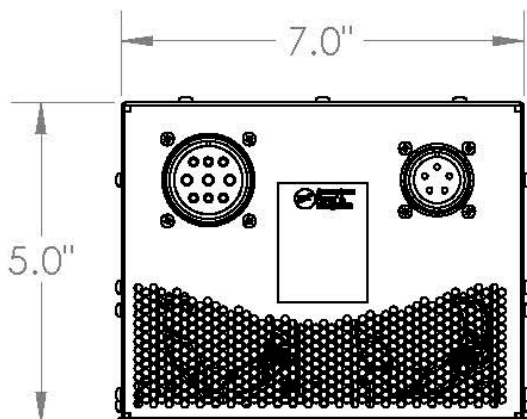
-40°F to +167°F
(-40°C to +75°C)

CERTIFICATION

FAA TSO-C230
RTCA DO-160G

REMOTE ON/OFF

Yes





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