NGB1200 SERIES

1200 Watts Single Output
Medical & Industrial Grade



Medical

Industrial

Advanced Energy's NGB1200 series AC to DC power supplies features ITE and medical safety approvals. The series offers a choice of three single output models, with voltages of 12V, 24V, or 48V. Each model also provides a 5V standby output. NGB1200 series power supplies provide 1200W of output power, and have a typical full load power conversion efficiency of 90%. All models have output overvoltage, short circuit and overload protection and a 3 x 10.8 x 1.6 inch form factor.

AT A GLANCE

Total Power

1200 Watts

Input Voltage

85 to 264 VAC

# of Outputs

Single

SPECIAL FEATURES

- Up to 1200W output power
- 3"x 10.8"x 1.6" Size
- Universal input 85 to 264 VAC
- Meets Class B emissions levels
- 7+ years electrolytic capacitor Life
- -10°C to 70°C operating temperature Range
- Meets 4th edition / heavy ndustrial EMC
- Less than 100 uA leakage current
- ROHS compliant
- REACH compliant
- 3 years warranty

SAFETY

- IEC/UL/EN60601-1-1, 3rd Edition, BF Rated
- IEC/UL/EN62368-1
- UKCA Mark
- CE Mark

TYPICALAPPLICATIONS

- ITE
- Medical

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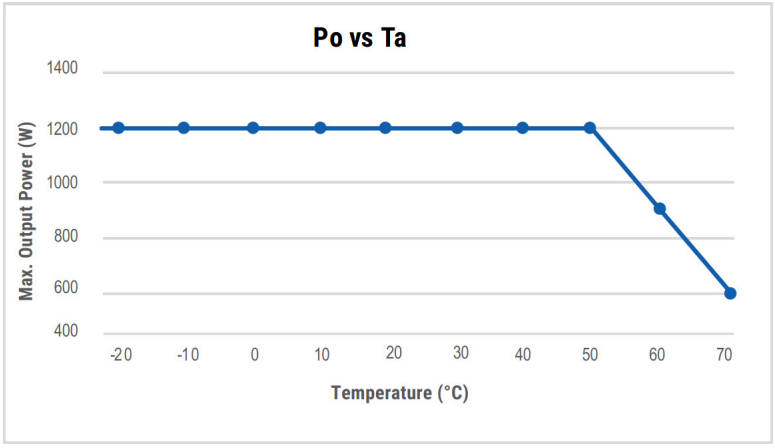
ELECTRICAL SPECIFICATIONS

Input	
Operating Input Range	85 to 264 VAC, 47 to 63 Hz, 1Ø
Inrush Current	40 A max., cold start @ 264 VAC input
Input Fuses	250 VAC fuses provided in both line & neutral
Leakage Current Earth Patient (output to earth)	 <500 µA @ 264 VAC, 60 Hz, NC <100/500 µA @ 264 VAC, 60 Hz, NC/SFC
Efficiency	>90% typical
Standby Input Power	< 1 W
Isolation Voltage	Input/Ground: 1500 VAC (1 MOPP) Input/Output: 4500 VAC (2 MOPP) Output/Ground: 1500 VAC (1 MOPP)
Output	
Maximum Power	1200 W
Ripple and Noise	1% of Vout on all models (1.25% on 12V output) 3% of 5VSB and 12Vfan
Load Regulation	2%
Line Regulation	1%
Total Regulation	5%
Minimum Load	Not required
Capacitive Load	3000 µF
Adjustment Range	5%
Initial set point tolerance	±1 %
Overshoot	<5% overshoot at turn-on, <1% overshoot at turn-off, under all conditions
Monotonic Waveform	PSU have monotonic wave forms on the main output at start up, shut down and fault (OVP, OCP, OTP, OPP, SCP) triggered shutdown.
Transient Response	500 µs response time for return to within 0.5% of final value for any 50% load step over the range of 25% to 100% of rated load, $\Delta i/\Delta t$<0.2 A/µs. Max. voltage deviation is ±3.5% of final value.
Reliability	
MTBF	>500K hrs
Warranty	3 years
E-Cap Lifetime	All specified electrolytic capacitors will exceed 7 year life based on operating at 25°C ambient temp., 24 hrs/day, 365 days/year, 6 power up cycles/day.
Life Cycle AC Power On / Off Test	>10,000 cycles for each of the following: 230Vac input with 100% load at 1 seconds on, 59 seconds off, and at 100Vac input at 10 seconds on, 50 seconds off
Protection	
Overvoltage Protection	110% to 130% of nominal output voltage. Latch mode.
Short Circuit Protection	Short across the output terminals will not cause damage to the unit. Auto-recovery mode.
Thermal Protection	Will shutdown upon an over temperature condition. Auto-recovery mode.
Overload Protection	110% to 180% of rated output current value. Hiccup mode.

DERATING CURVES



EMI/EMC COMPLIANCE

Conducted emissions	EN55011/15/32: Class B, CISPR11/15/32: Class B, FCC Part 15.107, Class B, Measured at 10%, 50%, and 100% load steps; 6db margin typ, at 120 VAC and 230 VAC
Radiated emissions[2]	EN55011/15/32: Class A, CISPR11/15/32: Class A, FCC Part 15.107, Class A, Measured at 10%, 50%, and 100% load steps; 3db margin typ, at 120 VAC and 230 VAC
Harmonic current emissions	EN61000-3-2, Class A at 230 VAC, 100% load
Voltage fluctuations & flicker	IEC61000-3-3
Electro static discharge immunity	EN55024/IEC61000-4-2, Level 4: ±8kV contact, ±15kV air, Criteria A, IEC60601-1-2, 4th Edition, Table 4
Radiated RF EM fields susceptibility	EN55022/EN61000-4-3, 10 V/m, 80 MHz to 2.7 GHz, 80% AM at 1 kHz IEC60601-1-2, 4th Edition, Table 4
Electrical fast transients / bursts	EN55024/IEC61000-4-4, Level 4, ±4 kV, 100 Khz rep rate, 40 A, Criteria A IEC60601-1-2, 4th Edition, Table 5
Surges line to line (DM) and line to ground (CM)	EN55024/IEC61000-4-5, Level 4, ±2kV DM, ±4kV CM, Criteria A Surpasses IEC60601-1-2, 4th Edition requirements
Conducted disturbances induced by RF fields	EN55022/IEC61000-4-6, 3 V/m – Level 4, 0.15 to 80 MHz; and 12V/m in ISM and amateur radio bands between 0.15 MHz and 80 MHz, 80% AM at 1 KHz IEC60601-1-2, 4th Edition, Table 5
Rated power frequency magnetic fields test	EN55024/IEC1000-4-8, Level 4: 30 A/m, 50Hz/60Hz IEC60601-1-2, 4th Edition, Table 4
Voltage dips	EN55024/IEC/EN61000-4-11: --100% dip for 10 ms, at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° --100% dip for 20mS, 0 deg., Criteria A @ 50% load. Criteria B at full load. --100% dip for 5000 ms (250/300 cycles), criteria B --60% dip for 100 ms, criteria B --30% dip for 500 ms, criteria B IEC60601-1-2, 4th Edition, Table 5

Notes:
1. Performance criteria are based on EN55024. According to the standards, performance criteria are decoded as following:
   A. Normal performance during and after the test
   B. Temporary degradation, self-recoverable
   C. Temporary degradation, operator intervention required to recover the operation
   D. Permanent damage
2. Class B can be met with added ferrite on input cable. Consult Advanced Energy for details.

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SYSTEM TIMING SPECIFICATIONS

Parameter	Min	Typ	Max	Unit
Turn-On Time – Main outputs	500	-	1000	ms
Turn-On Time – 5Vsb output	-	-	100	ms
Rise Time, 10% Vmain to Vmain in regulation	-	-	100	ms
Hold Up Time - All outputs stay within regulation after loss of AC @ 70% load	18 (12 V) 20 (24&48 V)	-	-	ms
Hold Up Time - Vsb stays within regulation after loss of AC	100	-	-	ms
Turn-On Time at -20°C	-	300	-	ms

ENVIRONMENTAL SPECIFICATIONS

Vibration	Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis, 5 to 500 Hz. Non-operating: Random waveform, 3 mins/axis, 3 axes and sine waveform, Vib. frequency / acceleration:10 Hz to 500 Hz / 1 g, sweep rate of 1 octave/minutes, vibration time of 10 sweeps/axes, 3 axes. Transportation vibration: Random vib. per MIL-STD-810E, Method 514.4, Cat. 1, Figure 514.4-1, 1hr in each of three axes.
Shock	Operating: Half-sine, 20 gpk, 10 ms, 3 axes, 6 shocks total. Non-operating: Half-sine waveform, impact acceleration of 50 g, pulse duration of 6 ms. Number of shocks: 3 for each of the three axis
Cooling	Built in fans
Audible Noise	<70 dbA
Operating Temperature	-10°C to +70°C
Temperature Derating	Derate output power above 50°C. See derating curve
Storage Temperature	-40°C to +85°C
Altitude	Operating: -500 to 5,000 m. Non-operating: -500 to 12,192 m
Relative Humidity	5% to 95%, non-condensing

ORDERING INFORMATION

Model Number	Output Voltage	Output Current	Output Power	Standby Output	Input /Output Terminations
NGB1200S12K	12 V	100 A	1200 W	5 V @ 2 A	Screw Terminals (Class I)
NGB1200S24K	24 V	50 A	1200 W	5 V @ 2 A	
NGB1200S48K	48 V	25 A	1200 W	5 V @ 2 A	

Notes:

1. Unless otherwise noted, all parameters are specified at nominal input (115/230 Vac), 25°C ambient operating temperature.

UNIT PACKAGING REQUIREMENTS

Inserted instructions	Instruction sheet to be provided with all units packaged in individual unit box if used.
Individual unit packing	Units can be packed in egg crate type cartons for production quantities. Individual product shipments include an individual unit box.
Master carton shipping box	Only anti-static packing material may be used inside the box. Exterior box sealing tape is anti-static type.
Individual carton packing box (when used)	Individual carton is labelled with ROHS sticker and individual label showing unit serial number, bar code, manufacturing date, bar code, and manufacturing part number, bar code, country of origin.

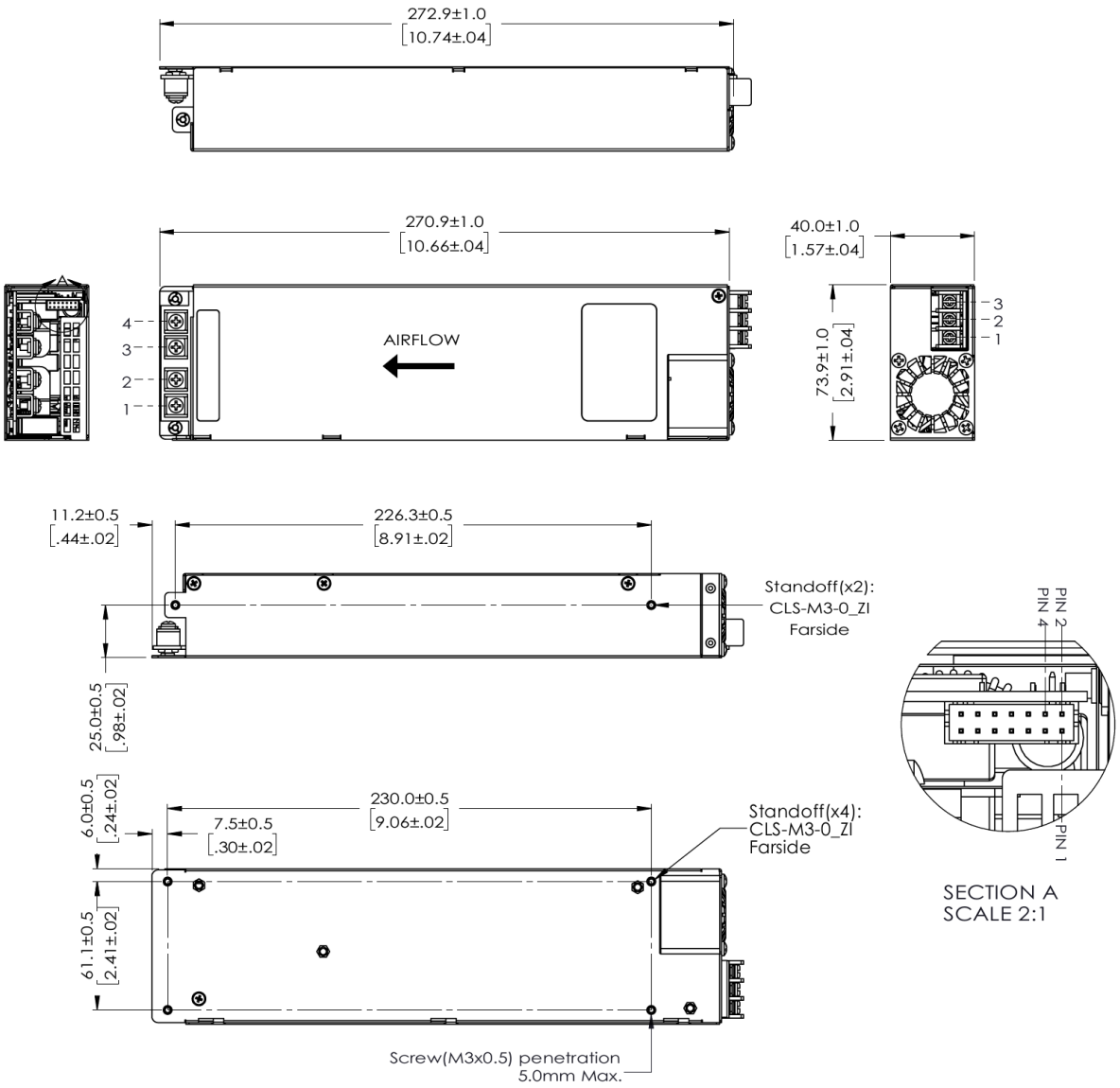
SAFETY

UL	UL62368-1, UL60601-1-1, 3rd Edition, Am1 Complies with BF rated application requirements.
CSA	CAN/CSA-C22.2 No. 62368-1, 60601-1, BF Rated.
Demko	EN62368-1 EN60601-1-1, 3rd Edition, Complies with BF rated application requirements.
CB Report	Design to meet 5000 m and 50°C, 93% RH with 120 h (Tropical standard) according to GB4943 1-2011, IEC62368-1, IEC60601-1-1, complies with BF rated application requirements.
CE	CE Marking (LVD)
UKCA	UKCA Marking

PIN ASSIGNMENTS

Type	Connector	Pin #	Assignment	Mating Connector
INPUT	J1	1	Line	Molex: 19141-0052/0053
		2	Neutral	
		3	Ground	
OUTPUT	J201	1	+Vout	Molex: 19141-0058/0063/0065/0059/0064 /0066
	J200	2	+Vout	
	J203	3	-Vout	
	J204	4	-Vout	
	J900	1	Return	LANDWIN: 2050S1400 (housing) LANDWIN: 2053T021N (pins)
		2	+Remote Sense	
		3	CONTROL	
		4	Return	
		5	Spare	
		6	Spare	
		7	Spare	
		8	POWER_GOOD	
		9	Spare	
		10	Spare	
		11	Return	
		12	Spare	
		13	5VSB	
		14	5VSB	

MECHANICAL DRAWING



Notes:
1. All dimensions in mm (inches).
2. Dimensions: W: 3” Wx L: 10.5” x H: 1.6”.
3. Unit weight: 830 g.

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE | TRUST

For international contact information,
visit advancedenergy.com.

powersales@aei.com (Sales Support)
productsupport.ep@aei.com (Technical Support)
+1 888 412 7832

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