

# ARTESYN DS2000-3

2000 Watts 12 V Distributed Power System



Advanced Energy's Artesyn DS2000 series of bulk front end AC-DC power supplies comprises two models, each of which accepts a wide range 90–264 Vac input and provides a main 12 V output plus a 3.3 V or optional 5 V standby output. The DS2000-3 is rated at 2,000 watts, when operating from a nominal 200 Vac input. These power supplies are intended primarily for rack-mounting server type applications such as data centers and are ideal for feeding downstream DC-DC converters in systems that use distributed power architectures (DPA). The main 12 V output of the DS2000-3 can deliver up to 161.5 amps.

## SPECIAL FEATURES

- Active power factor correction
- EN61000-3-2 harmonic compliance
- Active AC inrush control
- 1U X 3U form factor
- 26.14 W / in<sup>3</sup>
- +12 Vdc output
- +3.3 Vdc or 5.0 V Standby
- No minimum load required
- Hot plug operation
- N + 1 redundant
- Internal OR'ing fets
- Active current sharing (10 - 100% load)
- Built-in cooling fans (40 mm x 28 mm)
- I<sup>2</sup>C communication interface bus
- PMBus compliant
- EEPROM for FRU data

- Green and Amber LED status
- Internal fan speed control
- INTEL, SSI Std. logic timing
- INTEL, SSI Std. FRU data format
- Two year warranty

## SAFETY

- UL/cUL 60950 (UL Recognized)
- NEMKO+ CB Report EN60950
- EN60950
- CE Mark
- China CCC

## DATA SHEET

### Distributed Power Bulk Front-End

**Total Output Power: 2000 Watts**

+12 Vdc Main Output  
+3.3 or +5.0 Vdc Standby Output

### Wide Range Input Voltage:

90 - 264 Vac



## ELECTRICAL SPECIFICATIONS

Input	
Input voltage range	90 - 264 Vac (wide range) 90 - 264 1200 W load, nominal 100 Vac 180 - 264 2000 W load, nominal 200 Vac
Frequency	47 - 63 Hz, single phase AC
Inrush current	40 A maximum inrush current
Efficiency	> 89% typical at full load, high line
Conducted EMI	FCC Subpart J EN55022 Class B
Radiated EMI	FCC Subpart J EN55022 Class B
Power factor	0.99 typical
Leakage current	1.40 mA @ 240 Vac
Hold-up time	10 ms minimum
Output	
Main DC voltage	+12 V @ 164.2 A      180 - 264 Vac +12 V @ 100 A      90 - 264 Vac
Standby	+3.3 Vsb @ 9 A or 5 V @ 6 A
Adjustment range	Factory set, no pot adjustments
Regulation	+12 Vdc; $\pm 5\%$ +3.3 Vsb/+5.0V; $\pm 5\%$
Overcurrent	+12 Vdc; latches off if overcurrent lasts over 1 second, otherwise it is auto recovery (See ordering info next page)
Overvoltage	+12 Vdc; 13.2 - 14.4 Vdc +3.3 Vsb: 3.76 - 4.30 Vdc, +5.0Vsb: 5.5 - 6.25Vdc
Undervoltage	+12 Vdc; 9 - 10.8 V (latch off)
Turn-on delay	2 second max
+12 V output rise time	5 - 300 ms, Monotonic Rise
Logic Control	
PRESENT#	TTL logic LOW if power supply is seated into system connector. This is a short pin. A logic HIGH if the PSU is removed.
PWOK#	Active TTL LOW when output is within regulation limits.
AC OK#	A LOW logic level if the input voltage is within allowable limits. A TTL logic HIGH level, and a 2 mS early warning signal before 12.0 V DC output loss of regulation.

## ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-10 °C to 50 °C
Storage temperature	-40 °C to +85 °C Altitude, operating 10,000 ft
Electromagnetic susceptibility / Input transients	EN61000-3-2, -3-3 EN61000-4-2, 4.3, 4-4, -4-5, 4-11 Level EN55024:1998
RoHS & lead free	Compliant (no tantalum caps)
Humidity	20 to 90% RH, non-condensing
Shock and vibration	Standard operating and non-operaitng random shock and vibration
MTBF (Demonstrated)	300 K Hrs at full load, 40 °C

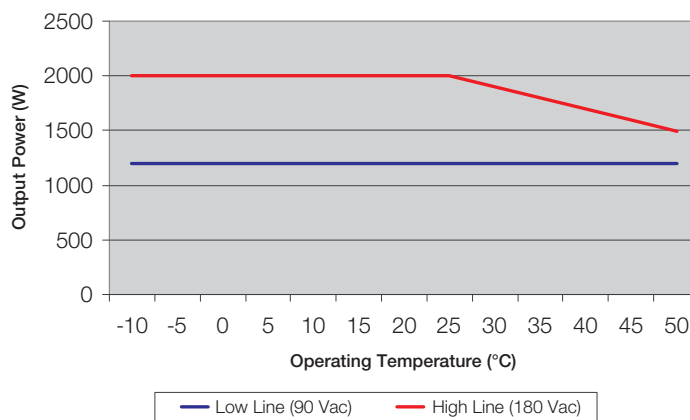
## ORDERING INFORMATION

Model Number	Nominal Output Voltage Set Point	Set Point Tolerance	Total Regulation	Minimum Current	Maximum Current	Output Ripple P/P	Overcurrent	Airflow
DS2000-3	12.2 Vdc 3.3 Vsb	±0.2% ±1%	±5% ±5%	0 A 0 A	161.5 A 9.0 A	120 mV 60 mV	120 - 130% of nominal 100 - 125% of nominal	Standard
DS2000-3-001	12.2 Vdc 3.3 Vsb	±0.2% ±1%	±5% ±5%	0 A 0 A	161.5 A** 9.0 A	120 mV 60 mV	120 - 130% of nominal 100 - 125% of nominal	Reverse
DS2000-3-002	12.2 Vdc 5.0 Vsb	±0.2% ±1%	±5% ±5%	0 A 0 A	161.5 A 6.0 A	120 mV 60 mV	120 - 130% of nominal 120 - 140% of nominal	Standard

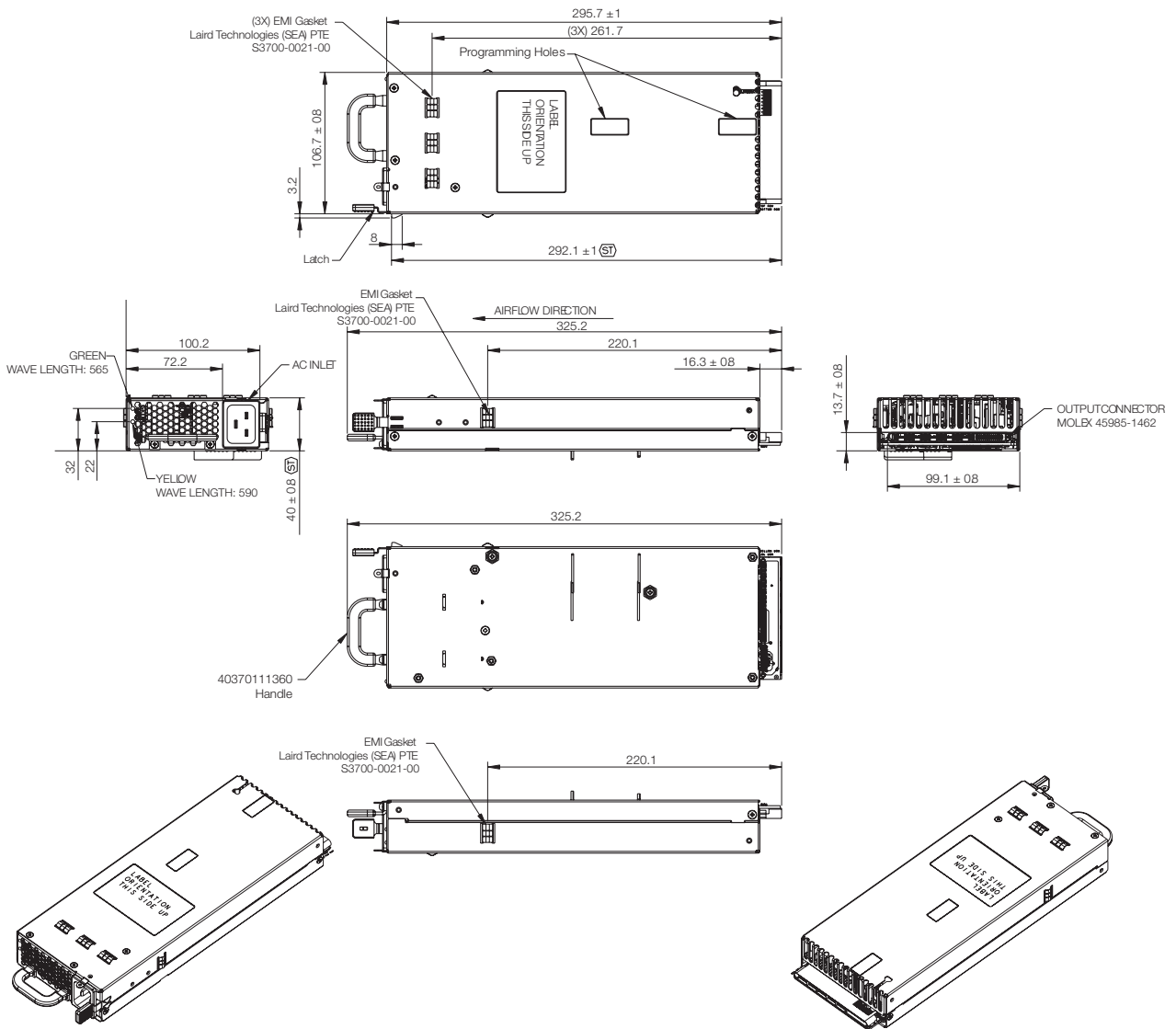
\* Overcurrent latches off if overcurrent lasts over 1 second, otherwise it is auto recovery.

\*\* Derates per below curve (-001) reverse air

DS2000-3-001 Derating Curve



MECHANICAL DRAWING



Power Supply Condition	Power LED (Green)	Fail LED (Amber)
No AC power to PSU	OFF	OFF
AC Present/Standby Output ON	Blinking	OFF
Power Supply Main Output ON and OK	ON	OFF
Power Supply Main Output Failure (overvoltage and overtemperature)	OFF	ON
Over-current	ON	Blinking

## DC OUTPUT CONNECTOR PINOUT/FUNCTIONS

Unit Connector; Molex Blade, (LPH Series) 45985-xxx

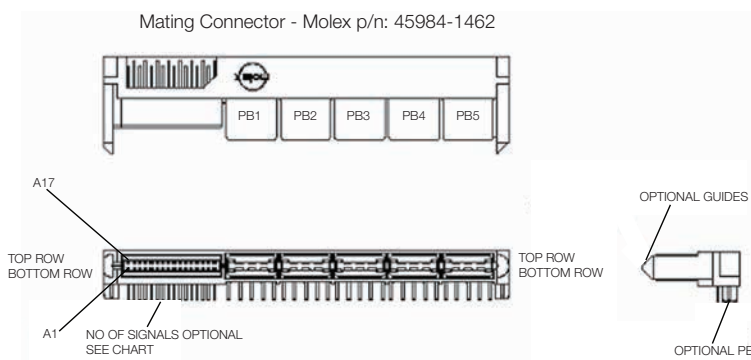
Mating Connector; Molex Blade, (LPH Series) SD-45984-1462 or any approved equivalent

## SIGNAL DESCRIPTIONS

Signal Pin #Comp Side Top Row	Signal Function	Signal Description	Signal Pin #Solder Side Bottom Row	Signal Function	Signal Description
A17	3.3 V Sense RTN	3.3 V Sen Rtn	A1	SPARE	
A18	AC OK#	AC input present	A2	SPARE	+Stand-by rmt Sen
A19	A0	I <sup>2</sup> C address bit 0	A3	#ALERT	Fail signal
A20	A2	I <sup>2</sup> C address bit 2	A4	A1	I <sup>2</sup> C address bit 1
A21	SCL*	I <sup>2</sup> C Clock signal	A5	SDA	I <sup>2</sup> C Data signal
A22	PWOK#	Pwr OK output	A6	PRESENT#	Power supply present
A23	12 LS	12 V load share bus	A7	PERSON#	Power enable input
A24	+12 VRS Rtn	+12 V Rmt Sen Rtn	A8	+12 V RS	+12 V Remote Sense
A25	3.3 vsb	Stand-By	A9	3.3 vsb	Stand-By
A26	3.3 vsb	Stand-By	A10	3.3 vsb	Stand-By
A27	3.3 vsb	Stand-By	A11	3.3 vsb	Stand-By
A28	3.3 vsb	Stand-By	A12	3.3 vsb	Stand-By
A29	3.3 vsb Rtn	Stand-By return	A13	3.3 vsb Rtn	Stand-By return
A30	3.3 vsb Rtn	Stand-By return	A14	3.3 vsb Rtn	Stand-By return
A31	3.3 vsb Rtn	Stand-By return	A15	3.3 vsb Rtn	Stand-By return
A32	3.3 vsb Rtn	Stand-By return	A16	3.3 vsb Rtn	Stand-By return

Power Blade			Power Blade		
PB1 Top	+12 vdc	Main Output	PB1 Bottom	+12 vdc	Main Output
PB2 Top	+12 vdc	Main Output	PB2 Bottom	+12 vdc	Main Output
PB3 Top	+12 vdc	Main Output	PB3 Bottom	+12 vdc Rtn	Main Output
PB4 Top	+12 vdc Rtn	Main Output	PB4 Bottom	+12 vdc Rtn	Main Output
PB5 Top	+12 vdc Rtn	Main Output	PB5 Bottom	+12 vdc Rtn	Main Output

\* Supports I<sup>2</sup>C standard mode (100 kHz) only





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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three 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**

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