# ARTESYN DS450-3/DS550-3

Distributed Power Bulk Front-End



Advanced Energy's Artesyn DS450 and DS550 series bulk front end AC-DC power supplies accept a wide range 90–264 Vac input and provide a main 12 Vdc output, plus a 3.3 Vdc standby output. Rated at 450 watts and 550 watts respectively, the DS450 and DS550 have a typical full load conversion efficiency of 84%. Standard features include active current sharing, internal ORing FETs and an EEPROM for storing service data to facilitate efficient field replacement. An I2C communication interface is provided for the FRU EEPROM data.

DATA SHEET

**Total Output Power:**

450 - 550 Watts
+12 Vdc Main Output
+3.3 Vdc Standby Output

**Wide Range Input Voltage:**

90 - 264 Vac

RoHS 6/6 COMPLIANT

## SPECIAL FEATURES

- Active power factor correction
- EN61000-3-2 harmonic compliance
- Inrush control
- 1U X 2U form factor
- 10.3 W/in$^3$ (DS550)
  8.4 W/in$^3$ (DS450)
- +12 Vdc output
- +3.3 Vdc standby
- No minimum load required
- Hot plug operation
- N + 1 redundant
- Internal OR'ing fets
- Active current sharing
- Built-in cooling fans (40 mm x 28 mm)
- I$^2$C communication interface bus
- EEPROM for FRU data
- Amber LED status, fan_fail
- Green LED status, power good/ AC_OK status
- Internal fan speed control
- Fan fail tach output signal
- One year warranty

## SAFETY

- UL/cUL 60950 (UL recognized)
- NEMKO+ CB report EN60950
- EN60950
- CE mark
- China CCC

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## ELECTRICAL SPECIFICATIONS

| Input | |
|---|---|
| Input range | 90 - 264 Vac (wide range) |
| Frequency | 47 - 63 Hz, single phase AC |
| Inrush current | 15 A maximum |
| Efficiency | > 84% typical at full load, high line |
| Conducted EMI | FCC Subpart J EN55022 Class A |
| Radiated EMI | FCC Subpart J EN55022 Class A |
| Power factor | 0.99 typical |
| Leakage current | 1.30 mA @ 240 Vac |
| Hold up time | 20 ms minimum |
| **Output** | |
| Main DC voltage | +12 V |
| Standby | +3.3 Vsb |
| Adjustment range | Factory set, no pot adjustments |
| Regulation | +12 Vdc; +5%/-3%<br>+3.3 Vsb; +5%/-4% |
| Overcurrent | See Table 1 next page |
| Overvoltage | +12 Vdc; 13.5 - 15 Vdc<br>+3.3 Vsb; 3.76 - 4.30 Vdc |
| Undervoltage | +12 Vdc; 11.0 - 11.5 Vdc<br>+3.3 Vsb; 2.77 - 3.00 Vdc |
| Turn-on delay | 1 second max |
| +12 V output rise time | 2 - 20 mS, monotonic |

## LOGIC CONTROL

| | |
|---|---|
| PS Inhibit | When supply is inserted into the system the pin is pulled LOW and power supply is ON after all other pins are seated |
| PS_Status | $I^2C$ port P6. When the power supply is on and running normal P6 is low. When the power supply is off, either due to -PS_ON, PS_KILL, or a fault, then P6 is high. |
| AC_Pfail | $I^2C$ port P7. P7 is high except when the power supply turns the main outputs, not +3.3 Vsb, off due to an AC failure (AC missing or too low for power supply operation). If the supply is turned off due to -PS_ON, PS_KILL, or a fault, then P7 remains high. |
| Fan_Fault | The PSU will provides an open collector Tach 1 output. |
| Tach_1 | This signal is generated from the fan. The signal should generate 2 pulses per revolution. The logic in the system will be operating at 3.3 V. |

## ENVIRONMENTAL SPECIFICATIONS

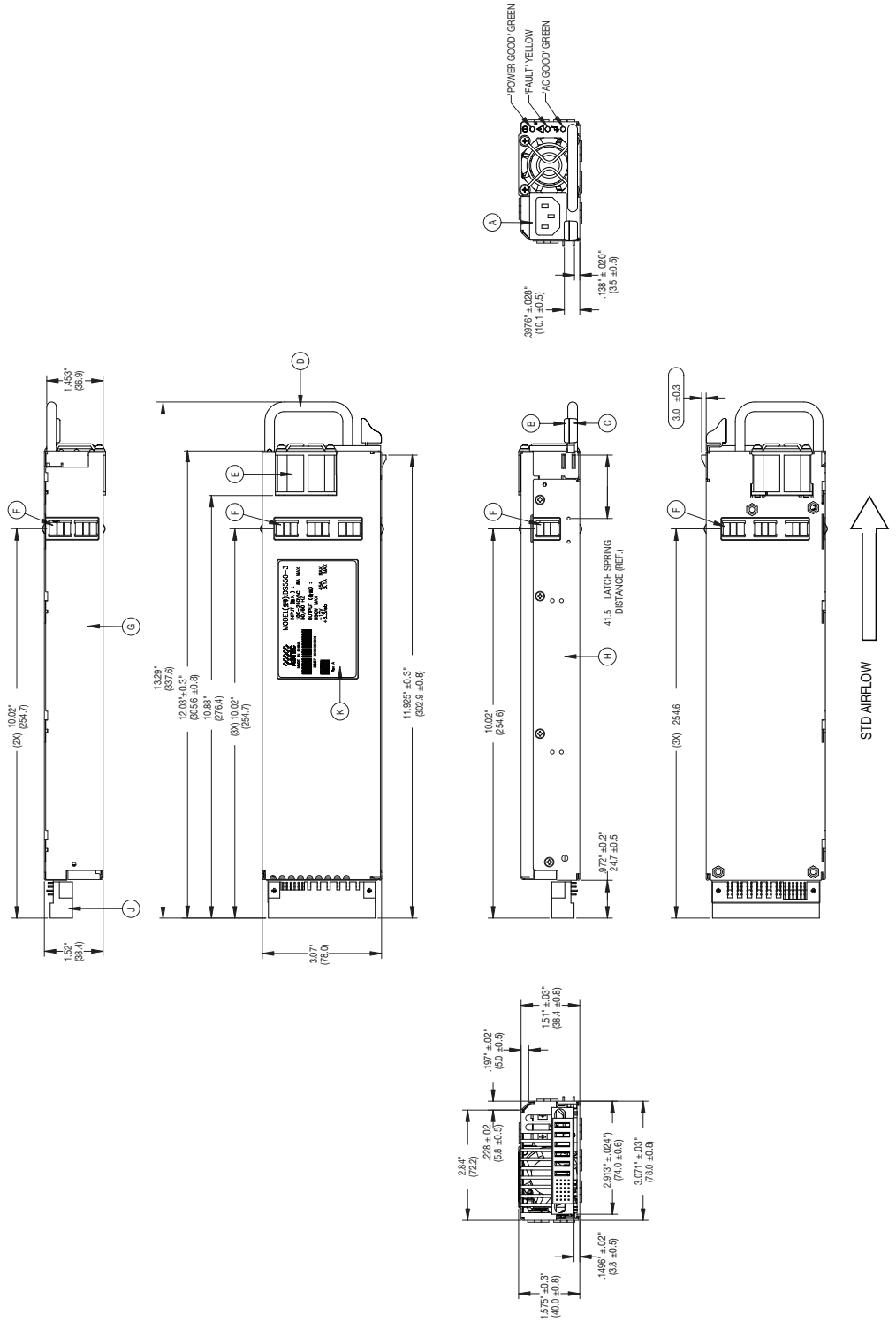
| | |
|---|---|
| Operating temperature | -10 °C to 50 °C |
| Storage temperature | -40 °C to +70 °C |
| Altitude, operating | 10,000 ft. |
| Electromagnetic susceptibility/Input transients | -EN61000-3-2, -3-3<br>-EN61000-4-2, 4.3, 4-4, -4-5, 4-11<br>-EN55024:1998 |
| RoHS & lead-free compliant (no tantalum caps) | |
| Humidity | 20 to 90% RH, non-condensing |
| Shock and vibration specificatons complies with Artesyn Embedded Power Std. Specification. | |
| MTBF (Demonstrated) | 400 K Hrs at full load, 40 °C |

## ORDERING INFORMATION

| Output | Nominal Output Voltage Set Point | Set Point Tolerance | Total Regulation | Minimum Current | Maximum Current | Output Ripple P/P | Overcurrent | Options |
|---|---|---|---|---|---|---|---|---|
| DS450-3 | 12.0 Vdc<br>3.3 Vsb | ± 0.2%<br>± 1% | +5/-3%<br>+5/-4% | 0 A<br>0 A | 37.0 A<br>3.0 A | 120 mV<br>60 mV | 39.5 A - 44.4 A<br>4.9 A Avg, 7 A max | Standard |
| DS450-3-002 | 12.0 Vdc<br>3.3 Vsb | ± 0.2%<br>± 1% | +5/-3%<br>+5/-4% | 0 A<br>0 A | 37.0 A<br>3.0 A | 120 mV<br>60 mV | 39.5 A - 44.4 A<br>4.9 A Avg, 7 A max | Reverse Air |
| DS550-3 | 12.0 Vdc<br>3.3 Vsb | ± 0.2%<br>± 1% | +5/-3%<br>+5/-4% | 0 A<br>0 A | 45.0 A<br>3.0 A | 120 mV<br>60 mV | 48.0 A - 54.0 A<br>4.9 A Avg, 7 A max | Standard |

*Overcurrent latches off if overcurrent lasts over 1 second, otherwise it is auto recovery.
*For 5 Vsb, please contact marketing department.

## MECHANICAL DRAWINGS



## DC OUTPUT CONNECTOR PINOUT ASSIGNMENT

| Male connector as viewed from the rear of the supply: | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 | D2 | D3 | D4 | D5 | D6 | PB1 | PB2 | PB3 | PB4 | PB5 | PB6 |
| C1 | C2 | C3 | C4 | C5 | C6 | | | | | | |
| B1 | B2 | B3 | B4 | B5 | B6 | | | | | | |
| A1 | A2 | A3 | A4 | A5 | A6 | | | | | | |

## P1 - POWER SUPPLY SIDE

| | |
|---|---|
| 1 | FCI Power Blade 51721 series<br>51721-10002406AA |
| 2 | Molex Power Connector<br>SD-87667 series<br>87667-7002 |

## MATING CONNECTOR (SYSTEM SIDE)

| | |
|---|---|
| 1 | FCI Power Blade<br>51741-10002406CC<br>Strait Pins |
| 2 | FCI Power Blade<br>51761-10002406AA<br>Right Angle |

## PIN ASSIGNMENTS

| Pin | Signal Name |
|---|---|
| PB 1 | +12 V Return |
| PB 2 | +12 V Return |
| PB 3 | +12 V Return |
| PB 4 | +12 V |
| PB 5 | +12 V |
| PB 6 | +12 V |
| A1 | PS_KILL |
| A2 | +12 V_Current Share |
| A3 | Logic Return |
| A4 | +3.3 V Stand-By |
| A5 | A0 ($I^2C$ Address BIT 0 Signal) |
| A6 | +3.3V Stand-By |
| B1 | Logic Return |
| B2 | Spare |
| B3 | Logic Return |
| B4 | +3.3 V Stand-By |
| B5 | SDA ($I^2C$ Data Signal) |
| B6 | PSON (Power Enable Signal) |
| C1 | Logic Return |
| C2 | Tach_1 (Fan Fail Signal) |
| C3 | Logic Return |
| C4 | +3.3 V Stand-By |
| C5 | SCL ($I^2C$ Clock Signal)* |
| C6 | VIN_GOOD (AC Input present) |
| D1 | -PS_Present (Power Supply Seated) |
| D2 | Spare |
| D3 | Logic Return |
| D4 | +3.3 V Stand-By |
| D5 | S_INT (Alert) |
| D6 | POK (Output Power Ok) |

*Supports $I^2C$ standard mode (100 kHz) only

## 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.

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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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