

# 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.

#### **SPECIAL FEATURES**

- Active power factor correction
- EN61000-3-2 harmonic compliance
- Inrush control
- 1U X 2U form factor
- 10.3 W/in<sup>3</sup> (DS550)
  8.4 W/in<sup>3</sup> (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<sup>2</sup>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

#### DATA SHEET

#### **Total Output Power:**

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

#### Wide Range Input Voltage:

90 - 264 Vac



#### **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% +3.3 Vsb; +5%/-4%
Overcurrent	See Table 1 next page
Overvoltage	+12 Vdc; 13.5 - 15 Vdc +3.3 Vsb; 3.76 - 4.30 Vdc
Undervoltage	+12 Vdc; 11.0 - 11.5 Vdc +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 <sup>2</sup> C 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 <sup>2</sup> C 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 -EN61000-4-2, 4.3, 4-4, -4-5, 4-11 -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		

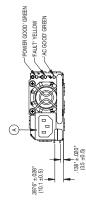
#### **ORDERING INFORMATION**

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 3.3 Vsb	± 0.2% ± 1%	+5/-3% +5/-4%	0 A 0 A	37.0 A 3.0 A	120 mV 60 mV	39.5 A - 44.4 A 4.9 A Avg, 7 A max	Standard
DS450-3-002	12.0 Vdc 3.3 Vsb	± 0.2% ± 1%	+5/-3% +5/-4%	0 A 0 A	37.0 A 3.0 A	120 mV 60 mV	39.5 A - 44.4 A 4.9 A Avg, 7 A max	Reverse Air
DS550-3	12.0 Vdc 3.3 Vsb	± 0.2% ± 1%	+5/-3% +5/-4%	0 A 0 A	45.0 A 3.0 A	120 mV 60 mV	48.0 A - 54.0 A 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**



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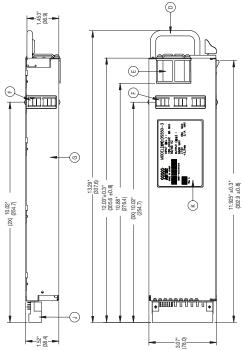
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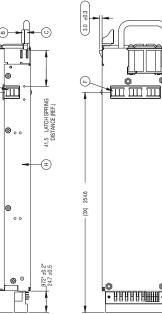
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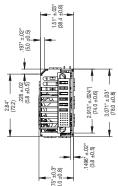
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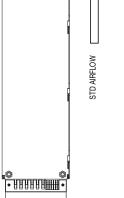
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## DC OUTPUT CONNECTOR PINOUT ASSIGNMENT

Male connector as viewed from the rear of the supply:											
D1	D2	D3	D4	D5	D6						
C1	C2	C3	C4	C5	C6		DDO	DDO	DD 4	DDC	DDC
B1	B2	B3	B4	B5	B6	PB1	PB2	PB3	PB4	PB5	PB6
A1	A2	A3	A4	A5	A6						

#### P1 - POWER SUPPLY SIDE

FCI Power Blade 51721 series 51721-10002406AA
Molex Power Connector SD-87667 series 87667-7002

# MATING CONNECTOR (SYSTEM SIDE)

1	FCI Power Blade 51741-10002406CC Strait Pins
2	FCI Power Blade 51761-10002406AA Right Angle



### **PIN ASSIGNMENTS**

P81.12 V ReturnP82.12 V ReturnP84.12 V ReturnP84.12 V ReturnP85.12 VP86.12 VA10.12 VA11.12 VA12.12 VA14.12 V.Current ShareA3.12 V.Gurent ShareA4.13 V Stand-ByA5.13 V Stand-ByB1.13 V Stand-ByB2.13 V Stand-ByB3.13 V Stand-ByB4.13 V Stand-ByB4.13 V Stand-ByB4.13 V Stand-ByB4.13 V Stand-ByB5.13 V Stand-ByB6.13 V Stand-ByB7.13 V Stand-ByB6.13 V Stand-ByB7.14 V Coart Signal)B7.15 V Cover Enable Signal)B7.15 V Cover Enable Signal)C1.14 V Fal Signal)C2.14 V Fal Signal)C3.14 V Color Signal)C4.25 V Stand-ByC5.25 V Stand-ByC6.14 V Stand-ByC7.26 ReturnC7.26 ReturnC3.26 NErdenC4.26 V Stand-ByC5.26 NErdenC5.26 NErdenC6.26 NErdenC6.26 NErdenC7.26 NErdenC7.26 NErdenC6.26 NErdenC7.26 NErdenC7.26 NErdenC7.26 NErdenC7.26 NErdenC7.26 N	Pin	Signal Name
P83121 KetumP84121 VP85122 VP86122 VP66122 VA1P5.KLLA1121 V_Ururet ShareA3122 V_Ururet ShareA3132 V Stard-ByA4333 V Stard-ByA6433 V Stard-ByB1Logic RetumB2SpareB3123 V Stard-ByB433 V Stard-ByB5SpareB6SpareB6SporeC1Logic RetumB6SporeC2Tech_1 Fable Signal)C3Stard-ByC4SpareC5SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC6SporeC7SporeC7SporeC6SporeC7SporeC7SporeC7SporeC8SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9SporeC9Spore	PB 1	+12 V Return
P84.12 VP85.12 VP86.12 VA1P5_KLLA2.12 V_Curret ShareA3Logic ReturnA4.33 V Stand-ByA5.00 (r²C Address BIT 0 Signal)A6.33 V Stand-ByB1.00 ic ReturnB2.00 ic ReturnB4.00 ic ReturnB4.00 ic ReturnB2.00 ic ReturnB4.00 ic ReturnB4.00 ic ReturnB4.00 ic ReturnB5.00 ic ReturnB6.00 ic ReturnC1.00 ic ReturnC2.00 ic ReturnC3.00 ic ReturnC4.00 ic ReturnC5.00 ic ReturnC6.00 ic ReturnC7.00 ic ReturnC8.00 ic ReturnC9.00 ic ReturnC9.00 ic ReturnC1.00 ic ReturnC4.00 (C4 Clock Signal)*C5.00 (C4 Clock Signal)*C6.00 (C4 Clock Signal)*C7.00 (C4 Clock Signal)*C7 <td< td=""><td>PB 2</td><td>+12 V Return</td></td<>	PB 2	+12 V Return
P8512 VP8612 VA1PS_KILLA212 V_Current ShareA3Logic ReturnA433 V Stand-ByA5A0 (°C Address BT O Signal)A633 V Stand-ByB1Logic ReturnB2SpareB3Logic ReturnB4SDA (°C Data Signal)B4SpareB5Sol (°C Data Signal)B6SDA (°C Data Signal)B7Logic ReturnB6Colic ReturnB7SDA (°C Data Signal)B6SDA (°C Data Signal)B7Logic ReturnB6Colic ReturnC1Logic ReturnC2Sol (°C Data Signal)C3Colic ReturnC4-33 V Stand-ByC5CL (°C Clock Signal)*C6SCL (°C Clock Signal)*C6SCL (°C Clock Signal)*C7SpareD1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4-SJ Stand-ByD5SLINT (Alert)	РВ 3	+12 V Return
P8642 VA1PS_KILLA2412 V_Current ShareA3Logic ReturnA4-33 V Stand-ByA5A0 (°C Address BIT 0 Signal)A6-33 V Stand-ByB1Logic ReturnB2SpareB3Logic ReturnB4-33 V Stand-ByB5SDA (°C Logic ReturnB6SDA (°C Logic ReturnB7SDA (°C Logic ReturnB6SDA (°C Logic ReturnB6SDA (°C Logic ReturnB7SDA (°C Logic ReturnB6SDA (°C Logic ReturnC1Logic ReturnC2Tach_1 (Fan Fall Signal)C3SDA (°C Clock Signal)*C4-33 V Stand-ByC5SCL (°C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnC4SpareD3Logic ReturnC4-SS_Present (Power Supply Seated)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4SJ Stand-ByD5SeatenD5SpareD4SpareD5SpareD5SpareD5SpareD5Stand-ByD5Stand-ByD5SpareD5SpareD5SpareD5SpareD5SpareD5Spare<	РВ 4	+12 V
A1PS_KILA2.12 V_Current ShareA3Logic ReturnA4.43 V Stand-ByA5.0 (°C Address BIT 0 Signal)A6.43 V Stand-ByB1Logic ReturnB2SpareB4.43 V Stand-ByB5.50 A (1°C Data Signal)B6.50 A (1°C Data Signal)B7.50 A (1°C Data Signal)B6.50 A (1°C Data Signal)C1.50 ReturnC2.50 A (1°C Data Signal)C3.50 A (1°C Data Signal)C4.53 V Stand-ByC5.50 A (1°C Clock Signal)*C6.50 C (1°C Clock Signal)*C7.50 S (20 Clock Signal)*C6.50 C (1°C Clock Signal)*C6.50 C (1°C Clock Signal)*C7.50 S (20 Clock Signal)*C8.50 S (20 Clock Signal)*C9.50 S (20 Clock S	РВ 5	+12 V
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A4433 V Stand-ByA5A0 (°C Address BIT 0 Signal)A63.33 V Stand-ByB1Logic ReturnB2SpareB3Logic ReturnB4.433 V Stand-ByB5SDA (°C Data Signal)B6SDA (°C Data Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3SCL (°C Clock Signal)*C4.33 V Stand-ByC5SCL (°C Clock Signal)*C6VIN_GOOD (AC Input present)D1.95_Present (Power Supply Seated)D2SpareD3Logic ReturnD4.33 V Stand-ByD5SLINT (Alert)	A2	+12 V_Current Share
A5A0 ('C Address BIT 0 Signal)A6+3.3V Stand-ByB1Logic ReturnB2SpareB3Logic ReturnB4+3.3V Stand-ByB5SDA ('C Data Signal)B6SDA (Power Enable Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Stand-ByC4-3.3 V Stand-ByC5SCL ('C Clock Signal)C6SCL ('C Clock Signal)*C6SCL ('C Clock Signal)*C7SCL ('C Clock Signal)*C6SCL ('C Clock Signal)*C7Sparen (Power Supply Seated)D1-PS_Present (Power Supply Seated)D2Sparen (Power Supply Seated)D3Sig Stand-ByD4-3.3 V Stand-ByD5Sig NT (Alert)	A3	Logic Return
A633V Stand-ByB1Logic ReturnB2SpareB3Logic ReturnB44.33 V Stand-ByB5SDA (l <sup>2</sup> C Data Signal)B6SDN (Power Enable Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Logic ReturnC44.33 V Stand-ByC5SCL (l <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD44.33 V Stand-ByD5S/ Stand-By	A4	+3.3 V Stand-By
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B2SpareB3Logic ReturnB4+3.3 V Stard-ByB5SDA (I'C Data Signal)B6PSON (Power Enable Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Logic ReturnC4+3.3 V Stard-ByC5SCL (I'C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stard-ByD5S.INT (Alert)	A6	+3.3V Stand-By
Ba      Logic Return        B4      433 V Stand-By        B5      SDA (i <sup>2</sup> C Data Signal)        B6      PSON (Power Enable Signal)        C1      Logic Return        C2      Tach_1 (Fan Fail Signal)        C3      Logic Return        C4      433 V Stand-By        C5      SCL (i <sup>2</sup> C Clock Signal)*        C6      VIN_GOOD (AC Input present)        D1      -PS_Present (Power Supply Seated)        D2      Spare        D3      Logic Return        D4      Spare        D5      SL (i <sup>2</sup> Clock Signal)*        C5      ScL (i <sup>2</sup> Clock Signal)*        C6      VIN_GOOD (AC Input present)        D1      -PS_Present (Power Supply Seated)        D2      Spare        D3      Logic Return        D4      +33 V Stand-By        D5      Spare	B1	Logic Return
B4+3.3 V Stand-ByB5SDA (I <sup>2</sup> C Data Signal)B6PSON (Power Enable Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Logic ReturnC4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5S_INT (Alert)	B2	Spare
B5      SDA (i <sup>2</sup> C 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 <sup>2</sup> C lock 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      Spare	B3	Logic Return
B6PSON (Power Enable Signal)C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Logic ReturnC4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5S_INT (Alert)	B4	+3.3 V Stand-By
C1Logic ReturnC2Tach_1 (Fan Fail Signal)C3Logic ReturnC4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5SINT (Alert)	B5	SDA (l²C Data Signal)
C2Tach_1 (Fan Fail Signal)C3Logic ReturnC4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5S_INT (Alert)	B6	PSON (Power Enable Signal)
C3Logic ReturnC4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5S_INT (Alert)	C1	Logic Return
C4+3.3 V Stand-ByC5SCL (I <sup>2</sup> C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4+3.3 V Stand-ByD5S_INT (Alert)	C2	Tach_1 (Fan Fail Signal)
C5SCL (l²C Clock Signal)*C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4*3.3 V Stand-ByD5S_INT (Alert)	СЗ	Logic Return
C6VIN_GOOD (AC Input present)D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4*3.3 V Stand-ByD5S_INT (Alert)	C4	+3.3 V Stand-By
D1-PS_Present (Power Supply Seated)D2SpareD3Logic ReturnD4*3.3 V Stand-ByD5S_INT (Alert)	C5	SCL (I <sup>2</sup> C Clock Signal)*
D2  Spare    D3  Logic Return    D4  +3.3 V Stand-By    D5  S_INT (Alert)	C6	VIN_GOOD (AC Input present)
D3  Logic Return    D4  +3.3 V Stand-By    D5  S_INT (Alert)	D1	-PS_Present (Power Supply Seated)
D4  +3.3 V Stand-By    D5  S_INT (Alert)	D2	Spare
D5 S_INT (Alert)	D3	Logic Return
	D4	+3.3 V Stand-By
D6 POK (Output Power Ok)	D5	S_INT (Alert)
	D6	POK (Output Power Ok)

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





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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# **Mouser Electronics**

Authorized Distributor

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