

## DS650/DS850

650 / 850 Watts

Distributed Power System

Distributed Power Bulk Front-End

**Total Output Power:** 650/850 Watts  
+3.3 Vdc Stand-by Output

**Wide Range Input Voltage:** 90 - 264Vac  
12, 24 and 48V



## Special Features

- Active power factor correction
- EN61000-3-2 harmonic compliance
- Active AC inrush control
- 1U X 2U form factor
- 15.4W/ in<sup>3</sup>
- 12 Vdc, 24 Vdc and 48 Vdc output
- +3.3 Vdc stand-by (5V standby - consult factory)
- No minimum load required
- Hot plug operation
- N + 1 redundant
- Internal OR'ing fets
- Active current sharing (10 - 100% load)
- Built-in cooling fans (40mm x 28mm)
- I<sup>2</sup>C communication interface bus
- EERPOM for FRU data
- Red/Green bi-color LED status
- Internal fan speed control
- Fan Fail Tach output signal
- INTEL, SSI Std. logic timing
- INTEL, SSI Std. FRU data format
- One year warranty

## Safety

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

## Electrical Specifications

| Input                 |  |
|-----------------------|--|
| Input range           | 90-264 Vac (wide range)  |
| Frequency             | 47-63 Hz, single phase AC  |
| Inrush current        | 55 A maximum inrush current  |
| Efficiency            | >82% 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          | 20ms minimum   |
| Output                |  |
| Main DC voltage       | +12 V @ 52.5 A/70.0 A<br>+24 V @ 26.3 A / 35.0 A<br>+48 V @ 13.1 A / 17.5 A  |
| Stand-By              | +3.3 vsb @ 6 A (5 V @ 4 A available)   |
| Adjustment range      | Factory Set, no pot adjustments  |
| Regulation            | Main output; +5%/-5%<br>+3.3 vsb; +5%/-5%  |
| Over current          | 110% - 150% of nominal Latches off if overcurrent lasts over 1 second, otherwise it is auto recovery.<br>+3.3 vsb, 9 A max (hiccup mode) |
| Over voltage          | 110% - 120% of nominal<br>+3.3 vsb; 3.76 - 4.30 Vdc  |
| Under voltage         | 75% - 90% of nominal   |
| Turn-on delay         | 2 Second max, 5 - 50 mS, Monotonic Rise  |
| Main output rise time | 5 - 50 mS, Monotonic Rise  |



### Logic Control

|                    |   |
|--------------------|---|
| PS_SEATED          | TTL logic LOW if power supply is seated into system connector. This is a short pin. A logic HIGH if the PSU is removed.   |
| PWR_GOOD           | Active TTL HIGH 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 5mS early warning signal before main output loss of regulation.  |
| Temp_OK            | A TTL logic HIGH, when operating within allowable temperature range.  |
| PS_INHIBIT/PS_KILL | This signal is connected to a short pin on the PSU<br>When left open power supply operation will be inhibited.<br>When the power supply is inserted into the system, this pin will be pull low by the system and turn the power supply on only after all other power supply pins have seated. |

## Environmental Specifications

|  |   |
|--|---|
| Operating temperature:                             | -10° to 50°C ; 50% power derating at 70°C                                       |
| Storage temperature:                               | -40°C to +85°C  |
| Altitude, operating                                | 10,000ft.   |
| Electromagnetic susceptibility / Input transients: | -EN61000-3-2, -3-3<br>-EN61000-4-2, 4.3, 4-4, -4-5, 4-11 Level<br>-EN55024:1998 |
| RoHS & lead-free compliant (no tantalum caps.)     |   |
| Humidity:  | 20 to 90% RH, non-condensing  |
| Shock and vibration specifications                 | complies with Astec Std. Specifications, Q3205                                  |
| MTBF (Demonstrated)                                | 500K Hrs at full load, 40°C   |

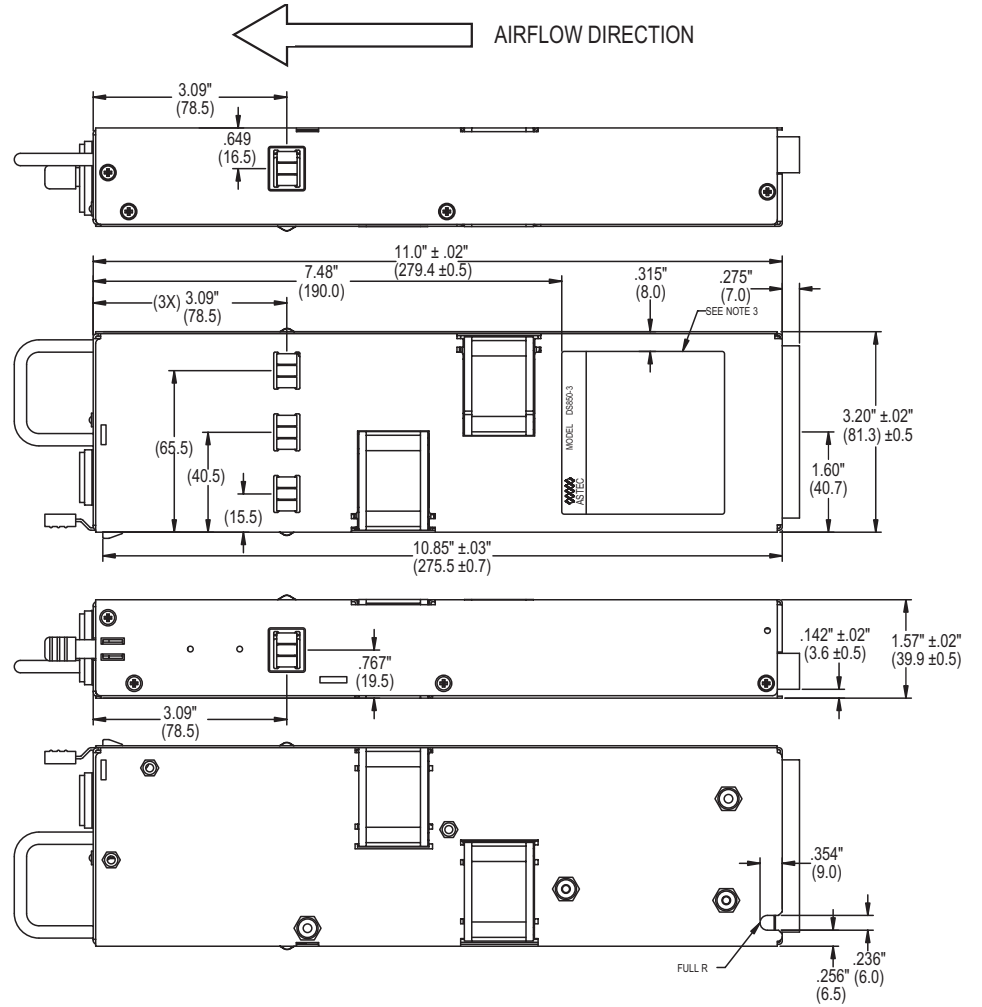
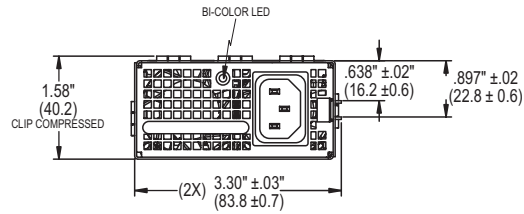
### Ordering Information

| Output  | Nominal Output Voltage Set Point | Set Point Tolerance | Total Regulation | Minimum Current | Maximum Current | Output Ripple P/P |
|---------|----------------------------------|---------------------|------------------|-----------------|-----------------|-------------------|
| DS650-3 | 12.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 52.5 A          | 120mV             |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50mV              |
| DS650-5 | 24.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 26.3 A          | 240 mV            |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50 mV             |
| DS650-9 | 48.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 13.1 A          | 480mV             |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50mV              |
| DS850-3 | 12.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 70.0 A          | 120mV             |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50mV              |
| DS850-5 | 24.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 35.0 A          | 240 mV            |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50 mV             |
| DS850-9 | 48.0 Vdc                         | ±0.2%               | ±5%              | 0A              | 17.5 A          | 480mV             |
|         | 3.3 vsb*                         | ±1%                 | ±5%              | 0A              | 6.0 A           | 50mV              |

\*For 5 vsb, consult marketing.

Mechanical Drawing

| Power Supply Condition                           | LED Green/Amber |
|--|-----------------|
| No AC power to all PSU                           | OFF             |
| AC present/Standby output ON,<br>Main output OFF | Blinking Green  |
| Power supply DC outputs ON and OK                | Solid Green     |
| Main output failure (OCP, OVP, UVP)              | Blinking Amber  |
| Fan Fail, OTP, Standby output OCP/UVP            | Solid Amber     |



## 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 | PB1 | PB2 | PB3 | PB4 | PB5 | PB6 |
| B1 | B2 | B3 | B4 | B5 | B6 |     |     |     |     |     |     |
| A1 | A2 | A3 | A4 | A5 | A6 |     |     |     |     |     |     |

### P1 - Power Supply Side

1. FCI Power Blade 51721 series  
51721-10002406AA
2. 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  | Signal Name                      |
|------|----------------------------------|
| PB 1 | MAIN O/P RETURN                  |
| PB 2 | MAIN O/P RETURN                  |
| PB 3 | MAIN O/P RETURN                  |
| PB 4 | + MAIN O/P                       |
| PB 5 | + MAIN O/P                       |
| PB 6 | + MAIN O/P                       |
| A1   | PS_ON                            |
| A2   | MAIN O/P V RMT SENSE RETURN      |
| A3   | TEMP_OK                          |
| A4   | PS_SEATED ( Power Supply Seated) |
| A5   | +3V3 STAND-BY                    |
| A6   | +3V3SB RETURN                    |
| B1   | AC_OK (AC Input Present)         |
| B2   | MAIN O/P RMT SENSE               |
| B3   | MAIN O/P CURRENT SHARE           |
| B4   | PS_INHIBIT                       |
| B5   | +3V3 STAND-BY                    |
| B6   | +3V3SB RETURN                    |
| C1   | SDA (I2C Data Signal)            |
| C2   | SCL (I2C Clock Signal)           |
| C3   | POWER GOOD                       |
| C4   | FAN FAIL (Fan Fail Signal)       |
| C5   | +3V3 STAND-BY                    |
| C6   | +3V3SB RETURN                    |
| D1   | A0 (I2C Address BIT 0 Signal)    |
| D2   | A1 (I2C Address BIT 1 Signal)    |
| D3   | S_INT (Alarm)                    |
| D4   | +3V3 STAND-BY RMT SENSE          |
| D5   | +3V3 STAND-BY                    |
| D6   | +3V3SB RETURN                    |

### Americas

5810 Van Allen Way  
Carlsbad, CA 92008  
USA  
Telephone: +1 (760) 930 4600  
Facsimile: +1 (760) 930 0698

### Europe (UK)

Waterfront Business Park  
Merry Hill, Dudley  
West Midlands, DY5 1LX  
United Kingdom  
Telephone: +44 (0) 1384 842 211  
Facsimile: +44 (0) 1384 843 355

### Asia (HK)

14/F, Lu Plaza  
2 Wing Yip Street  
Kwun Tong, Kowloon  
Hong Kong  
Telephone: +852 2176 3333  
Facsimile: +852 2176 3888

For global contact, visit:

[www.powerconversion.com](http://www.powerconversion.com)  
[techsupport.embeddedpower@emerson.com](mailto:techsupport.embeddedpower@emerson.com)

While every precaution has been taken to ensure accuracy and completeness in this literature, Emerson Network Power assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

**Emerson Network Power.**  
The global leader in enabling  
business-critical continuity.

- AC Power
- Connectivity
- DC Power
- Embedded Computing
- **Embedded Power**
- Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

**EmersonNetworkPower.com**

Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co.  
©2008 Emerson Electric Co.