

ARTESYN CSU1300AP

1300 Watts Distributed Power System



Advanced Energy's Artesyn CSU1300AP power supply is housed in a 1U high rack-mount enclosure measuring just 2.89 x 7.28 inches (73.5 x 185.0 mm). This form factor is significantly narrower and shorter than that of similarly rated earlier generation power supplies — freeing up valuable system space — and is achieved by use of the latest power switching technology and high density component packaging techniques. This form factor conforms to the standard market's Common Redundant Power Supplies.

DATA SHEET

Front-end Bulk Power

Total Output Power:

1300 W continuous

Wide Input Voltage:

90 - 264 Vac; 180 - 300 Vdc

SPECIAL FEATURES

- 1300 W output power
- High power and short form factor
- 1U power supply
- High density design: 39 W/in³
- Active Power Factor Correction
- EN61000-3-2 Harmonic compliance
- Inrush current control
- 80 PLUS® Platinum efficiency
- N+M redundant N+M ≤ 4
- Hot-pluggable
- Active current sharing
- Full digital control
- PMBus® compliant
- EN61000-4-5 surge level 1 kV/2 kV
- DM/CM
- Compatible with Artesyn's Universal PMBus GUI

COMPLIANCE

- Conducted/Radiated EMI Class A
- EN61000-4-11

SAFETY

- UL/cUL
- UL + CB Report
- CE Mark
- CCC
- BSMI
- KC
- TÜV



ELECTRICAL SPECIFICATIONS

| Input | | | | | | |
|---|---|---------|-------------------------------------|-------------------|---|---------|
| Input range | 90 - 264 Vac / 180 - 300 Vdc | | | | | |
| Frequency | 47 Hz to 63 Hz | | | | | |
| Efficiency | 80 PLUS® Platinum efficiency | | | | | |
| Max input current | 8.5 Arms @ 180 Vac; 12.5 Arms @ 100 Vac | | | | | |
| Inrush current | 25 Apk | | | | | |
| Conducted EMI | Class A | | | | | |
| Radiated EMI | Class A | | | | | |
| Power factor | >0.9 beginning at 10% load | | | | | |
| ITHD | 20% beginning at 10% load; 8% at 20% load | | | | | |
| Leakage current | 1.75 mA | | | | | |
| Hold-up time | 11 ms at full load | | | | | |
| Output | | | | | | |
| | Main DC Output | | | Standby DC Output | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| Nominal setting (12 V / 1 A, 12 VSB / 0.1 A) | 12.1 | 12.2 | 12.3 | 11.9 | 12.0 | 12.1 |
| Total output regulation range | 11.8 V | | 12.6 V | 11.4 V | | 12.6 V |
| Dynamic load regulation range | 11.6 V | | 12.6 V | 11.4 V | | 12.6 V |
| Output ripple | | | 120 mV | | | 120 mV |
| Output current | 1 | | Hi line: 108.3 A Lo line: 83.3 A | 0 | | 3 A |
| Current sharing | beginning at 20% loading | | | N/A | | |
| Capacitive loading | 2200 µF | | 22000 µF | 100 µF | | 3100 µF |
| Start-up from AC to output | | | 3000 ms | | | 1500 ms |
| Output rise time | NA | | 25 ms | NA | | 70 ms |
| Protections (Main Output) | | | | | | |
| | Minimum | Nominal | Maximum | Units | Comment | |
| Peak current | | 115 | | % | | |
| Output OCP | 120 | | 140 | % | | |
| Dynamic loading setup | | | ±5 | % | 60% rated load step, 1.0 A/µs slew rate; 2200 µF / 1 A min | |
| Output OVP | 13.5 | | 15 | V | Latch | |
| Output UVP | 9.5 | | 11.0 | V | Recovery | |
| Overtemperature protection | | Yes | | | | |
| Fan fault protection | | Yes | | | | |
| Standby Output | | | | | | |
| Output OCP | 4.0 | | 5.0 | A | | |
| Output OVP | 13.5 | | 15 | V | | |
| Dynamic loading setup | | | ±5 | % | 1 A rated load step Slew rate: 0.5 A / µs / 1000 µF | |

ELECTRICAL SPECIFICATIONS (CONTINUED)

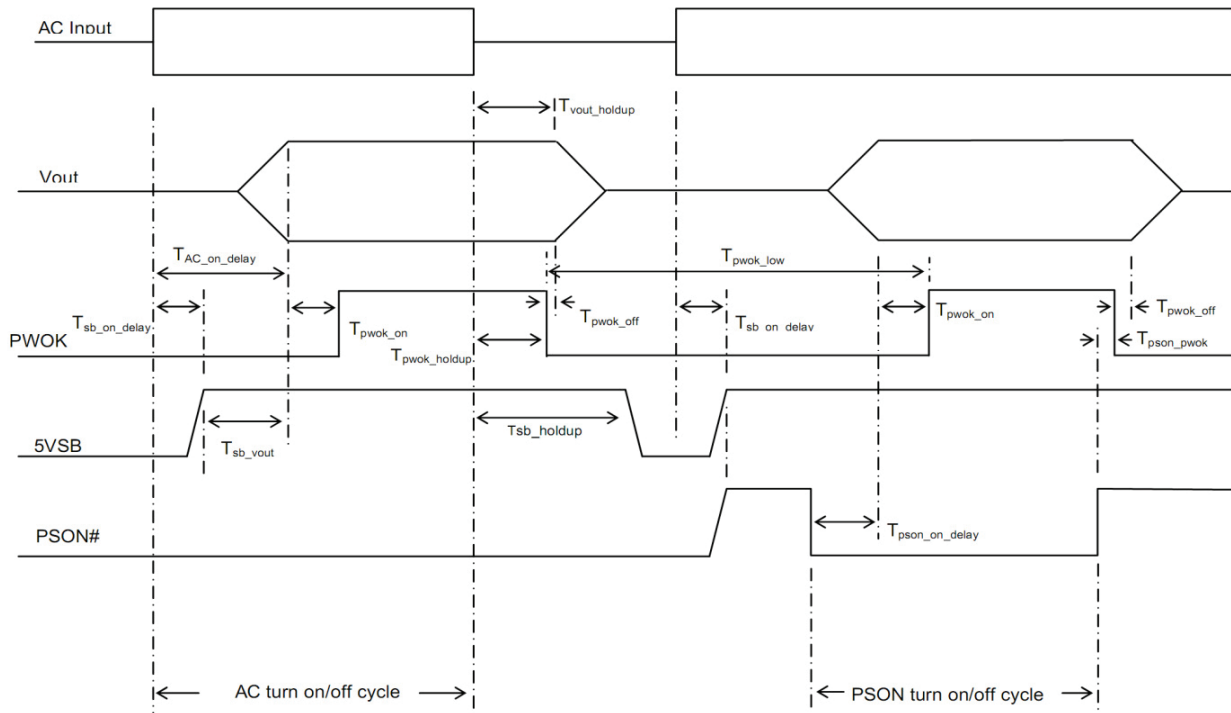
| LED Indicators | |
|--|------------------|
| POWER SUPPLY CONDITION | LED STATE |
| Normal work | GREEN |
| No AC power to all power supplies | OFF |
| AC present / Only 12 VSB on (PS off) or PS in CR state | 1 Hz Blink GREEN |
| AC cord unplugged; with a second power supply in parallel still with AC input power | RED |
| Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan, input voltage lower than 90 Vac (not warning above 90 V condition, must be warning state below 85 V condition) | 1 Hz Blink RED |
| Power supply critical event causing a shutdown; failure, OCP, OVP, fan fail | RED |

| Firmware Reporting And Monitoring | | | |
|-----------------------------------|----------------|--------------|---------------|
| | Accuracy Range | | |
| Output loading | 10% to 20% | > 20% to 50% | > 50% to 100% |
| READ_PIN and READ_EIN | ±5 W | ±2% | ±2% |
| READ_IOUT | ±5% | ±2% | ±2% |
| READ_TEMPERATURE | ±3 °C | | |

TIMING SPECIFICATIONS

| | Description | Min | Max | Unit |
|----------------------------|--|-----|------|------|
| T _{vout_rise} | 12 V main output voltage rise time | 5.0 | 25 | ms |
| | 12 VSB output voltage rise time | NA | 70 | ms |
| T _{sb_on_delay} | Delay from AC being applied to 12 Vsb being within regulation | | 1500 | ms |
| T _{ac_on_delay} | Delay from AC being applied to all output voltages being within regulation | | 3000 | ms |
| T _{vout_holdup} | Time 12 V _I output voltage stay within regulation after loss of AC | 11 | | ms |
| T _{pwok_holdup} | Delay from loss of AC to de-assertion of PWOK | 10 | | ms |
| T _{pson_on_delay} | Delay from PSON# active to output voltages within regulation limits | 5 | 400 | ms |
| T _{pson_pwok} | Delay from PSON# deactivate to PWOK being de-asserted | | 5 | ms |
| T _{pwok_on} | Delay from output voltages within regulation limits to PWOK asserted at turn on | 100 | 500 | ms |
| T _{pwok_off} | Delay from PWOK de-asserted to output voltages dropping out of regulation limits | 1 | | ms |
| T _{pwok_low} | Duration of PWOK being in the de-asserted state during an off/on cycle using AC or the PSON signal | 100 | | ms |
| T _{sb_vout} | Delay from 12VSB being in regulation to O/Ps being in regulation at AC turn on | 50 | 1000 | ms |
| T _{12VSB_holdup} | Time the 12VSB output voltage stays within regulation after loss of AC | 70 | | ms |

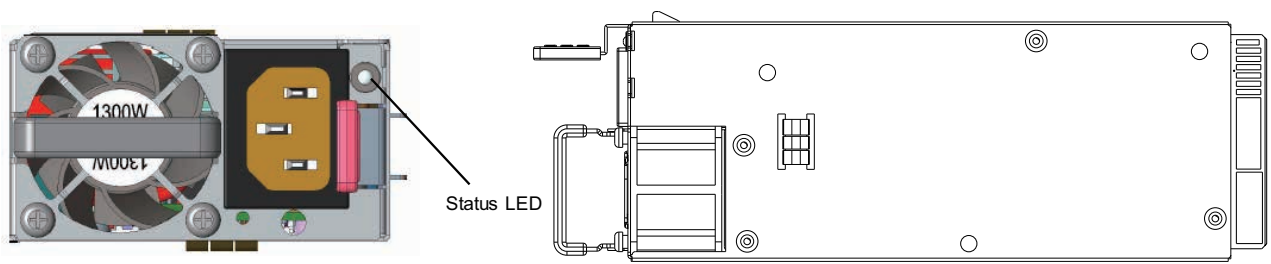
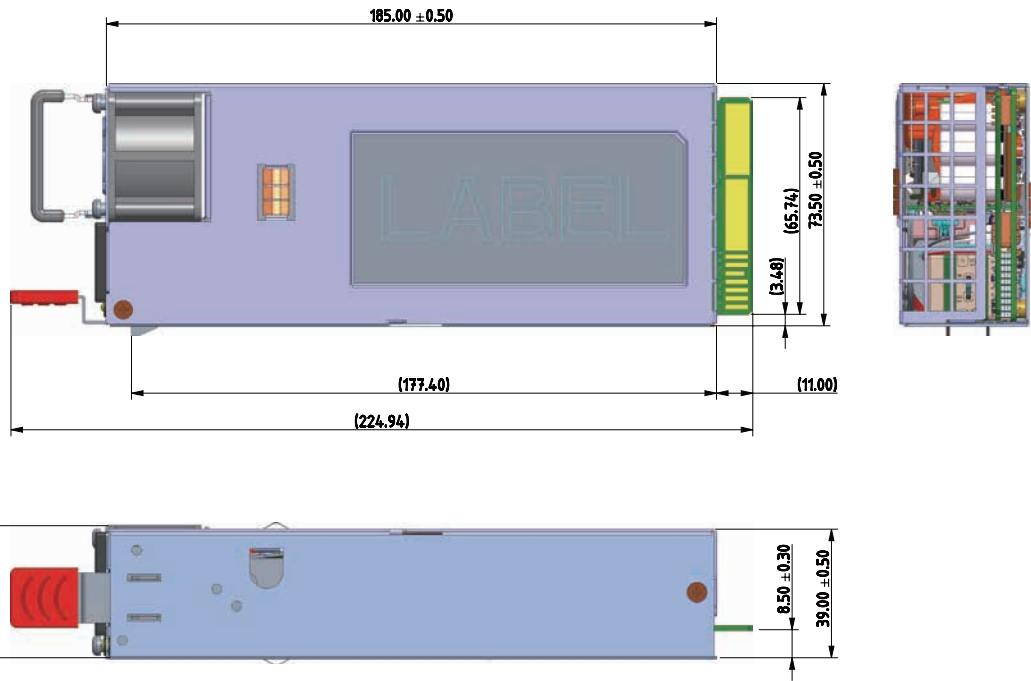
TIMING DIAGRAM



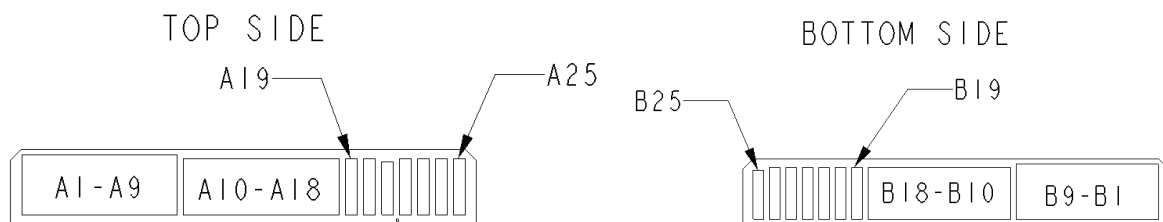
ENVIRONMENTAL SPECIFICATIONS

| | |
|------------------------|---|
| Operating temperature | 0 to 55 °C |
| Operating altitude | up to 5000 m |
| Operating humidity | +5% to +90% non-condensing |
| Storage temperature | -40 °C to +85 °C, non-condensing |
| Storage humidity | +5% to +95% non-condensing |
| Non-operating altitude | up to 15,200 meters |
| Vibration and shock | Standard operating/non-operating random shock and vibration |
| RoHS compliance | Yes |
| MTBF | 250,000 hours at 40 °C ambient at full load |

MECHANICAL OUTLINE



POWER SUPPLY OUTPUT CARD EDGE



CONNECTOR DEFINITIONS

| | |
|------------------------------|---|
| Output connector part number | Card-edge |
| Mating connector part number | 2x25 pin configuration of the FCI power card connector 10035388-102LF |

| Output Connector Pin Configuration | | | |
|------------------------------------|-----------|---------|--------------------|
| Pin | Name | Pin | Name |
| A1-A9 | GND | B1-B9 | GND |
| A10-A18 | +12 V | B10-B18 | +12 V |
| A19 | SDA | B19 | A0 (SMBus address) |
| A20 | SCL | B20 | A1 (SMBus address) |
| A21 | PSON | B21 | 12 VSB |
| A22 | SMBAlert# | B22 | CR_BUS# |
| A23 | -VSENSE | B23 | 12 V load share |
| A24 | +VSENSE | B24 | Present |
| A25 | PWOK | B25 | VIN-GOOD |

ORDERING INFORMATION

| Model number | Airflow | Nominal Output Voltage | Regulation Band | Minimum Current | Maximum Current | Output Ripple P/P | Standby |
|-----------------|------------|------------------------|-----------------|-----------------|-------------------------------------|-------------------|--------------|
| CSU1300AP-3-600 | Normal fan | 12.2 Vdc | 11.6 - 12.6 Vdc | 1 A | Hi line: 108.3 A Lo line: 83.3 A | 120 mV | 12.0 V @ 3 A |



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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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