

**280 WATT SERVER POWER SUPPLY
FAULT-TOLERANT POWER SYSTEM**

10.47 x 4.17 x 1.63" | 266 x 106 x 41.5mm

DESCRIPTION

Unipower's **SSD9233-R1U** is a 280 Watt fault-tolerant power system manufactured to support high-end server and communication equipment. The power system consists of two SSD3000 Power Modules which mate into the SSSDR1U Chassis / Backplane.

The SSD3000 Power Module:

- Universal AC Input with Active PFC
- >85% Efficiency (at 50% Load)
- +12V Main with 5VSB outputs
- Active Current Share with OR'ng Diodes
- >100,000 Hours MTBF (MIL217F)

The SSSDR1U Chassis:

- DC-DC Regulation atx 2.0 outputs
- Parallel Connecting the Power Modules
- ATX Output Harness (standard)

The power system provides hot-swap / redundant functionality of the AC-DC Power Supplies and the backplane's dc-dc regulators feature reliability measured in millions of hours to support high-reliability applications.

FEATURES

- >75% Efficiency (115 VAC / Full Load)
- 1U High: 1.63"
- 0°C to +40°C Operation (Full Load)
- Universal AC Input with Active PFC
- >0.95 Power Factor (minimum)
- ATX 2.0 Compliant Ooutput Voltgaes
- Hot Swappable Power Modules
- International Approvals and Class B Emissions
- LED Indicators
- PMBus Serial Communications
- Variable Speed Cooling Fans

TWO-YEAR WARRANTY

INTERNATIONAL STANDARDS

UL/cUL 60950-1, TUV EN 60950-1
CB IEC 60950-1, WEEE, CE Mark (LVD)



Fault-Tolerant Power System

| MODEL | POWER | VOUT | IOUT |
|------------------------------------|-------|------|------|
| SSD9233-R2U (integrated system) | 280W | 3.3V | 20A |
| | | 5V | 20A |
| | | 12V | 22A |
| | | -12V | 0.5 |
| | | 5VSB | 2A |

Component Parts

| MODEL | DESCRIPTION |
|---------|--------------------------------|
| SSD3000 | 280 Watt Hot-Swap Power Module |
| SSDR1U | 280 Watt Chassis & Backplane |

SSD3000 POWER MODULE SPECIFICATIONS

Typical at Nominal Line, Full Load and 25°C Unless Otherwise Noted.

INPUT

| | |
|--------------------------------|--|
| Voltage Range | 90-264 VAC |
| Power Factor | >0.95 |
| Total Harmonic Distortion, Max | 5% |
| Frequency | 47-63Hz |
| Inrush Current Limiting, Max | 35 / 70A Peak @ 115 / 230 VAC |
| EMI Filter, Conducted | FCC20780 pt 15J Curve B EN55022 Curve B |
| Fast Transients | EN61000-4-4 |
| Surges | EN61000-4-5 |
| Remote Sense Compensation | >250mV |
| Input Protection | Internal Fuse, 6.3A |

OUTPUT

| | |
|-----------------------------------|-------------------------|
| Current & Voltage | See Table |
| Output Power | 280W |
| Ripple / Noise, max | 12V = 120mV 5V = 60mV |
| Line Regulation | Max ±1% |
| Load Regulation | Max ±5% |
| Transient Load / Slew Rate | 0.5A/μs |
| Holdup Time | 17msec @ 70% load |
| Overvoltage Protection (12V Only) | 14.5V Max (Latch Off) |
| Current Limit | >130% (Latch Off) |
| Efficiency | 85% (Minimum) |

SAFETY STANDARDS UL60950-1, CSA22.2 No. 60950-1, EN60950-1

PMBus Version Compliance 1.1

STATUS INDICATORS

| | |
|-----------------------------|--------------------------|
| Normal(AC OK) | Green |
| Standby (Only +5VSB output) | (AC OK) Blinking Green |
| Power Fail | Red |
| Fan Fail | Blinking Red |
| Audible Buzzer | Fan / Power / AC Failure |

ALARM SIGNALS (open drain, TTL compatible)

| | |
|-----------|-----------------------------------|
| PS ON | Remote ON Off (LOW=ON) |
| PS KILL | Activates PSU (Short) |
| SMB ALERT | Power Fail (normal = high) |
| P GOOD | Power Good (HIGH) |
| PRESENT | Indicates Power Module is present |

ENVIRONMENTAL

| | |
|-------------------------|--|
| Operating Temp. Range | 0°C to +40°C Full Load |
| Output Current Derating | 2.5%/°C from 40-50°C, then 5%/°C from 50-60°C |
| Storage Temp. Range | -40°C to +70°C |
| Humidity | 20-90%, Non-Condensing |
| ESD | Bellcore GR-1089-Core and EN61000-4-2 |
| MTBF, 25°C (MIL217F) | 100,000 Hours |
| Cooling | Integral Ball Bearing Fans |

PHYSICAL SPECIFICATIONS

| | |
|------------------------------|---|
| Case Material | Steel |
| Case Dimensions, Inches (mm) | 8.66"(L) x 1.99"(W) x 1.57"(H) (220 x 50.5 x 40mm) |
| Weight | 2.4 lbs. (1.1 kg.) |

DC CONNECTOR DETAILS

1.27mm pitch card edge connector or equivalent

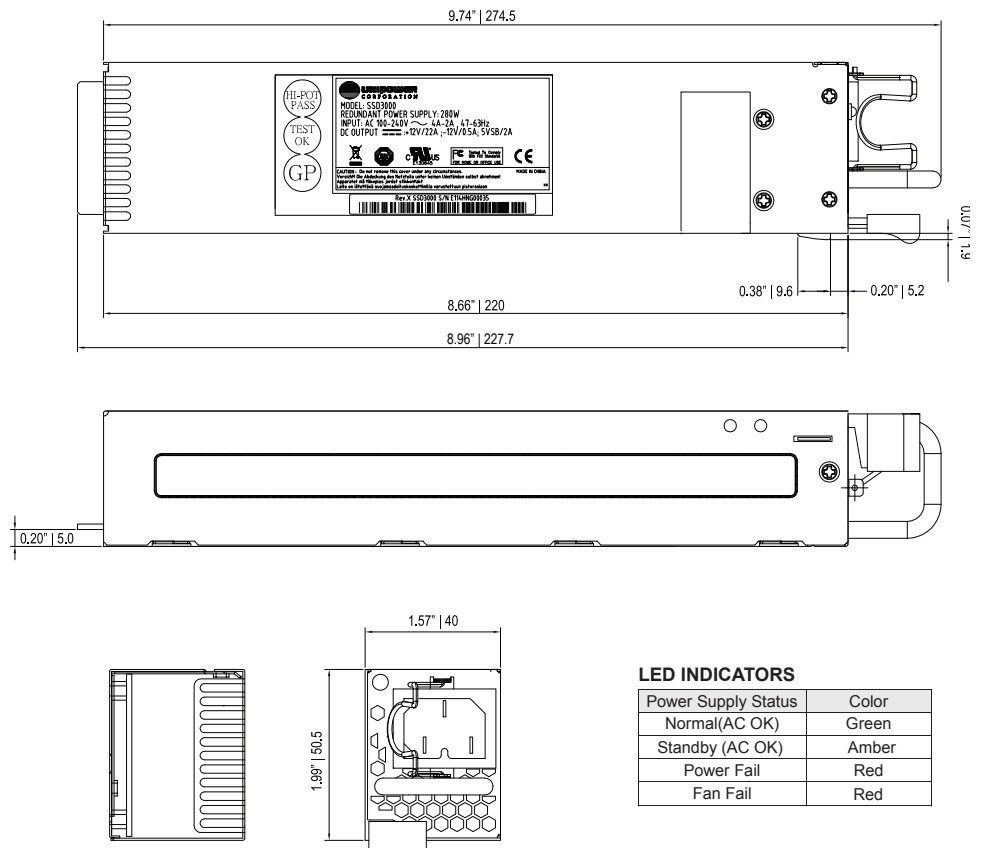
TOP SIDE

| | |
|------------|----|
| AC-L | 59 |
| - | 57 |
| - | 55 |
| - | 53 |
| AC-N | 51 |
| - | 49 |
| - | 47 |
| - | 45 |
| GND | 43 |
| GND | 41 |
| GND | 39 |
| GND | 37 |
| GND | 35 |
| GND | 33 |
| GND | 31 |
| GND | 29 |
| GND | 27 |
| GND | 25 |
| GND | 23 |
| GND | 21 |
| GND | 19 |
| GND | 17 |
| GND | 15 |
| -12V | 13 |
| 5VSB SENSE | 11 |
| ENABLE | 9 |
| - | 7 |
| - | 5 |
| SMB ALERT | 3 |
| PRESENT | 1 |

BOTTOM SIDE

| | |
|----|-----------|
| 60 | AC-L |
| 58 | - |
| 56 | - |
| 54 | - |
| 52 | AC-N |
| 50 | - |
| 48 | - |
| 46 | - |
| 44 | GND |
| 42 | GND |
| 40 | +12V |
| 38 | +12V |
| 36 | +12V |
| 34 | +12V |
| 32 | +12V |
| 30 | +12V |
| 28 | +12V |
| 26 | +12V |
| 24 | +12V |
| 22 | +12V |
| 20 | +12V |
| 18 | +12V |
| 16 | +12V |
| 14 | +5VSB |
| 12 | +5VSB |
| 10 | 12V SENSE |
| 8 | PS ON |
| 6 | P GOOD |
| 4 | - |
| 2 | PS KILL |

OUTLINE DRAWING



LED INDICATORS

| Power Supply Status | Color |
|---------------------|-------|
| Normal(AC OK) | Green |
| Standby (AC OK) | Amber |
| Power Fail | Red |
| Fan Fail | Red |

SSDR1U CHASSIS / BACKPLANE SPECIFICATIONS

Typical at Full Load and 25°C Unless Otherwise Noted.

INPUT

Input from Power Modules +12 VDC, -12V , 5VSB

OUTPUT

| Voltage | Minimum Load | Current | Load Regulation | Line Regulation | Ripple & Noise |
|---------|--------------|---------|-----------------|-----------------|----------------|
| 3.3V | - | 20A | ±5% | ±1% | 60Mv |
| 5V | - | 20A | ±5% | ±1% | 60Mv |
| 12V | 0.5A | 22A | ±5% | ±1% | 120Mv |
| -12V | - | 0.5A | ±5% | ±1% | 120Mv |
| 5VSB | - | 2.0A | ±5% | ±1% | 60Mv |

Output Power 280W (≤140W on 3.3V & 5V combined)
 Holdup Time >1 AC Cycle, Full Load
 Overvoltage Protection 3.3V, 5V, 12V only (Latch Off)
 Current Limit 3.3V, 5V, 12V only (Latch Off)
 Efficiency >92% (Minimum @ Full Load)

SAFETY STANDARDS UL60950-1, CSA22.2 No. 60950-1, EN60950-1

STATUS / CONROL

Remote Sense 3.3V, 5V, 12V Only
 Normal High Signal (open drain, TTL compatible)
 Power Fail Low Signal (open drain, TTL compatible)
 Fan Fail Low Signal (open drain, TTL compatible)

ENVIRONMENTAL

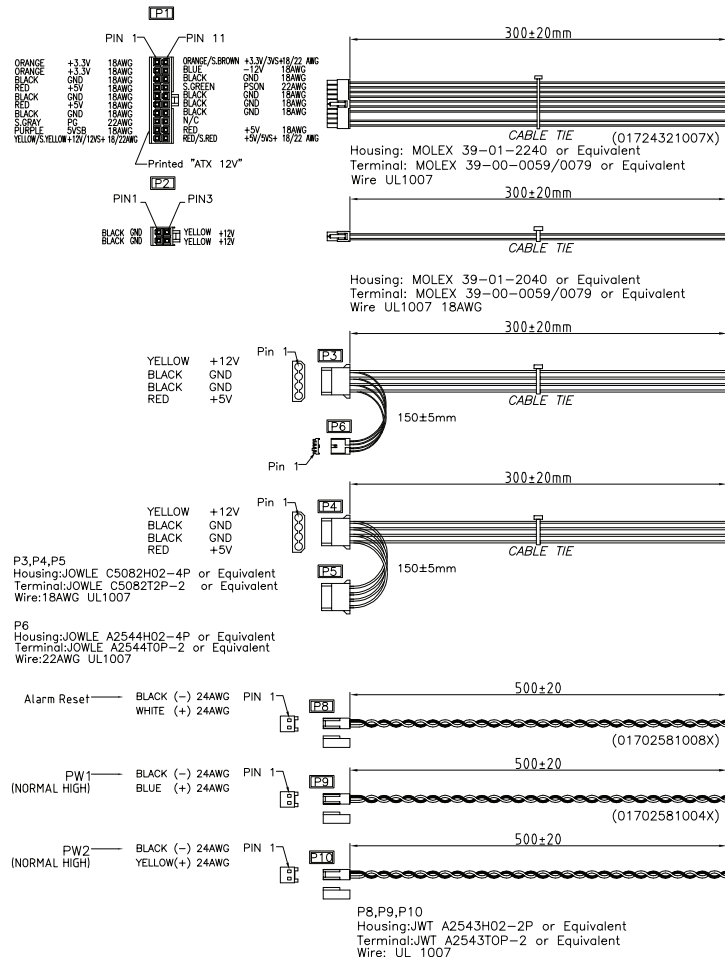
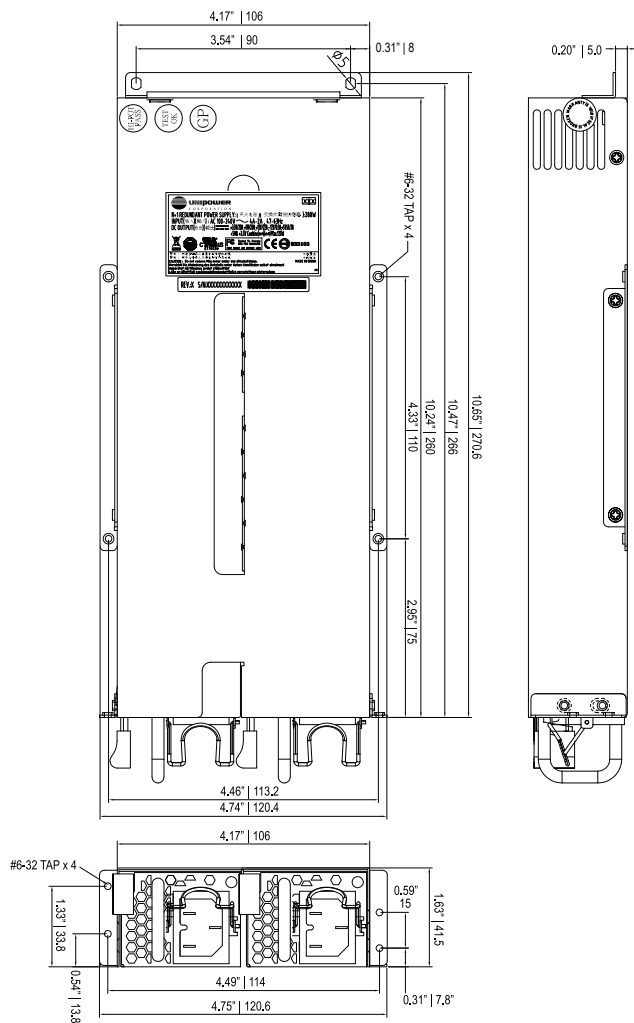
Operating Temp. Range 0°C to +40°C Full Load
 Output Current Derating 2.5%/°C from 40-50°C,
 then 5%/°C from 50-60°C
 Storage Temp. Range -40°C to + 70°C
 Humidity 20% to 90%, Non-Condensing
 ESD Bellcore GR-1089-Core and EN61000-4-2
 MTBF, 25°C (MIL217F) 100,000 Hours
 Cooling Integral Ball Bearing Fans

PHYSICAL SPECIFICATIONS

Case Material Steel
 Dimensions 10.47 x 4.17 x 1.63" | 266 x 106 x 41.5mm
 Weight (populated chassis) 6.61 lbs. (3 kg.)

OUTLINE DRAWING

Standard Cable Assemblies shown below. Customer specified cable assemblies available upon request and designated by customer specific suffix in the final part number.



INDICATORS (on each module)

| Power Supply Status | Color |
|---------------------|----------------|
| Normal(AC OK) | Green |
| Standby (AC OK) | Blinking Green |
| Power Fail | Red |
| Fan Fail | Blinking Red |

CAPACITIVE LOADING

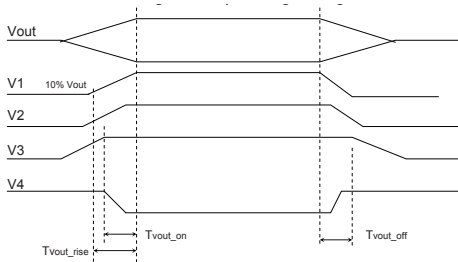
| Output | MIN | MAX | Units |
|--------|-----|--------|-------|
| +3.3V | 10 | 12,000 | uF |
| +5V | 10 | 12,000 | uF |
| +12V | 10 | 11,000 | uF |
| -12V | 1 | 350 | uF |
| +5VSB | 1 | 350 | uF |

TRANSIENT LOAD RESPONSE

| Output | ΔStep Load Size | Load Slew Rate | Capacitive Load |
|--------|------------------|----------------|-----------------|
| +5V | 50% of Max. Load | 0.5 A/uS | 1000 uF |
| +3.3V | 50% of Max. Load | 0.5 A/uS | 1000 uF |
| +12V | 50% of Max. Load | 0.5 A/uS | 2200 uF |
| +5VSB | 50% of Max. Load | 0.5 A/uS | 1 uF |

OUTPUT VOLTAGE TIMING

| Item | Description | MIN | MAX | Units |
|------------|---|-----|-----|-------|
| Tvout_rise | Output voltage rise time from each main output | 1 | 20 | mS |
| | Output voltage rise time for the 5Vsb out put | 1 | 25 | mS |
| Tvout_on | All main output must be within regulation of each other within this time. | | 50 | mS |
| Tvout_off | All main output must leave regulation within this time | | 400 | mS |



TURN ON / OFF TIMING

| Item | Description | MIN | MAX | Units |
|----------------|--|-----|------|-------|
| Tsb_on-delay | Delay from AC being applied to +5VSB being within regulation. | | 1500 | mS |
| Tac_on-delay | Delay from AC being applied to all output voltages being within regulation. | | 2500 | mS |
| Tvout_holdup | Time all output voltage stay within regulation after loss of AC tested at 60% of maximum load. | 17 | | mS |
| Tpwok_holdup | Delay from loss of AC deassertion of PWOK tested at 60% of maximum load. | 16 | | mS |
| Tpson_on_delay | Delay from PSON# active to output voltage within regulation limits. | 5 | 400 | mS |
| Tpson_pwok | Delay from PSON# deactive to PWOK being deasserted. | | 50 | mS |
| Tpwok_on | Delay from output voltage within regulation limits to PWOK asserted at turn on. | 100 | 1000 | mS |
| Tpwok_off | Delay from PWOK deasserted to output voltages (+5V, +3.3V, +12V, -12V) dropping out of regulation limits. Tested at 60% of maximum load. | 1 | | mS |
| Tpwok_low | Duration of PWOK being in the deasserted state during an off/on cycle using AC or the PSON# signal. | 100 | | mS |
| Tsb_vout | Delay from +5VSB being in regulation to O/Ps being in regulation at AC turn on. | 50 | 1000 | mS |

