



FEATURES

- RoHS compliant
- 1U height, 18.3" width, 16" depth powershell
- Holds 3 D1U series power supplies
- Hot insertion / removal
- Blind-docking connection
- Lug DC output connection for 2 AWG cables
- I²C interface
- Signal connector
- Optional shelf to shelf signal connector (up to 2 shelves in parallel)

DESCRIPTION

The S1U-X3 is a 1U x 19" EIA Rack Mount Power Shelf designed for holding three 12V or 48V D1U Front End Power Supplies in current sharing applications. It is intended for distributed power architecture applications in the Servers, Storage Networking and Data Communications markets. There are two lug terminal connections for #2 AWG cabling for the DC output. System connection through the I²C bus reports the performance status of the power supplies within the power shelf. Two Power Shelves can operate in parallel by an optional Shelf-to-Shelf cable, doubling the power output to the maximum capability of 9.6kW for two 12V power shelves or 12kW for two 48V power shelves.

| SELECTION GUIDE | |
|-------------------|-------------------------|
| Part Number | Description |
| S1U-3X-16-A-12-RC | Power shelf for 12V D1U |
| S1U-3X-16-A-48-RC | Power shelf for 48V D1U |

| OUTPUT AND PROTECTION CHARACTERISTICS | | | |
|--|--------------------------------|---|----------------------------------|
| Parameter | | | |
| Main output set point | Output total regulation | Please Refer to Appropriate D1U Datasheet on www.cd4power.com | |
| | Output ripple voltage & noise | | 12V 1200W: CPS_D1U-W-1200-12.pdf |
| | Output current operating range | | 12V 1600W: CPS_D1U-W-1600-12.pdf |
| Standby output set point | Output total regulation | | 48V 1200W: CPS_D1U-W-1200-48.pdf |
| | Output ripple voltage & noise | | 48V 1600W: CPS_D1U-W-1600-48.pdf |
| | Output current operating range | | 48V 2000W: CPS_D1U-W-2000-48.pdf |
| Efficiency | | | |
| Start-up time | | | |
| Transient response main output | | | |
| Transient response standby output | | | |
| Current sharing accuracy (up to 3 in parallel with 5A total minimum current) | | | |
| Hold-up time | | | |
| Over-temperature (Auto-restart) | | | |
| Over voltage main output (Latching) | | | |
| Over voltage standby output (Latching) | | | |
| Over current main output (Latching) | | | |
| Over current standby output (Latching) | | | |

D1U Family Part Numbering

D1U-W-1200-12-HA1C

- D = Distributed Power
- 1U = 1U
- W = Wide AC input
- 1200 = 1200 Watts
- 1600 = 1600 Watts
- 2000 = 2000 Watts (only available in 48V output model)
- 12 = Main output 12V
- 48 = Main output 48V
- C = RoHS compliant
- 1 = Airflow front to back, 2 = Airflow back to front
- Standby Output Voltage A=5V, B=12V, C=3.3V, 0=no standby
- H = Hotplug connector

| EMISSIONS & IMMUNITY (with power supplies inserted) ¹ | | |
|--|---|---|
| Conditions | Description | Criteria |
| Harmonics | IEC/EN 61000-3-2 | |
| Voltage fluctuation & flicker | IEC/EN 61000-3-3 | |
| Emission conducted | FCC 47 CFR Parts 15 / CISPR 22 / EN 55022 | Class A, 6dB margin |
| Emission radiated | FCC 47 CFR Parts 15 / CISPR 22 / EN 55022 | Class A, 6dB margin |
| ESD | IEC/EN 61000-4-2 | 4kV contact discharge |
| | | 8kV operational air discharge |
| | | 15kV non-operational air discharge |
| Electromagnetic field | IEC/EN 61000-4-3 | |
| Electrical fast transients/burst | IEC/EN 61000-4-4 | |
| Surge | IEC/EN 61000-4-5 | 1kV/2kV, performance criteria B |
| RF Conducted immunity | IEC/EN 61000-4-6 | 3 Vac, 80% AM, 1kHz, Performance criteria A |
| Magnetic immunity | IEC/EN 61000-4-8 | 3A/m |
| Voltage dips, interruptions | IEC/EN 61000-4-11 | |

| SAFETY | |
|-----------------------|---|
| Parameter | Condition |
| Agency approvals | c-CSA-us (CSA 60950-1-03/UL 60950-1, first edition) |
| Material flammability | UL 94V-0 |

¹ Product is designed to meet the referenced standards.



| GENERAL CHARACTERISTICS | | | | | |
|-----------------------------|------------------------------------|------|------|------|----------------------|
| Parameter | Conditions | MIN. | TYP. | MAX. | Units |
| Storage Temperature Range | Non-condensing | -40 | | 125 | °C |
| Operating Temperature Range | | 0 | | 50 | |
| Operating Humidity | Non-condensing | 10 | | 90 | % |
| Storage Humidity | | 5 | | 90 | |
| Shock | 30G non operating | | | | |
| Sinusoidal Vibration | 0.5G, 5 – 500 Hz | | | | |
| MTBF | Calculated per Bellcore at Ta=30°C | 200 | | | x10 ⁵ hrs |
| | Demonstrated | 200 | | | x10 ⁵ hrs |

| CONNECTOR TO CUSTOMER SYSTEM | | | | | |
|---|-------------------------------------|---|---|------------------|--|
| Signal Connector: MOLEX # 39-28-5204 OR TYCO # 281282-1 | | | | | |
| Pin Assignment | Signal Name | Description | High Level Low Level | I Max | |
| 1 | AC_OK1 ¹ | Input AC Voltage 'OK' signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA | |
| 2 | P_Good1 ² | Power good signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA | |
| 3 | PS_On1 ³ | Power enable for the shelf | > 2.1V (open, or Vsb) < 0.7V (active, PS:On) | - 1 mA - 4 mA | |
| 4 | NOT USED | | | | |
| 5 | AC_OK0 ¹ | Input AC Voltage "OK" signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA | |
| 6 | P_Good0 ² | Power good signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA | |
| 7 | PS_On0 ³ | Power enable for the shelf | > 2.1V (open, or Vsb) < 0.7V (active, PS:On) | - 1 mA - 4 mA | |
| 8 | NOT USED | | | | |
| 9 | I ² C ADR2 | Address input 2 | > 2.1V, < Vsb < 0.8V | ± 1 mA | |
| 10 | I ² C Clock ⁴ | I ² C serial clock bus | Vsb | | |
| 11 | I ² C Data ⁴ | I ² C serial data bus | Vsb | | |
| 12 | I_SHARE | | | | |
| 13 | SENSE + ⁵ | | | | |
| 14 | SENSE - ⁵ | | | | |
| 15 | Vsb | Standby voltage output | | | |
| 16 | Vsb | Standby voltage output | | | |
| 17 | Vsb | Standby voltage output | | | |
| 18 | GND | GROUND | | | |
| 19 | GND | GROUND | | | |
| 20 | GND | GROUND | | | |

All control signals are with respect to Ground. Negative currents exit the power supply.

¹ Signal goes low when any one of the three power supplies loses AC

² Signal goes low when any one of the three power supplies fail

³ Pull this pin to GND to turn on three power supplies at the same time. Use I²C to turn on one power supply at a time.

⁴ Recommended 10KOhm pull up resistor to host 3.3 or 5V rail

⁵ Short Sense+ to +Vout and Sense- to GND at the point of load

| SHELF TO SHELF CONNECTION | | | | |
|---|-------------------------------------|---|---|------------------|
| Signal Connector: MOLEX # 39-28-5164 OR TYCO # 281281-1 | | | | |
| Pin Assignment | Signal Name | Description | High Level Low Level | I Max |
| 1 | AC_OK1 ¹ | Input AC Voltage 'OK' signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA |
| 2 | P_Good1 ² | Power good signal output for the shelf | open drain < 0.7V | - 2 mA + 4 mA |
| 3 | PS_On1 ³ | Power enable for the shelf | > 2.1V (open, or Vsb) < 0.7V (active, PS:On) | - 1 mA - 4 mA |
| 4 | NOT USED | | | |
| 5 | NOT USED | | | |
| 6 | I ² C Clock ⁴ | I ² C serial clock bus | Vsb | |
| 7 | I ² C Data ⁴ | I ² C serial data bus | Vsb | |
| 8 | I_SHARE | | | |
| 9 | SENSE + ⁵ | | | |
| 10 | SENSE - ⁵ | | | |
| 11 | Vsb | Standby voltage output | | |
| 12 | Vsb | Standby voltage output | | |
| 13 | Vsb | Standby voltage output | | |
| 14 | GND | GROUND | | |
| 15 | GND | GROUND | | |
| 16 | GND | GROUND | | |

All control signals are with respect to Ground. Negative currents exit the power supply.

¹ Signal goes low when any one of the three power supplies loses AC

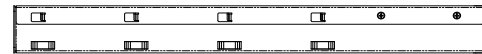
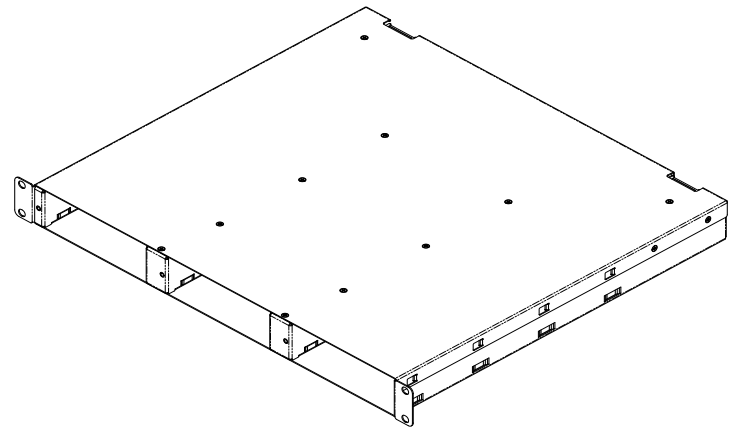
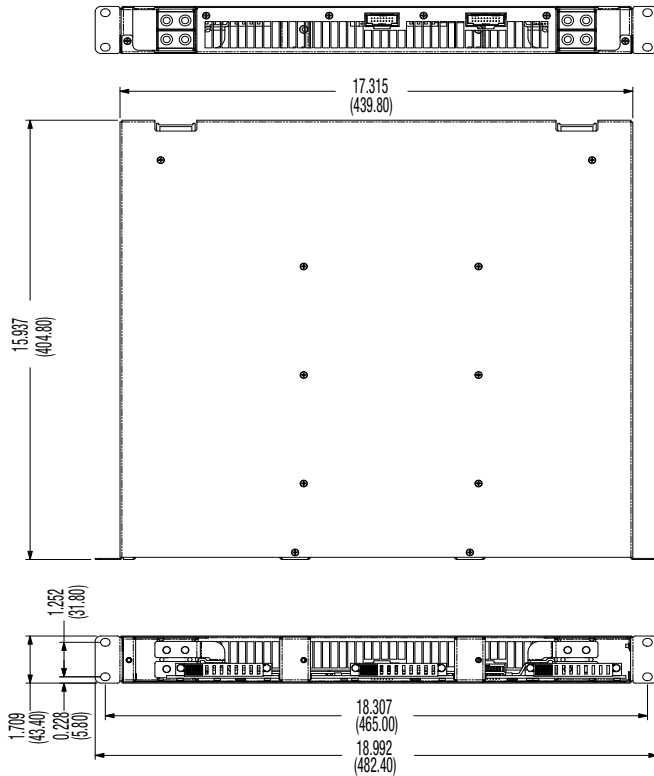
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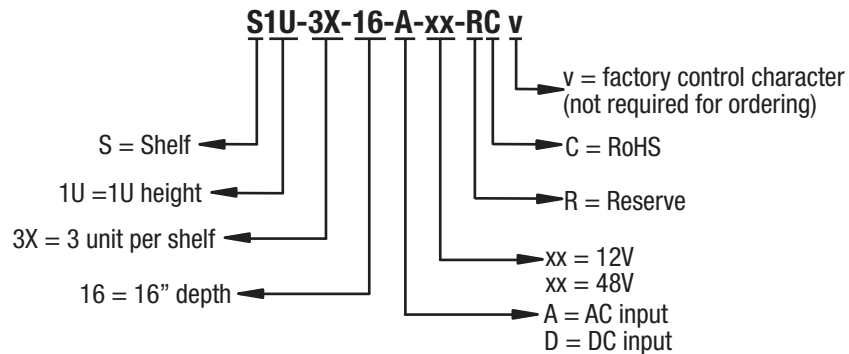
⁵ Short Sense+ to +Vout and Sens- to GND at the point of load

| OPTIONAL ACCESSORIES | |
|----------------------|-----------------|
| Description | C&D Part Number |
| Shelf to Shelf Cable | 535-413-1537-1 |



NOTES:

1. The DC output terminals are of terminal block style that will allow connection using crimp type right-angle lugs accepting up to AWG#2 wire, Panduit lug LCC2-14AWF-Q or equivalent is recommended.
2. Two M6 studs at 15.88 mm centre spacing are provided for connection to each pole. Hardware is provided for fastening the lugs/wires as well as terminal block covers



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