

**To Be Discontinued\***



### FEATURES

- 1200W output power
- 80 PLUS® Gold efficiency
- 12V main output
- 3.3V or 5V standby output of 20W
- 1U height: 3.20" x 11.00" x 1.57"
- 21.7 Watts per cubic inch density
- N+1 redundancy capable, including hot plugging (up to 8 in parallel)
- Active current sharing on 12V main output; ORing FET
- Overvoltage, overcurrent, overtemperature protection
- Internal cooling fan (variable speed)
- PMBus™ I<sup>2</sup>C interface with status indicators
- RoHS compliant
- Two-year warranty



Available now at  
[www.murata-ps.com/en/3d/acdc.html](http://www.murata-ps.com/en/3d/acdc.html)

### PRODUCT OVERVIEW

The D1U3CS-W-1200-12-HxxC series are 80 PLUS Gold efficiency 1200 watt, power factor corrected front end supplies with a 12V main output and a 5V or 3.3V (20W) standby. They have active current sharing and up to 8 supplies may be operated in parallel. The supplies may be hot plugged, they recover from overtemperature faults, and have status LEDs on their front panel in addition to logic and PMBus™ status signals. Their low profile 1U package and >21W/cubic inch power density make them ideal for delivering reliable, efficient power to servers, workstations, storage systems and other 12V distributed power systems.

### ORDERING GUIDE

| Part Number           | Power Output High Line AC | Power Output Low Line AC | Main Output | Standby Output | Airflow       |
|-----------------------|---------------------------|--------------------------|-------------|----------------|---------------|
| D1U3CS-W-1200-12-HC4C | 1200W                     | 1000W                    | 12V         | 3.3V           | Back to front |
| D1U3CS-W-1200-12-HA4C | 1200W                     | 1000W                    | 12V         | 5V             | Back to front |
| D1U3CS-W-1200-12-HC3C | 1200W                     | 1000W                    | 12V         | 3.3V           | Front to back |
| D1U3CS-W-1200-12-HA3C | 1200W                     | 1000W                    | 12V         | 5V             | Front to back |

### INPUT CHARACTERISTICS

| Parameter                              | Conditions                      | Min. | Nom.    | Max. | Units |
|----------------------------------------|---------------------------------|------|---------|------|-------|
| Voltage Operating Range                |                                 | 90   | 115/230 | 264  | Vac   |
| Frequency                              |                                 | 47   | 50/60   | 63   | Hz    |
| Turn-on Voltage                        | Ramp up                         | 81   | 85      | 89   | Vac   |
| Turn-off Voltage                       | Ramp down                       | 70.5 | 74.3    | 78   |       |
| Maximum Current at Vin=200Vac          | 1200W                           |      |         | 8    | Arms  |
| Maximum current at Vin=90Vac           | 1000W                           |      |         | 15   | Apk   |
| Inrush Current                         | Cold start between 0 to 200msec |      |         | 25   |       |
| Power Factor                           | At 230Vac, full load            |      | 0.99    |      | %     |
| Efficiency (230Vac) excluding fan load | 20% load                        | 88   |         |      |       |
|                                        | 50% load                        | 92   |         |      |       |
|                                        | 100% load                       | 92   |         |      |       |

### OUTPUT VOLTAGE CHARACTERISTICS

| Output Voltage | Parameter                           | Conditions      | Min. | Typ. | Max.  | Units  |
|----------------|-------------------------------------|-----------------|------|------|-------|--------|
| 12V            | Voltage Set Point Accuracy          |                 |      | 12.0 |       | Vdc    |
|                | Line and Load Regulation            |                 | 11.4 |      | 12.6  |        |
|                | Ripple Voltage & Noise <sup>1</sup> | 20MHz Bandwidth |      |      | 120   | mV p-p |
|                | Output Current (230Vac)             |                 | 0    |      | 98.3  |        |
|                | Output Current (120Vac)             |                 | 0    |      | 81.7  | A      |
|                | Load Capacitance                    |                 |      |      | 30000 | µF     |
| 3.3VSB         | Voltage Set Point Accuracy          |                 |      | 3.3  |       | Vdc    |
|                | Line and Load Regulation            |                 | 3.2  |      | 3.4   |        |
|                | Ripple Voltage & Noise <sup>1</sup> | 20MHz Bandwidth |      |      | 100   | mV p-p |
|                | Output Current                      |                 | 0    |      | 6     |        |
|                | Load Capacitance                    |                 |      |      | 10000 | µF     |
|                | Voltage Set Point Accuracy          |                 |      | 5.0  |       | Vdc    |
| 5VSB           | Line and Load Regulation            |                 | 4.85 |      | 5.15  |        |
|                | Ripple Voltage & Noise <sup>1</sup> | 20MHz Bandwidth |      |      | 50    | mV p-p |
|                | Output Current                      |                 | 0    |      | 4     |        |
|                | Load Capacitance                    |                 |      |      | 10000 | µF     |

<sup>1</sup> Ripple and noise are measured with 0.1 µF of ceramic capacitance and 10 µF of tantalum capacitance on each of the power supply outputs. A short coaxial cable with 50ohm scope termination is used.



| OUTPUT CHARACTERISTICS                         |                                        |      |      |      |       |
|------------------------------------------------|----------------------------------------|------|------|------|-------|
| Parameter                                      | Conditions                             | Min. | Typ. | Max. | Units |
| Output Rise Monotonicity                       | No voltage excursion                   |      |      |      |       |
| Startup Time                                   | AC ramp up                             |      | 1.5  | 2.5  | s     |
| Transient Response                             | 12V, 50-100% load step, 1A/μs di/dt    |      |      | 300  | mV    |
|                                                | 5VSB, 50-100% load step, 1A/μs di/dt   |      |      | 250  |       |
|                                                | 3.3VSB, 50-100% load step, 1A/μs di/dt |      |      | 165  |       |
| Current sharing accuracy (up to 8 in parallel) | At 100% load                           |      |      | ±7   | %     |
| Hot Swap Transients                            | All outputs remain in regulation       |      |      | 5    | %     |
| Holdup Time                                    | At full load                           | 12   |      |      | ms    |

| ENVIRONMENTAL CHARACTERISTICS       |                                                                                                                                                           |      |      |      |         |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------|
| Parameter                           | Conditions                                                                                                                                                | Min. | Typ. | Max. | Units   |
| Storage Temperature Range           |                                                                                                                                                           | -40  |      | 70   | °C      |
| Operating Temperature Range         |                                                                                                                                                           | -10  |      | 50   |         |
| Operating Humidity                  | Noncondensing                                                                                                                                             | 5    |      | 90   | %       |
| Storage Humidity                    |                                                                                                                                                           | 5    |      | 95   |         |
| Altitude (without derating at 40°C) |                                                                                                                                                           | 4000 |      |      | m       |
| Altitude (without derating at 55°C) |                                                                                                                                                           | 1800 |      |      |         |
| Shock                               | 30G non operating                                                                                                                                         |      |      |      |         |
| Sinusoidal Vibration                | 0.5G, 5 – 500 Hz                                                                                                                                          |      |      |      |         |
| MTBF                                | Per Telcordia SR-322 M1C1 @40°C                                                                                                                           | 500K |      |      | hrs     |
| Acoustic                            |                                                                                                                                                           |      |      | 55   | dB LpAm |
| Safety Approvals                    | CSA/UL 60950-1-07-2nd Ed.<br>IEC 60950-1:2005 (2nd Edition) w Am. 1:2009<br>EN 60950-1:2006 +A11:2009 +A1:2010<br>CE Marking per LVD DIRECTIVE 2006/95/EC |      |      |      |         |
| Input Fuse                          | Power Supply has internal 15A/250V fast blow fuse on the AC line input                                                                                    |      |      |      |         |
| Material Flammability               | UL 94V-0                                                                                                                                                  |      |      |      |         |
| Switching Frequency                 | 90KHz for Boost PFC Converter<br>130KHz for Main Output Converter                                                                                         |      |      |      |         |
| Weight                              | 3.15lbs (1.43kg)                                                                                                                                          |      |      |      |         |

| PROTECTION CHARACTERISTICS |                          |              |      |      |            |
|----------------------------|--------------------------|--------------|------|------|------------|
| Output Voltage             | Parameter                | Conditions   | Min. | Typ. | Max. Units |
|                            | Overtemperature (intake) | Autorestart  | 57   | 60   | 63 °C      |
| 12V                        | Overvoltage              | Latching     | 13.3 |      | 14.5 V     |
|                            | Overcurrent at 220Vac    | Latching     | 108  |      | 147 A      |
|                            | Overcurrent at 110Vac    | Latching     | 90   |      | 102 A      |
| 3.3VSB                     | Overvoltage              | Latching     | 3.9  |      | 4.3 V      |
|                            | Overcurrent              | Autorecovery | 6.5  |      | 9.0 A      |
| 5VSB                       | Overvoltage              | Latching     | 5.6  |      | 6.0 V      |
|                            | Overcurrent              | Autorecovery | 4.4  |      | 6.0 A      |

| ISOLATION CHARACTERISTICS               |                              |      |      |      |       |
|-----------------------------------------|------------------------------|------|------|------|-------|
| Parameter                               | Conditions                   | Min. | Typ. | Max. | Units |
| Insulation Safety Rating / Test Voltage | Input to Output - Reinforced | 3000 |      |      | Vrms  |
|                                         | Input to Chassis - Basic     | 1500 |      |      | Vrms  |
| Isolation                               | Output to Chassis            | 500  |      |      | Vdc   |

### STATUS INDICATORS

| Condition                                                             | LED Status     |
|-----------------------------------------------------------------------|----------------|
| Standby - ON; Main output - OFF; AC PRESENT                           | Blinking green |
| Standby - ON; Main output - ON                                        | Solid green    |
| Main output overcurrent, undervoltage, overvoltage                    | Blinking red   |
| FAN_FAULT; overtemperature; standby overcurrent, standby undervoltage | Red            |

### EMISSIONS AND IMMUNITY

| Characteristic                            | Standard                            | Compliance                                                                                                                                                                                       |
|-------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Current Harmonics                   | IEC/EN 61000-3-2                    | Complies                                                                                                                                                                                         |
| Voltage Fluctuation and Flicker           | IEC/EN 61000-3-3                    | Complies                                                                                                                                                                                         |
| Conducted Emissions                       | FCC 47 CFR Part 15/CISPR 22/EN55022 | Class A, 6dB margin                                                                                                                                                                              |
| ESD Immunity                              | IEC/EN 61000-4-2                    | Level 3 criteria A                                                                                                                                                                               |
| Radiated Field Immunity                   | IEC/EN 61000-4-3                    | Level 3 criteria B                                                                                                                                                                               |
| Electrical Fast Transients/Burst Immunity | IEC/EN 61000-4-4                    | Level 3 criteria B                                                                                                                                                                               |
| Surge Immunity                            | IEC/EN 61000-4-5                    | Level 3 criteria A                                                                                                                                                                               |
| RF Conducted Immunity                     | IEC/EN 61000-4-6                    | Level 3 criteria A                                                                                                                                                                               |
| Magnetic Field Immunity                   | IEC/EN 61000-4-8                    | 3 A/m criteria B                                                                                                                                                                                 |
| Voltage dips, interruptions               | IEC/EN 61000-4-11                   | 230Vin, 100% load, Phase 0°, Dip 100% Duration 10ms (A)<br>230Vin, 50% load, Phase 0°, Dip 100% Duration 20ms (VSB:A, V1:A)<br>230Vin, 100% load, Phase 0°, Dip 100% Duration > 20ms (VSB, V1:B) |

### OUTPUT CONNECTOR AND SIGNAL SPECIFICATION

DC and Signal Connector: FCI 51731-057LF

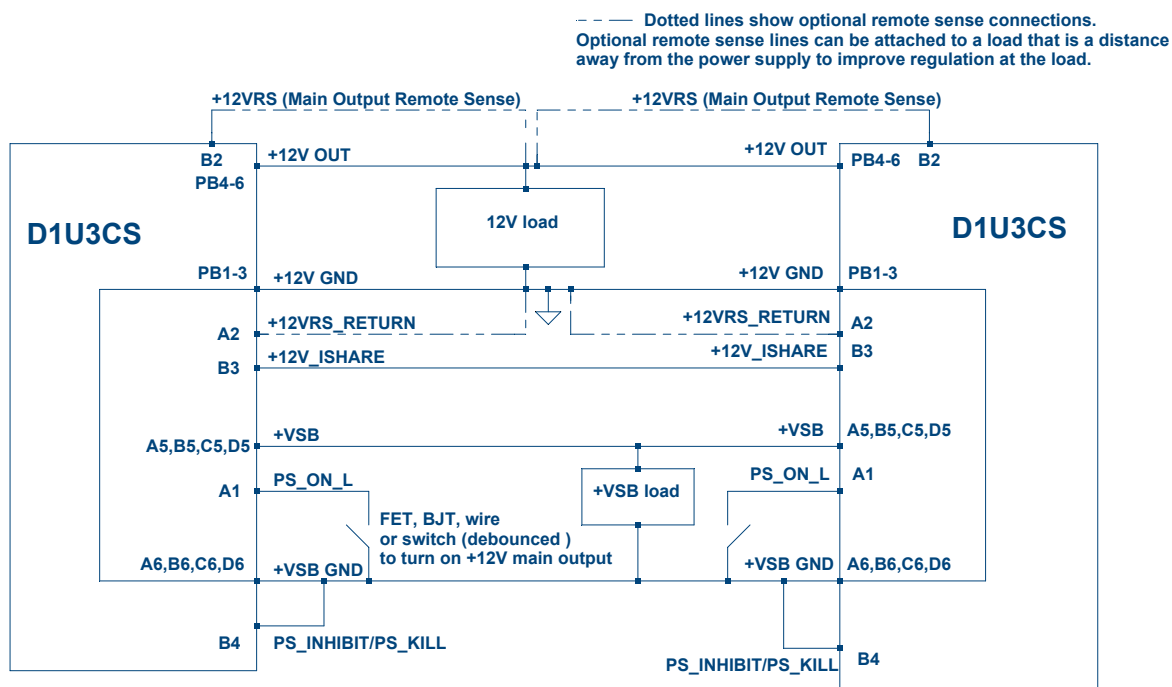
|    |    |    |    |    |    |     |     |     |     |     |     |
|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| D1 | D2 | D3 | D4 | D5 | D6 | PB1 | PB2 | PB3 | PB4 | PB5 | PB6 |
| C1 | C2 | C3 | C4 | C5 | C6 |     |     |     |     |     |     |
| B1 | B2 | B3 | B4 | B5 | B6 |     |     |     |     |     |     |
| A1 | A2 | A3 | A4 | A5 | A6 |     |     |     |     |     |     |

| Pin Assignment | Signal Name        | Description                                                                                                                                                                                                                                     | Amps per pin |
|----------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| PB1, PB2, PB3  | +12V GND           | Main output voltage return                                                                                                                                                                                                                      | 30           |
| PB4, PB5, PB6  | +12V OUT           | Main output voltage                                                                                                                                                                                                                             | 30           |
| A1             | PS_ON_L            | Input. Internal 10K ohm pull-up (accepts open collector/drain drive). This signal to be pulled low to turn-on power supply.                                                                                                                     | N/A          |
| A2             | +12VRS_RETURN      | Main output remote sense return                                                                                                                                                                                                                 | N/A          |
| A3             | TEMP_OK            | A TTL logic HIGH when operating temperature within allowable range                                                                                                                                                                              | N/A          |
| A4             | PS_SEATED          | Power supply is plugged into the system. Internally tied to ground.                                                                                                                                                                             | N/A          |
| A5, B5, C5, D5 | +VSB               | Standby output voltage                                                                                                                                                                                                                          | 2.0          |
| A6, B6, C6, D6 | +VSB GND           | Standby output voltage return                                                                                                                                                                                                                   | 2.0          |
| B1             | AC OK              | Input AC voltage "OK" signal output                                                                                                                                                                                                             | N/A          |
| B2             | +12VRS             | Main output remote sense                                                                                                                                                                                                                        | N/A          |
| B3             | +12V_ISHARE        | Main output active load sharing bus                                                                                                                                                                                                             | N/A          |
| B4             | PS_INHIBIT/PS_KILL | This signal is connected to a short pin on the PSU. When left open operation will be inhibited. When the PSU is inserted into the system, this pin must be pulled low by the system and will turn on the PSU only after all inputs have seated. | N/A          |
| C1             | SDA                | I <sup>2</sup> C Data line                                                                                                                                                                                                                      | N/A          |
| C2             | SCL                | I <sup>2</sup> C Clock line                                                                                                                                                                                                                     | N/A          |
| C3             | PWR_GD             | Power good. Active TTL HIGH when output is within regulation limits                                                                                                                                                                             | N/A          |
| C4             | FAN_FAIL           | Fan failure                                                                                                                                                                                                                                     | N/A          |
| D1             | A0                 | Address line least significant bit                                                                                                                                                                                                              | N/A          |
| D2             | A1                 | Address line most significant bit                                                                                                                                                                                                               | N/A          |
| D3             | S_INT              | System interrupt                                                                                                                                                                                                                                | N/A          |
| D4             | VSB RS             | Standby output remote sense                                                                                                                                                                                                                     | N/A          |

### MATING CONNECTORS

| Mating Connector | Press Fit |                  |
|------------------|-----------|------------------|
|                  | Straight  | Right Angle      |
| FCI              | TBD       | 51761-10002406AA |

### WIRING DIAGRAM FOR OUTPUT



### CURRENT SHARING NOTES

12V Output: Current sharing is achieved using the active current share method. (See wiring diagram for connection details.)

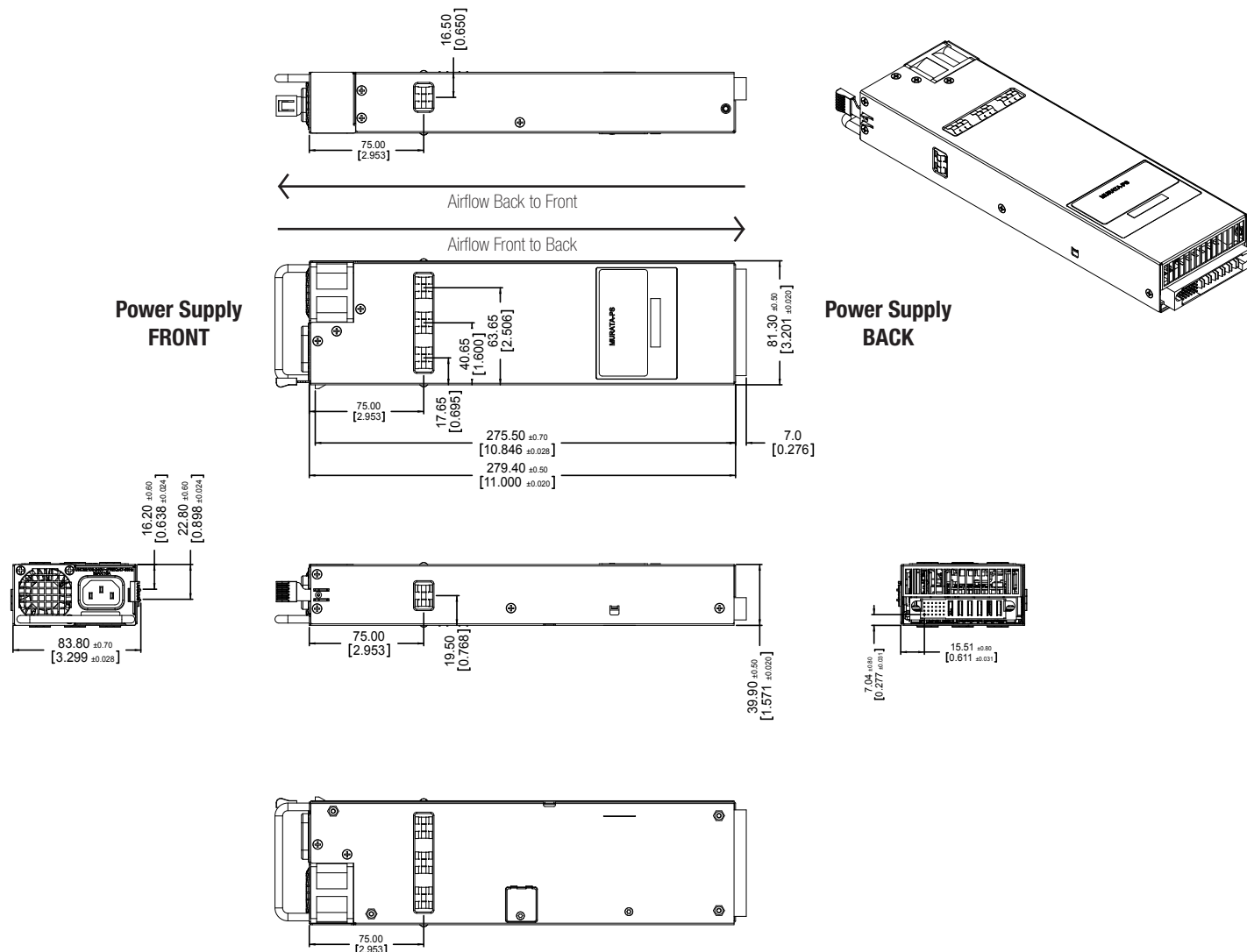
Current sharing can be achieved with or without remote sense connected to the common load.

+VSB outputs can be tied together for redundancy but total combined output power must not exceed 20W. The +VSB output has internal ORing MOSFET for additional redundancy / internal short protection.

The current share pin B3 is a connection between the two units. It is input and/or output as the voltage on the line controls the current share. A power supply will respond to a change in this voltage but a power supply can also change the voltage depending on the load drawn from it. On a single unit this would read 8V at 100% load. For two units sharing load then this should read 4V for perfect current sharing.

Up to 8 units can be paralleled together. Please consult your Murata sales representative if operation with more than 8 units in parallel is needed.

### MECHANICAL DIMENSIONS



AC input connector: IEC 320-C14

Dimensions: 3.20" x 11.00" x 1.571" [81.3mm x 279.4mm x 39.9mm]

### OPTIONAL ACCESSORIES

| Description                      | Part Number    |
|----------------------------------|----------------|
| 12V D1U3CS Output Connector Card | D1U3CS-12-CONC |

### APPLICATION NOTES

| Document Number | Description                     | Link                                                                                                       |
|-----------------|---------------------------------|------------------------------------------------------------------------------------------------------------|
| ACAN-41         | D1U3CS Output Connector Card    | <a href="http://www.murata-ps.com/data/apnotes/acan-41.pdf">www.murata-ps.com/data/apnotes/acan-41.pdf</a> |
| ACAN-43         | D1U3CS-x Communication Protocol | <a href="http://www.murata-ps.com/data/apnotes/acan-43.pdf">www.murata-ps.com/data/apnotes/acan-43.pdf</a> |

Murata Power Solutions, Inc.  
11 Cabot Boulevard, Mansfield, MA 02048-1151 U.S.A.  
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