



### PRODUCT OVERVIEW

The C1U-W-1200 is a 1200 Watt universal AC input, power-factor-corrected (PFC) front-end power supply for general applications. The main output is 12V with a standby output of either 5V or 3.3V. Packaged in a 1U low profile chassis, it is designed to deliver reliable bulk power to servers, workstations, storage systems or any 12V distributed power architecture systems requiring high power density. The highly efficient electrical and thermal design with internal cooling fans supports reliable operation conditions. The C1U-W-1200 is designed to autorecover from overtemperature faults.

### FEATURES

- 1200W (110/220Vac) Output power
- 12V Main output, 3.3V or 5V standby output
- Dimensions: 5.5" x 14.2" x 1.67"
- 9.2 Watts per cubic inch density
- N+1 redundancy capable (up to 3 in parallel)
- Active current sharing on main output
- Overvoltage, overcurrent, overtemperature protection
- Internal cooling fans
- RoHS compliant

### SELECTION GUIDE

| Part Number        | Power Output Universal Line | Main Output | Standby Output | Airflow       |
|--------------------|-----------------------------|-------------|----------------|---------------|
| C1U-W-1200-12-TA1C | 1200W                       | 12V         | 5V             | Front to back |
| C1U-W-1200-12-TC1C | 1200W                       | 12V         | 3.3V           | Front to back |
| C1U-W-1200-12-TA2C | 1200W                       | 12V         | 5V             | Back to front |
| C1U-W-1200-12-TC2C | 1200W                       | 12V         | 3.3V           | Back to front |

### INPUT CHARACTERISTICS

| Parameter                     | Conditions       | Min. | Typ.    | Max. | Units |
|-------------------------------|------------------|------|---------|------|-------|
| Input Voltage Operating Range |                  | 90   | 115/230 | 264  | Vac   |
| Input Frequency               |                  | 47   | 55      | 63   | Hz    |
| Turn-on Input Voltage         | Ramp up          | 78.5 |         | 86.5 | Vac   |
| Turn-off Input Voltage        | Ramp down        | 70.5 |         | 78   |       |
| Maximum Input Current         |                  |      |         | 15   | Arms  |
| Inrush Current                |                  |      |         | 90   | Apk   |
| Power Factor                  | Output load >90% | 95%  |         |      |       |
|                               | Output load >50% | 75%  |         |      |       |

### OUTPUT VOLTAGE CHARACTERISTICS

| Output Voltage | Parameter                           | Conditions      | Min.  | Typ.  | Max.  | Units  |
|----------------|-------------------------------------|-----------------|-------|-------|-------|--------|
| 12V            | Voltage Set Point Accuracy          |                 |       | 12.12 |       | Vdc    |
|                | Line and Load Regulation            |                 | 11.75 |       | 12.48 |        |
|                | Ripple Voltage & Noise <sup>1</sup> | 20MHz Bandwidth |       |       | 120   | mV p-p |
|                | Output Current                      |                 | 0     |       | 98.3  | A      |
|                | Load Capacitance                    |                 |       |       | 40000 | 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 |       |       | 33    | mV p-p |
|                | Operating Range                     |                 | 0     |       | 6     | A      |
|                | Load Capacitance                    |                 |       |       | 1530  | µF     |
| 5Vsb           | Voltage Set Point Accuracy          |                 |       | 5     |       | Vdc    |
|                | Line and Load Regulation            |                 | 4.85  |       | 5.15  |        |
|                | Ripple Voltage & Noise <sup>1</sup> | 20MHz Bandwidth |       |       | 50    | mV p-p |
|                | Operating Range                     |                 | 0     |       | 4     | A      |
|                | Load Capacitance                    |                 |       |       | 1530  | µF     |

<sup>1</sup> Ripple and noise are measured with 0.1 µF of ceramic capacitance and 2 x 270 µF of OSCON capacitance on each of the power supply outputs. A short coaxial cable with 50ohm scope termination is used. See Ripple Test Setup diagram.



| OUTPUT CHARACTERISTICS                         |                                                                                                |      |      |      |       |
|------------------------------------------------|------------------------------------------------------------------------------------------------|------|------|------|-------|
| Parameter                                      | Conditions                                                                                     | Min. | Typ. | Max. | Units |
| Remote Sense                                   | Compensates for up to 0.12V of lead drop with or without remote sense connected                |      | 120  |      | mV    |
| Efficiency                                     | 220Vac                                                                                         |      | 90.6 |      | %     |
| Output Rise Monotonicity                       | Overshoot less than 10% for all outputs, no voltage negative between 10% to 95% during ramp up |      |      |      |       |
| Startup Time                                   | AC ramp up                                                                                     |      | 1.5  |      | s     |
|                                                | PS_On activated                                                                                |      | 150  |      | ms    |
| Transient Response                             | 12V Ramp 1A/μs                                                                                 |      |      | ±600 | mV    |
|                                                | 3.3Vsb Ramp 1A/μs                                                                              |      |      | ±165 |       |
|                                                | 5Vsb Ramp 1A/μs                                                                                |      |      | ±250 |       |
| Current sharing accuracy (up to 3 in parallel) | At 100% load                                                                                   |      |      | ±10  | %     |
| Holdup Time                                    |                                                                                                | 20   |      |      | ms    |

| ENVIRONMENTAL CHARACTERISTICS |                                                                                                                      |      |      |      |       |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------|------|------|------|-------|
| Parameter                     | Conditions                                                                                                           | Min. | Typ. | Max. | Units |
| Storage Temperature Range     | Non-condensing                                                                                                       | -40  |      | 70   | °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                          | Telcordia SR-332 @ 30°C                                                                                              | 200K |      |      | hrs   |
|                               | Demonstrated                                                                                                         | 200K |      |      | hrs   |
| Safety Approvals              | CAN/CSA C22.2 No. 60950-1-07, 2nd Ed.<br>UL 60950-1, 2nd Ed.<br>IEC 60950-1:2005 (2nd Edition); EN 60950-1:2006 +A11 |      |      |      |       |
| Input Fuse                    | Power Supply has internal 20A/250V fast blow fuse on the AC line input                                               |      |      |      |       |
| Material Flammability         | UL 94V-0                                                                                                             |      |      |      |       |
| Switching Frequency           | 90KHz for Boost PFC Converter<br>165KHz for Main Output Converter<br>200KHz for Standby Output Converter             |      |      |      |       |
| Weight                        | 5.7 lbs (2.6kg)                                                                                                      |      |      |      |       |

| PROTECTION CHARACTERISTICS |                 |             |      |      |      |       |
|----------------------------|-----------------|-------------|------|------|------|-------|
| Output Voltage             | Parameter       | Conditions  | Min. | Typ. | Max. | Units |
| 12V                        | Overtemperature | Autorestart | 55   |      | 65   | °C    |
|                            | Overvoltage     | Latching    | 13   |      | 14   | V     |
|                            | Overcurrent     | Latching    | 107  |      | 122  | A     |
| 3.3Vsb                     | Overvoltage     | Latching    | 3.57 |      | 4.02 | V     |
|                            | Overcurrent     | Latching    | 6.5  |      | 8    | A     |
| 5Vsb                       | Overvoltage     | Latching    | 5.6  |      | 6    | V     |
|                            | Overcurrent     | Latching    | 5    |      | 7    | 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                                                                                                                                                                                                                       |      |      |      |       |
|                                         | Output to Output                                                                                                                                                                                                                        |      |      |      |       |
| Grounding                               | Main Output Return and Standby Output Return are connected internally. 100kΩ resistor parallel with 100nF capacitor is connected between Return and power supply chassis. Main Output Return should be connected to the System Chassis. |      |      |      |       |

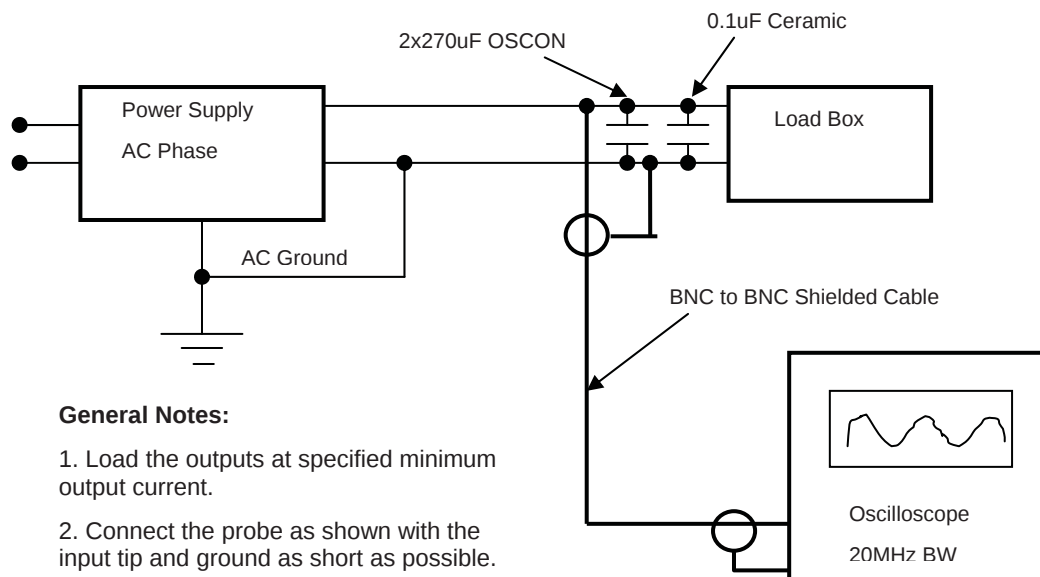
## STATUS INDICATORS AND CONTROL SIGNALS

| Status | Conditions            | Description                                                                  |
|--------|-----------------------|------------------------------------------------------------------------------|
| LED    | Off                   | No AC input to all PS                                                        |
|        | Flashing Yellow       | Power Supply Failure                                                         |
|        | Flashing Green        | Main Output Absent                                                           |
|        | Green                 | Power Supply Good                                                            |
| PS_ON  | To enable main output | Short PS_ON to GND (required)                                                |
|        |                       | Short SENSE+ to 12 main at point of load (optional for better regulation)    |
|        |                       | Short SENSE- to Output GND at point of load (optional for better regulation) |

## 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                         |
| Radiated Emissions                        | FCC 47 CFR Part 15/CISPR 22/EN55022 | Class A, 6dB margin                         |
| ESD Immunity                              | IEC/EN 61000-4-2                    | 4kV contact discharge                       |
|                                           |                                     | 8kV operational air discharge               |
|                                           |                                     | 15kV non-operational air discharge          |
| Radiated Field Immunity                   | IEC/EN 61000-4-3                    | Complies                                    |
| Electrical Fast Transients/Burst Immunity | IEC/EN 61000-4-4                    | Complies                                    |
| Surge Immunity                            | 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 Field Immunity                   | IEC/EN 61000-4-8                    | 3 A/m                                       |
| Voltage Dips, Interruptions               | IEC/EN 61000-4-11                   | Complies                                    |

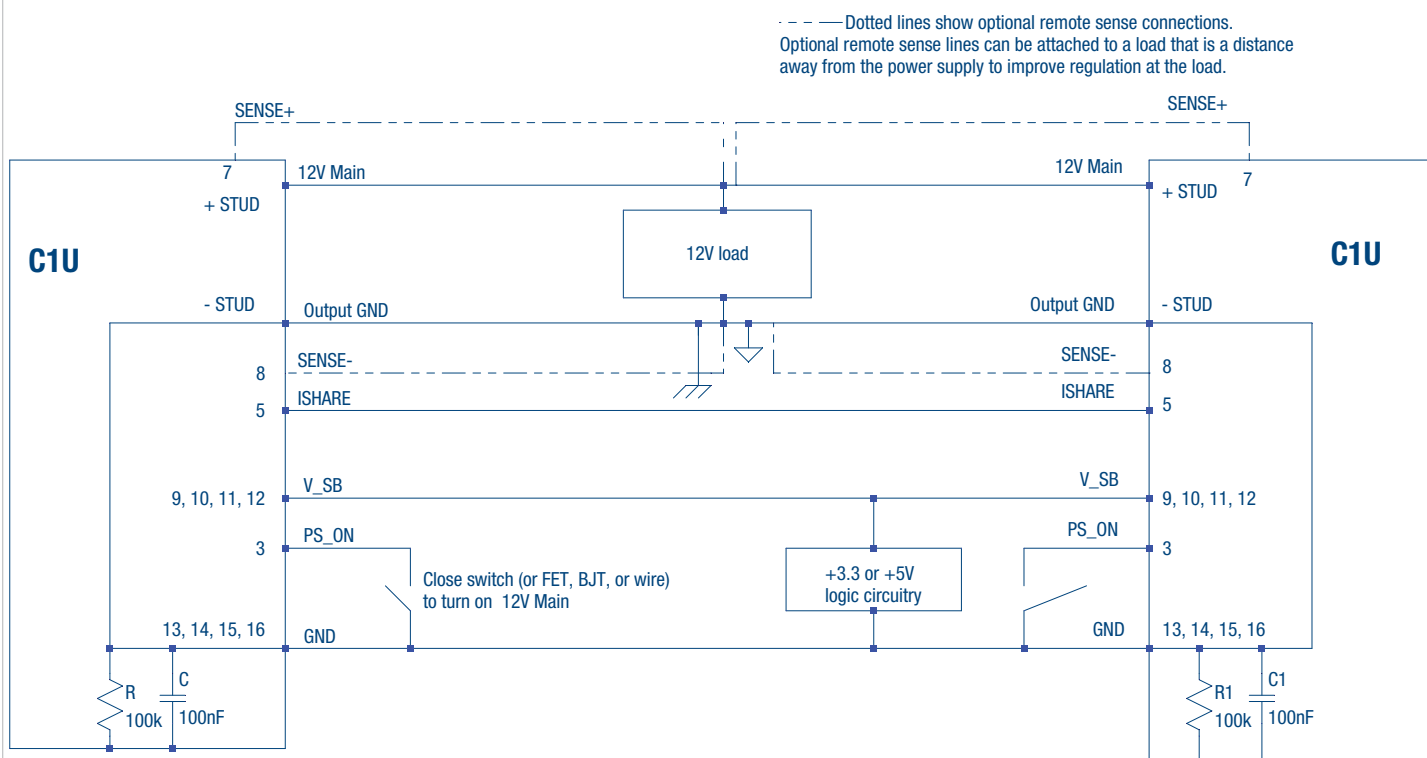
## RIPPLE TEST SETUP



### General Notes:

1. Load the outputs at specified minimum output current.
2. Connect the probe as shown with the input tip and ground as short as possible.
3. Take all measurements
4. Repeat the measurements with the outputs at specified maximum output current.

## WIRING DIAGRAM FOR OUTPUT



## CURRENT SHARING NOTES

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

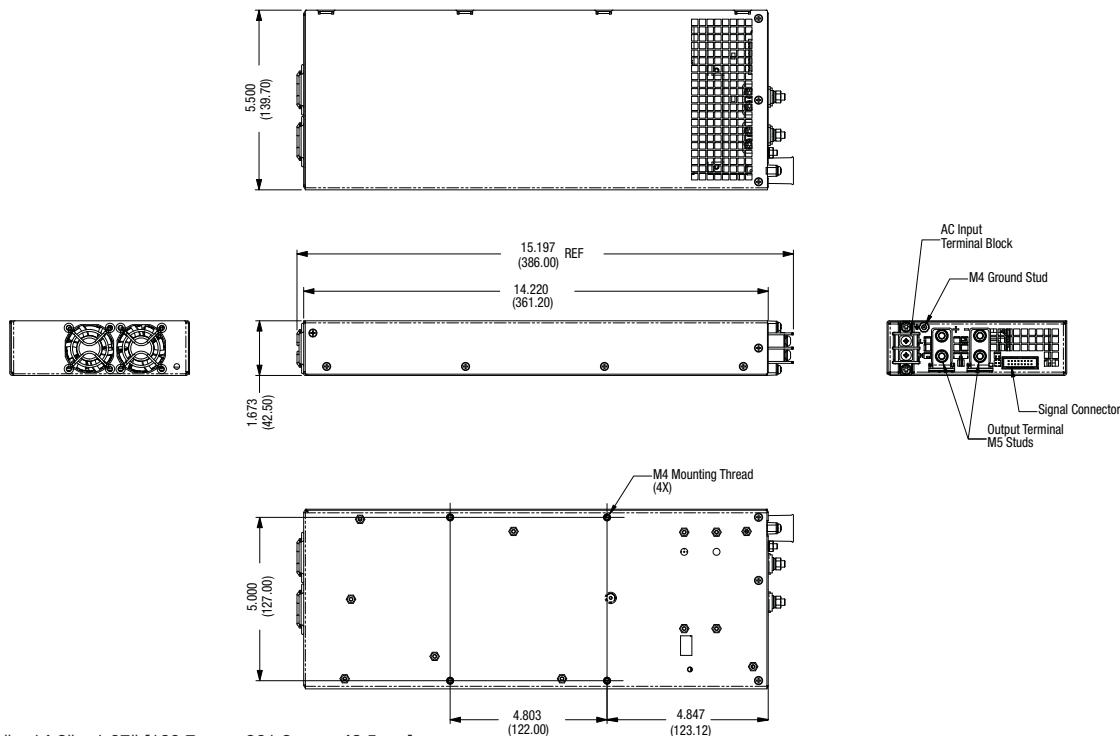
The total combined load must be below 1200W at startup. Current sharing can be achieved with or without remote sense connected to the common load.

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

The current share pin 5 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 3 units can be paralleled together. Please consult your Murata sales representative if operation with more than three units in parallel is needed.

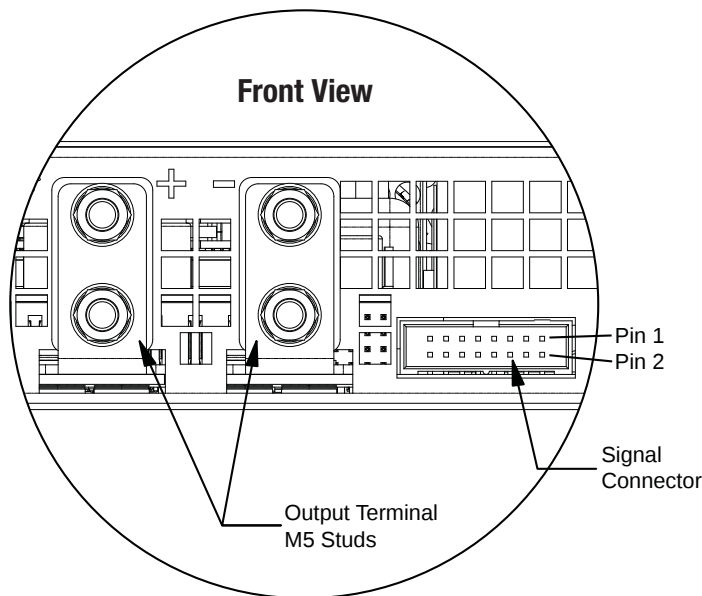
## MECHANICAL DIMENSIONS



### CONNECTORS

Signal 16 pin connector details, Type: TE Connectivity  
(Tyco) 281281-1 Mating part 1658622-3

| Pin                                           | Signal     |
|-----------------------------------------------|------------|
| 1                                             | AC_OK      |
| 2                                             | P_GOOD     |
| 3                                             | PS_ON      |
| 4                                             | BLANK      |
| 5                                             | I_SHARE    |
| 6                                             | BLANK      |
| 7                                             | SENSE+     |
| 8                                             | SENSE-     |
| 9                                             | V_SB       |
| 10                                            | V_SB       |
| 11                                            | V_SB       |
| 12                                            | V_SB       |
| 13                                            | GND        |
| 14                                            | GND        |
| 15                                            | GND        |
| 16                                            | GND        |
| 2-Pole terminal Block for AC Line and Neutral |            |
| Stud on Chassis for earth                     |            |
| +                                             | 12V Main   |
| -                                             | Output GND |



Murata Power Solutions, Inc.  
11 Cabot Boulevard, Mansfield, MA 02048-1151 U.S.A.  
ISO 9001 and 14001 REGISTERED



This product is subject to the following **operating requirements** and the **Life and Safety Critical Application Sales Policy**:  
Refer to: <http://www.murata-ps.com/requirements/>

Murata Power Solutions, Inc. makes no representation that the use of its products in the circuits described herein, or the use of other technical information contained herein, will not infringe upon existing or future patent rights. The descriptions contained herein do not imply the granting of licenses to make, use, or sell equipment constructed in accordance therewith. Specifications are subject to change without notice.  
© 2012 Murata Power Solutions, Inc.