D1U3CS-W-1200-12-HxxC Series

81mm 1U Front End AC-DC Power Supply Converter

Murata Power Solutions

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™ I²C interface with status indicators
- RoHS compliant

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	
Inrush Current	Cold start between 0 to 200msec			25	Apk
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[1]	20MHz Bandwidth			120	mV p-p
	Output Current (230Vac)		0		98.3	A
	Output Current (120Vac)		0		81.7	
	Load Capacitance				30000	µF
3.3VSB	Voltage Set Point Accuracy			3.3		Vdc
	Line and Load Regulation		3.2		3.4	
	Ripple Voltage & Noise[1]	20MHz Bandwidth			100	mV p-p
	Output Current		0		6	A
	Load Capacitance				10000	µF
5VSB	Voltage Set Point Accuracy			5.0		Vdc
	Line and Load Regulation		4.85		5.15	
	Ripple Voltage & Noise[1]	20MHz Bandwidth			50	mV p-p
	Output Current		0		4	A
	Load Capacitance				10000	µF

[1] Ripple and noise are measured with 0.1 uF of ceramic capacitance and 10 uF of tantalum capacitance on each of the power supply outputs. A short coaxial cable with 50ohm scope termination is used.

Available now at
www.murata-ps.com/en/3d/acdc.html

RoHS COMPLIANT

For full details go to
www.murata-ps.com/rohs

Test Certificate and Test Report

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. IEC 60950-1:2005 (2nd Edition) w Am. 1:2009 EN 60950-1:2006 +A11:2009 +A1:2010 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 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	
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) 230Vin, 50% load, Phase 0°, Dip 100% Duration 20ms (VSB:A, V1:A) 230Vin, 100% load, Phase 0°, Dip 100% Duration > 20ms (VSB, V1:B)

OUTPUT CONNECTOR AND SIGNAL SPECIFICATION

DC and Signal Connector: FCI 51731-057LF

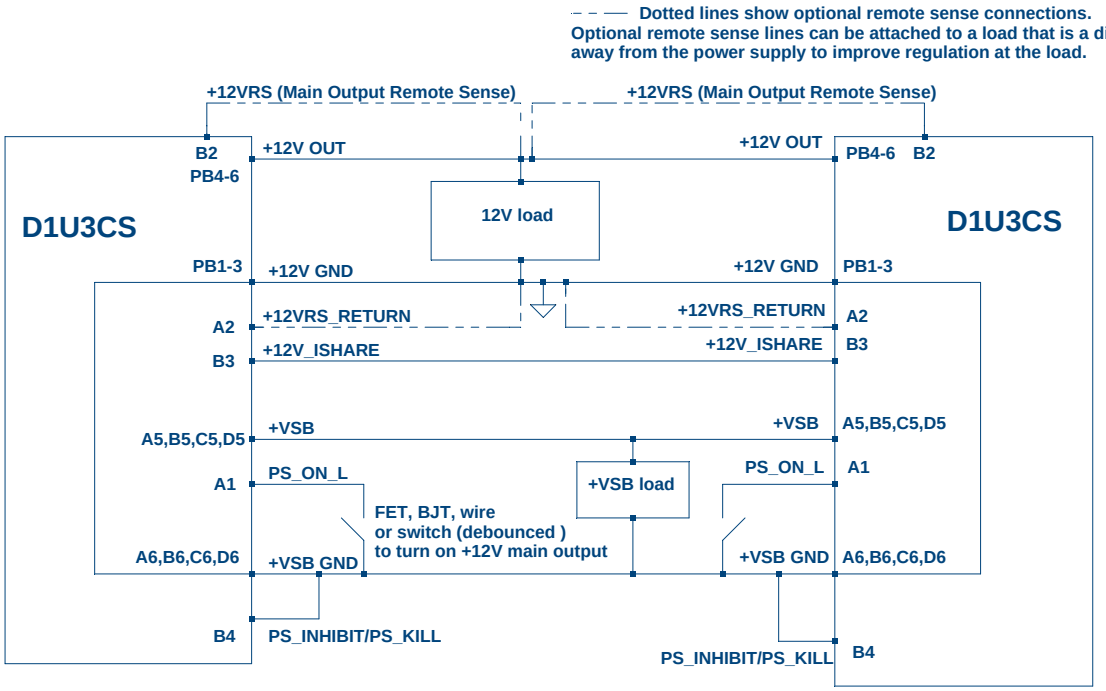
D1	D2	D3	D4	D5	D6	PB1	PB2	PB3	PB4	PB5	PB6
C1	C2	C3	C4	C5	C6						
B1	B2	B3	B4	B5	B6						
A1	A2	A3	A4	A5	A6						

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^2C Data line	N/A
C2	SCL	I^2C 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.)

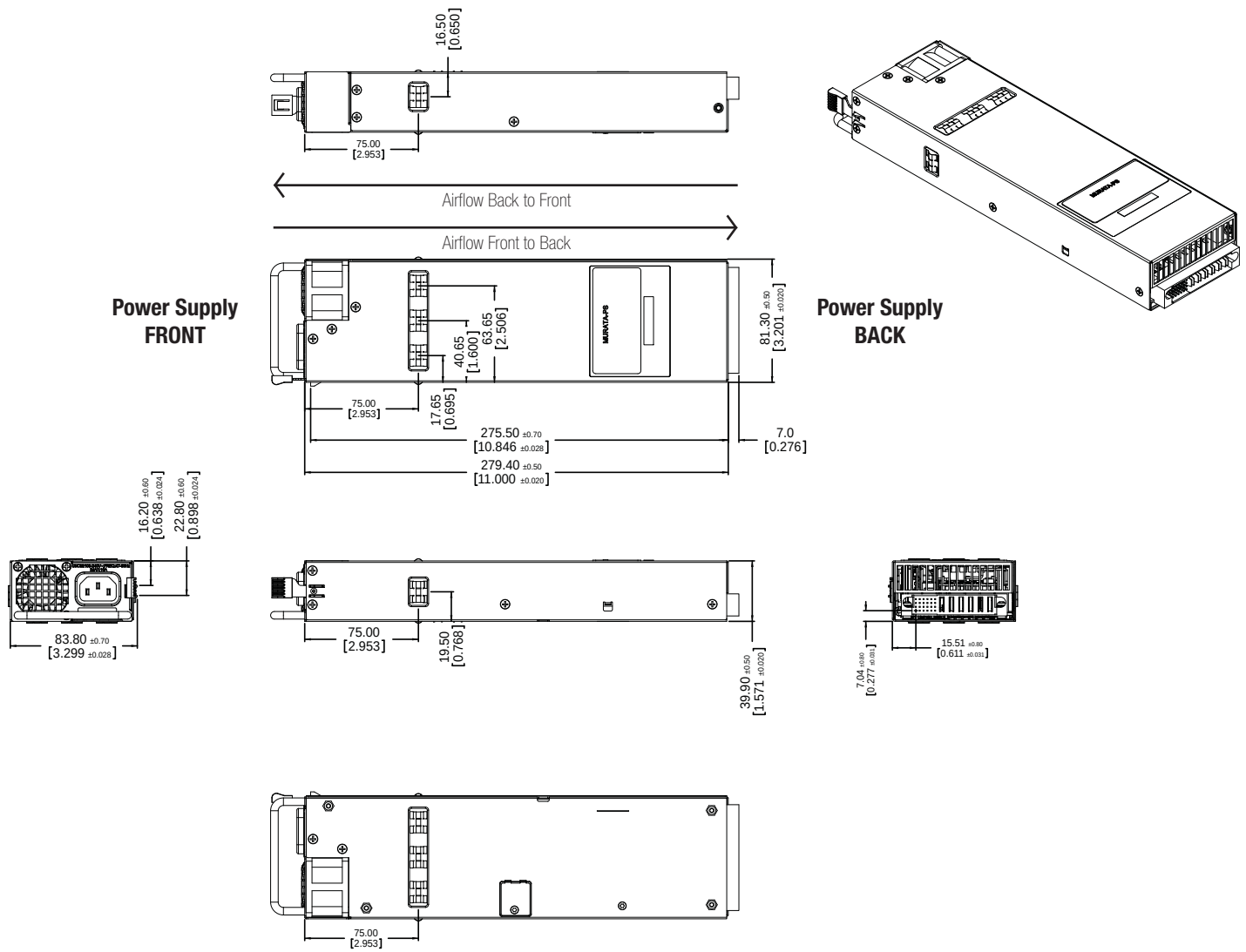
Current sharing can be achieved with or without remote sense connected to the common load.

+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	www.murata-ps.com/data/apnotes/acan-41.pdf
ACAN-43	D1U3CS-x Communication Protocol	www.murata-ps.com/data/apnotes/acan-43.pdf

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ISO 9001 and 14001 REGISTERED

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