ARTESYN CSU1300ADC

1300 Watts Distributed Power System



Advanced Energy's Artesyn CSU1300ADC is housed in the industry standard 1U x 73.5 x 185 mm form factor featuring -48Vdc input voltage. This DC/DC power supply belongs to the CRPS family of products, and matches the mechanical form and fit of Advanced Energy's AC/DC power supplies. The common form, fit, and function for all products in the family provides a path for power capacity flexibility, future-proofing your system designs.

AT A GLANCE

Front End Bulk Power

Total Output Power:

1300 W continuous

Wide Input Voltage:

-40 to -72 Vdc

SPECIAL FEATURES

- 1300 W output power
- High power and short form factor
- 1U power supply
- High density design: 39 W/in^3
- Uses two-hole terminal lugs to handle high input current
- Inrush current control
- N+M redundant N+M ≤ 4
- Hot-pluggable
- Active current sharing
- Full digital control
- PMBus® compliant
- Compatible with Artesyn's Universal PMBus GUI
- Reverse airflow option

COMPLIANCE

- Conducted/Radiated EMI Class A
- Tested for ATIS 0600315

SAFETY

- UL/cUL
- UL + CB Report
- CE Mark
- CCC
- KC

TARGET APPLICATIONS

- Server and Storage
- Networking

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ELECTRICAL SPECIFICATIONS

Input						
Input range	-40 to -72Vdc					
Efficiency	94% peak					
Max input current	50A at -40V					
Inrush current	ETSI 300 132-2 Annex C					
Conducted EMI	Class A					
Radiated EMI	Class A					
Hold-up time	2.4 ms at full load					
Output						
	Main DC Output			Standby DC Output		
	MIN	NOM	MAX	MIN	NOM	MAX
Nominal setting (12 V / 1 A, 12 VSB / 0 A)	11.8	12.2	12.6	11.4	12.0	12.6
Total output regulation range	11.6 V		12.8 V	11.4 V		12.8 V
Dynamic load regulation range	11.6 V		12.8 V	11.4 V		12.8 V
Output ripple			120 mV			120 mV
Output current	1		106.5 A	0		3.5 A
Current sharing	Within ±5% @ full load rating			N/A		
Capacitive loading	2000 µF		50000 µF	47 µF		3100 µF
Start-up from AC to output			3000 ms			1500 ms
Output rise time	10 ms		70 ms	10 ms		70 ms

ELECTRICAL SPECIFICATIONS (CONTINUED)

Protections (Main Output)					
	Minimum	Nominal	Maximum	Units	Comment
Peak current			176	A	
Output OCP	132		140	A	
Dynamic loading setup			±5	%	60% rated load step, 0.5 A/µs slew rate; 2000 µF / 1 A min
Output OVP	13.3		14.5	V	Latch
Overtemperature protection		Yes			
Fan fault protection		Yes			
Standby Output					
Output OCP	4.0		5.0	A	
Output OVP	13.3		14.5	V	
Dynamic loading setup			±5	%	50% rated load step Slew rate: 0.5 A / µs / 100 µF

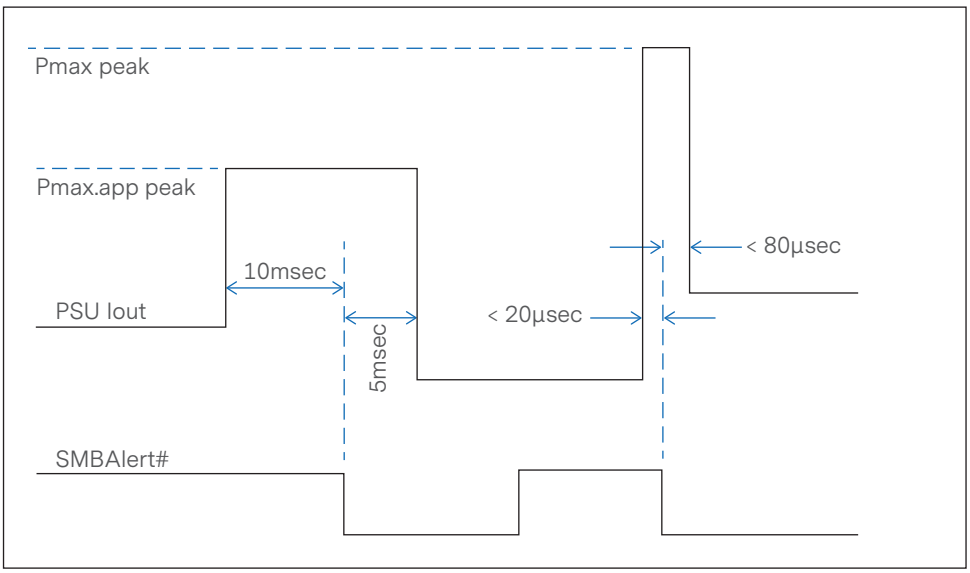
LED Indicators	
POWER SUPPLY CONDITION	LED STATE
Normal work	GREEN
No AC power to all power supplies	OFF
AC present / Only 12 VSB on (PS off) or PS in CR state	1 Hz Blink GREEN
AC cord unplugged; with a second power supply in parallel still with AC input power	RED
Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan, input voltage lower than 90 Vac (not warning above 90 V condition, must be warning state below 85 V condition)	1 Hz Blink RED
Power supply critical event causing a shutdown; failure, OCP, OVP, fan fail	RED

Firmware Reporting And Monitoring			
	Accuracy Range		
Output loading	2% to 7.5%	> 7.5% to 15%	> 15% to 100%
READ_PIN and READ_EIN	±10 W	±10W	±2%
READ_IOUT	±1A	±5%	±2%
READ_TEMPERATURE	±3 °C		

TIMING SPECIFICATIONS

ITEM	DESCRIPTION	MIN	MAX	UNITS
T_{vout_rise}	Output voltage rise time for 12V and 12VSB from 10% to within regulation limits. The default rise time shall be 25ms.	10	70	ms
dV/dt (new)	Output voltage dv/dt at any point of the voltage slow start when PSU is powered ON. Applies to both 12Vmain and 12Vstby.		0.5	V/msec
T_{off_latch}	This is the time the PSU must stay off when being powered off with loss of DC input. Both outputs must meet this OFF time; 1) whenever PWOK is de-asserted for the 12Vmain output; 2) whenever the 12Vstby output drops below regulation limits	500		ms
$T_{sb_on_delay}$	Delay from DC being applied to 12VSBbeing within regulation. *1500ms for first time startup; 2500ms for restart cycles		1500 2500	ms
$T_{vin_good_high}$	Delay from input being applied to VIN_GOOD assertion		1800	ms
$T_{ac_on_delay}$	Delay from DC being applied to all output voltages being within regulation.		3000	ms
T_{vout_holdup}	Time 12VI output voltage stay within regulation after loss of DC.	2.4		ms
T_{pwok_holdup}	Delay from loss of DC to de-assertion of PWOK	1		ms
$T_{vin_good_low}$	Delay from loss of DC to de-assertion of VIN_GOOD		2	ms
$T_{pson_off_delay}$	Delay from PSON# de-asserted to power supply turning off		5	ms
$T_{pson_on_delay}$	Delay from PSON# active to output voltages within regulation limits.	5	400	ms
T_{pson_pwok}	Delay from PSON# deactivate to PWOK being de-asserted.		5	ms
T_{pwok_on}	Delay from output voltages within regulation limits to PWOK asserted at turn on.	100	500	ms
T_{pwok_off}	Delay from PWOK de-asserted to output voltages dropping out of regulation limits.	1		ms
T_{pwok_low}	Duration of PWOK being in the de-asserted state during an off/on cycle using DC or the PSON signal.	100		ms
T_{sb_vout}	Delay from 12VSBbeing in regulation to O/Ps being in regulation at DC turn on.	50	1500	ms
T_{12VSB_holdup}	Time the 12VSBoutput voltage stays within regulation after loss of DC. *measured at 70% load, with the standby output loaded at 1.75A	50		ms

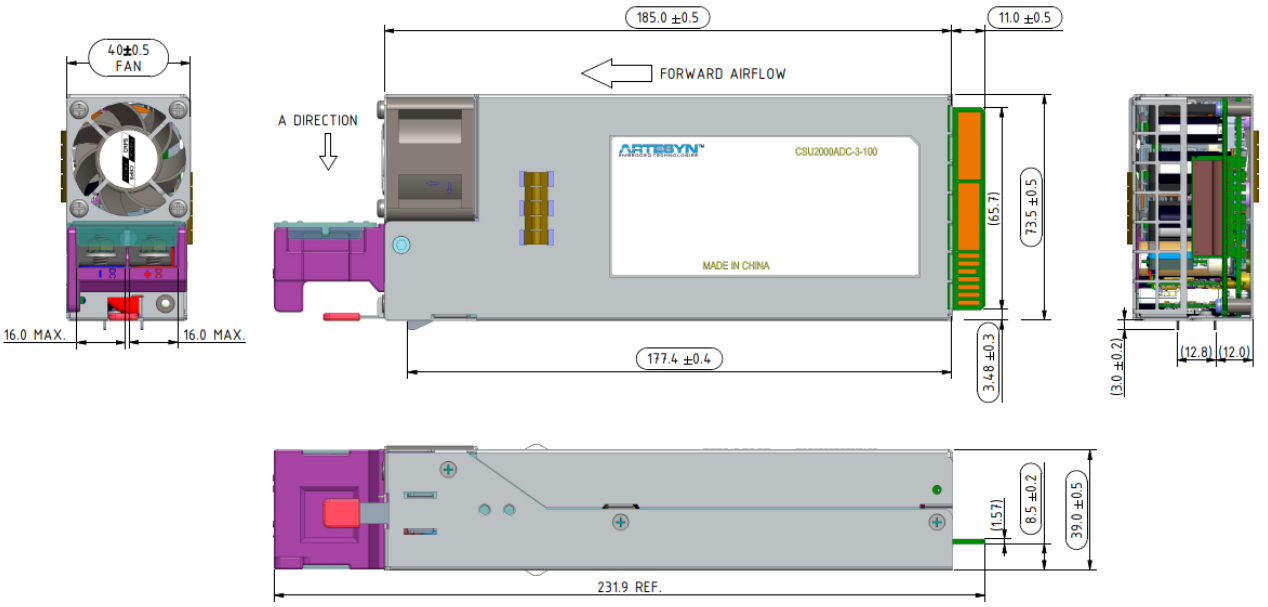
TIMING DIAGRAM



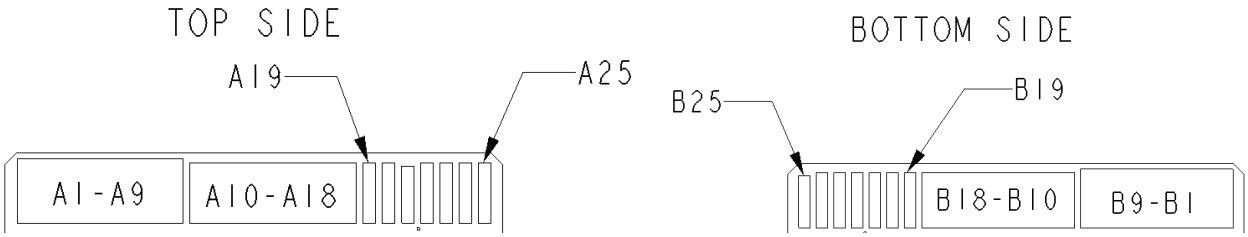
ENVIRONMENTAL SPECIFICATIONS

Operating temperature	0 to 55°C at full load Allowable operating temperature of 65°C at 60% load
Operating altitude	up to 5000 m
Operating humidity	+5% to +95% non-condensing
Storage temperature	-40 °C to +70 °C, non-condensing
Storage humidity	+5% to +95% non-condensing
Non-operating altitude	up to 10,000 meters
Vibration and shock	Standard operating/non-operating random shock and vibration
RoHS compliance	Yes
MTBF	250,000 hours per Telcordia Issue 2, Method 1, Case 3 at 25 °C ambient at full load

MECHANICAL OUTLINE



POWER SUPPLY OUTPUT CARD EDGE



CONNECTOR DEFINITIONS

Output connector part number	Card-edge
Mating connector part number	2x25 pin configuration of the FCI power card connector 10035388-102LF or any approved equivalent

Pin	Name	Pin	Name
A1	GND	B1	GND
A2	GND	B2	GND
A3	GND	B3	GND
A4	GND	B4	GND
A5	GND	B5	GND
A6	GND	B6	GND
A7	GND	B7	GND
A8	GND	B8	GND
A9	GND	B9	GND
A10	+12V	B10	+12V
A11	+12V	B11	+12V
A12	+12V	B12	+12V
A13	+12V	B13	+12V
A14	+12V	B14	+12V
A15	+12V	B15	+12V
A16	+12V	B16	+12V
A17	+12V	B17	+12V
A18	+12V	B18	+12V
A19	PMBus SDA	B19	A0 (SMBus address)
A20	PMBus SCL	B20	A1 (SMBus address)
A21	PSON	B21	12V stby
A22	SMBAlert#	B22	Cold Redundancy Bus
A23	Return Sense	B23	12V load share bus
A24	+12V remote Sense	B24	
A25	PWOK	B25	VIN_GOOD

ORDERING INFORMATION

Model number	Airflow	Nominal Output Voltage	Regulation Band	Minimum Current	Maximum Current	Output Ripple P/P	Standby
CSU1300ADC-3-100	Normal fan	12.2 Vdc	11.8 - 12.6 Vdc	1 A	106.5 A	120 mV	12.0 V @ 3.5 A
CSU1300ADC-3-101	Reverse fan	12.2 Vdc	11.8 - 12.6 Vdc	1 A	106.5 A	120 mV	12.0 V @ 3.5 A

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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For international contact information,
visit advancedenergy.com.

powersales@aei.com (Sales Support)
productsupport.ep@aei.com (Technical Support)
+1 888 412 7832

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