

CSU550AP

550 Watts Distributed Power System

Data Sheet

Front-end Bulk Power
Total Output Power:
 550 W continuous
Wide Input Voltage:
 90 - 264 Vac; 164 - 405 Vdc



SPECIAL FEATURES

- 550 W output power
- High power and short form factor
- 1U power supply
- High density design: 17 W/in³
- Active Power Factor Correction
- EN61000-3-2 Harmonic compliance
- Inrush current control
- 80plus Platinum efficiency
- N+M redundant N+M ≤ 4
- Hot-pluggable
- Active current sharing
- Full digital control
- PMBus compliant
- Accurate input power reporting
- Reverse airflow option

COMPLIANCE

- Conducted/Radiated EMI Class A
- EN61000-4-11

SAFETY

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

Electrical Specifications

Input						
Input range	90 - 264 Vac; 165 - 405 Vdc					
Frequency	47 Hz to 63 Hz					
Efficiency	80plus Platinum efficiency					
Max input current	8.0 Arms @ 90 Vac					
Inrush current	10 Apk					
Conducted EMI	Class A -6 dB					
Radiated EMI	Class A -6 dB					
Power factor	>0.89 beginning at 10% load					
ITHD	<10% beginning at 20% load					
Leakage current	0.85 mA					
Hold-up time	13 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 / 0.1 A)	12.05	12.15	12.25	12.05	12.2	12.35
Total output regulation range	11.4 V		12.6 V	11.4 V		12.6 V
Dynamic load regulation range	11.4 V		12.6 V	11.4 V		12.6 V
Output ripple			120 mV			120 mV
Output current	0		45 A	0		2.5 A
Current sharing	Within ±5% @ full load rating			N/A		
Capacitive loading	500 µF		25000 µF	100 µF		3100 µF
Start-up from AC to output			3000 ms			1500 ms
Output rise time	5 ms		70 ms	1 ms		25 ms

Electrical Specifications

Protections (Main Output)					
	Minimum	Nominal	Maximum	Units	Comment
Peak current			54	A	
Output OCP	55		62	A	
Dynamic loading setup	11.4		12.6	V	60% rated load step, 0.5 A/ μ s slew rate; 2000 μ F / 1 A min
Output OVP	13.3		14.5	V	Latch
Overtemperature protection		Yes			
Fan fault protection		Yes			
Standby Output					
Peak current			2.75	A	
Output OCP	3.0		4.5	A	
Output OVP	13.3		14.5	V	
Dynamic loading setup			\pm 5	%	Load step 1A, Slew rate: 0.5 A / μ s / 100 μ F

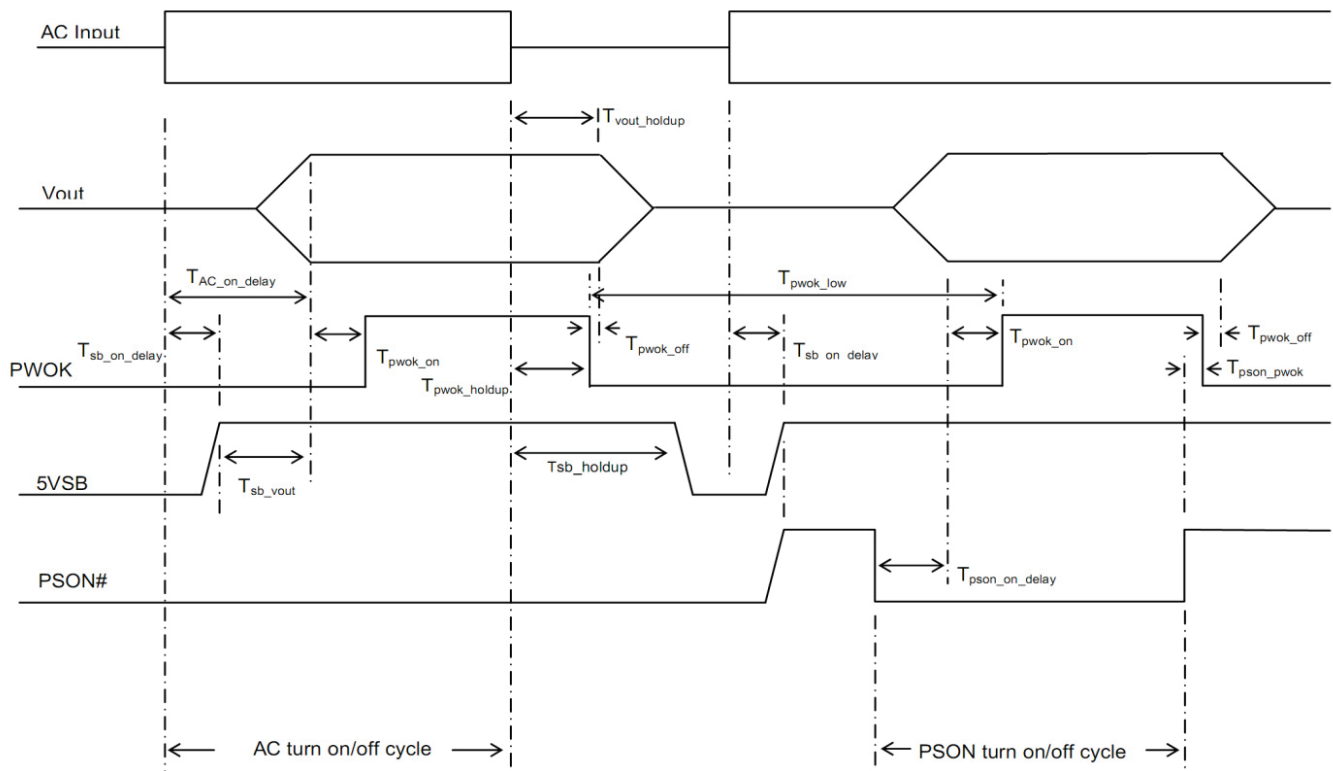
Electrical Specifications

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	10% to 30%	> 30% to 50%	> 50% to 100%		
READ_PIN and READ_EIN	\pm 6 W	\pm 3%	\pm 2%		
READ_IOUT	\pm 0.4 A	\pm 2%	\pm 2%		
READ_TEMPERATURE	\pm 3 $^{\circ}$ C				

Timing Specifications

	Description	Min	Max	Unit
T_{vout_rise}	12 V main output voltage rise time	5.0	70	ms
	12 VSB output voltage rise time	1	25	ms
$T_{sb_on_delay}$	Delay from AC being applied to 12 Vsb being within regulation		1500	ms
$T_{ac_on_delay}$	Delay from AC being applied to all output voltages being within regulation		3000	ms
T_{vout_holdup}	Time 12 VI output voltage stay within regulation after loss of AC	13		ms
T_{pwok_holdup}	Delay from loss of AC to de-assertion of PWOK	12		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 AC or the PSON signal	100		ms
T_{sb_vout}	Delay from 12VSB being in regulation to O/Ps being in regulation at AC turn on	50	1000	ms
T_{12VSB_holdup}	Time the 12VSB output voltage stays within regulation after loss of AC	70		ms

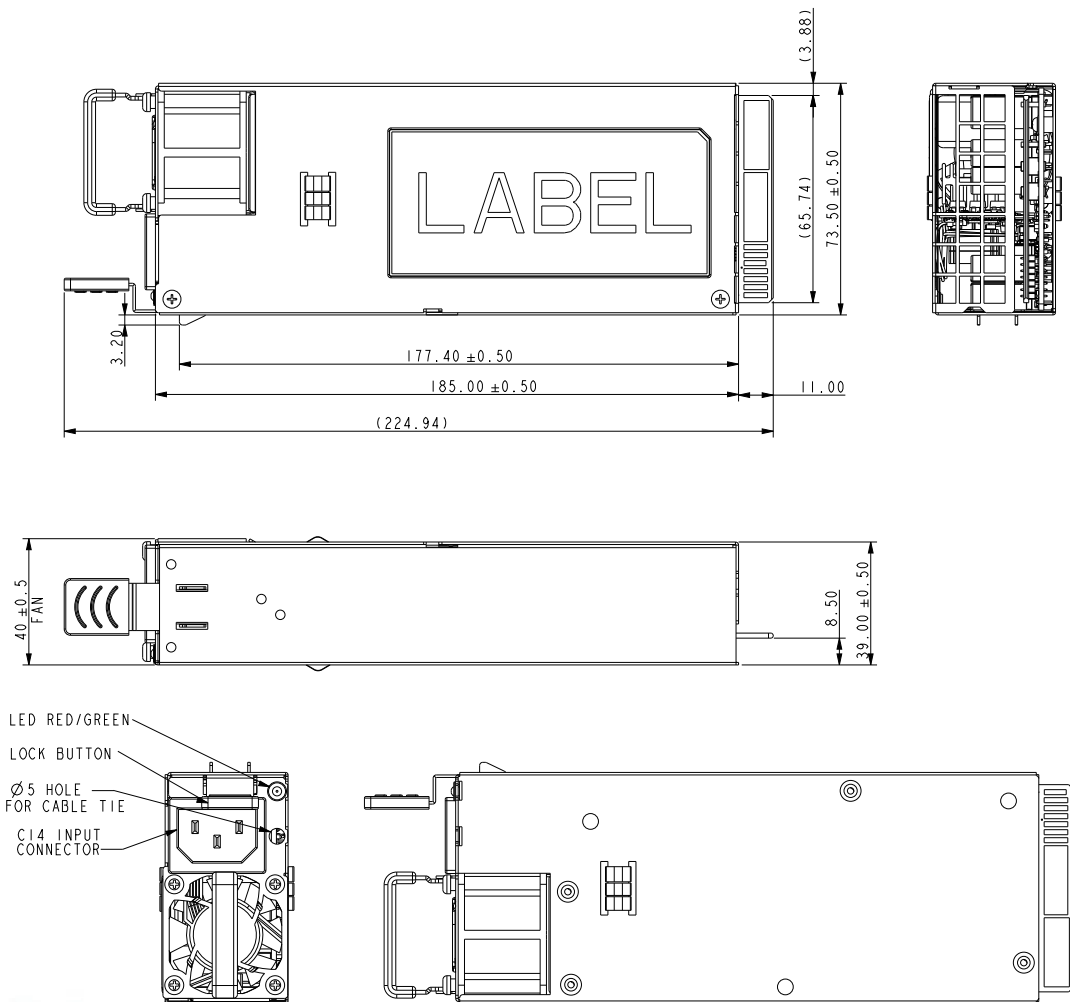
Timing Diagram



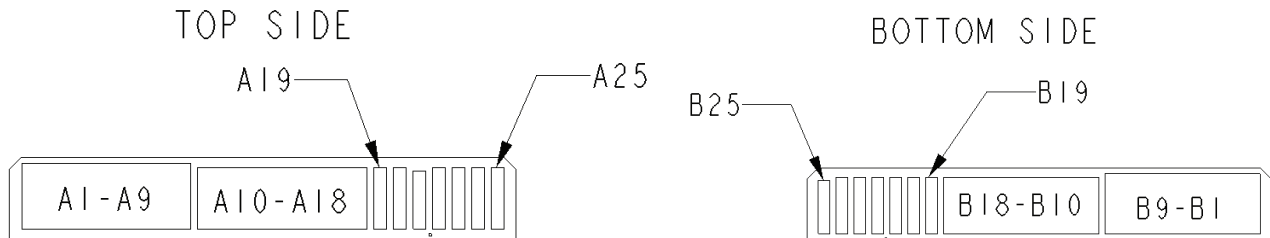
Environmental Specifications

Operating temperature	0 to 50 °C, the maximum operating temperature (50 °C) is to be derated by 1 °C per 300 m above 2000 m
Operating altitude	up to 5000 m
Operating humidity	+5% to +85% non-condensing
Storage temperature	-40 °C to +70 °C, non-condensing
Storage humidity	+5% to +95% non-condensing
Non-operating altitude	up to 15,200 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

Output Connector Pin Configuration

Pin	Name	Pin	Name
A1-A9	GND	B1-B9	GND
A10-A18	+12 V	B10-B18	+12 V
A19	SDA	B19	A0 (SMBus address)
A20	SCL	B20	A1 (SMBus address)
A21	PSON	B21	12 VSB
A22	SMBAlert#	B22	CR_BUS#
A23	-VSENSE	B23	12 V load share
A24	+VSENSE	B24	Present
A25	PWOK	B25	Reserved

Note: PSON connect to GND for power up.

Ordering Information

Model number	Airflow	Nominal Output Voltage	Set Point	Regulation Band	Minimum Current	Maximum Current	Output Ripple P/P	Standby
CSU550AP-3	Normal fan	12.0 Vdc	11.9 - 12.1 Vdc	11.4 - 12.6 Vdc	1 A	66.7 A	120 mV	12.0 V @ 2.5 A
CSU550AP-3-001	Reverse fan	12.0 Vdc	11.9 - 12.1 Vdc	11.4 - 12.6 Vdc	1 A	66.7 A	120 mV	12.0 V @ 2.5 A

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