

# POWER

## CSV1600BP

1600 Watts Distributed Power System

### Data Sheet

**Front-end Bulk Power**  
**Total Output Power:**  
 1600 W continuous at high line  
**Input Voltage:** 180 to 264 Vac

### SPECIAL FEATURES

- 1600 W output power
- 1U power supply
- Active Power Factor Correction
- EN61000-3-2 Harmonic compliance
- Inrush current control
- 80PLUS® Platinum efficiency
- N+N Redundant
- Hot-pluggable
- Active current sharing
- PMBus® compliant
- Two-year warranty

### COMPLIANCE

- Conducted/Radiated EMI Class A Limits
- RoHS
- IEC 60950

### SAFETY

- UL/cUL
- CB Test Certificate
- CE Mark
- KC
- CCC/CQC
- BSMI
- BIS
- TÜV



### Electrical Specifications

Input						
Input range	180 - 264 Vac: 1600 W					
Frequency	47 Hz to 63 Hz					
Efficiency	94.0% peak					
Max input current	8.7 A @ 200 Vac					
Inrush current	30 Apk					
Conducted EMI	Class A					
Radiated EMI	Class A					
Power factor	>0.9 beginning at 10% load					
Hold-up time	12 ms at full load					
Leakage current	0.575 mA					
Output						
	Main DC Output			Standby DC Output		
	MIN	NOM	MAX	MIN	NOM	MAX
Nominal setting	-0.20%	12.2	0.20%	-3.5%	12.0	+3.5%
Total output regulation range	11.6 V		12.8 V	11.4 V		12.6 V
Dynamic load regulation range	11.6 V		12.8 V	11.4 V		12.6 V
Output ripple			120 mVp-p			120 mVp-p
Output current	1.0 A <sup>1</sup>		131.2 A	0.0 A		2.5 A
Current sharing	Within ±10% of full load rating, starting at 30% of rated load			N/A		
Capacitive loading	1,000 µF		20,000 µF	50 µF		500 µF
Start-up from AC to output			3,000 ms			2,500 ms
Output rise time	5 ms		50 ms	1 ms		25 ms

<sup>1</sup> Minimum current for transient load response testing only. Unit is designed to operate and be within output regulation range at zero load.

## Electrical Specifications

Protections			
Main Output	MIN	NOM	MAX
Overcurrent protection <sup>2</sup>	>100%		125%
Oversvoltage protection <sup>1</sup>	13.4 V		
Undersvoltage protection			10.0 V
Overtemperature protection		Yes	
Fan fault protection		Yes	
Standby Output			
Overcurrent protection <sup>3</sup>	3.85 A		3.95 A
Oversvoltage protection <sup>3</sup>	13.4 V		
Undersvoltage protection			10.0 V

<sup>1</sup> Latch mode

<sup>2</sup> THROTTLE warning of at least 1 second before latching off

<sup>3</sup> Standby protection is auto-recovery

## LED Indicators

	Input Good (Green)	Output Good (Green)	Fault (Yellow)
Output ON and OK	On	On	Off
Standby mode (input present, main output off) or zero output mode	<b>On</b>	<b>Blinking 1 Hz</b>	<b>Off</b>
No input/Input out of range	Off	Off	Off
OCP, or over-subscription fault, or OVP, or fan failure, or OTP	<b>On</b>	<b>Off</b>	<b>On</b>

## Environmental Specifications

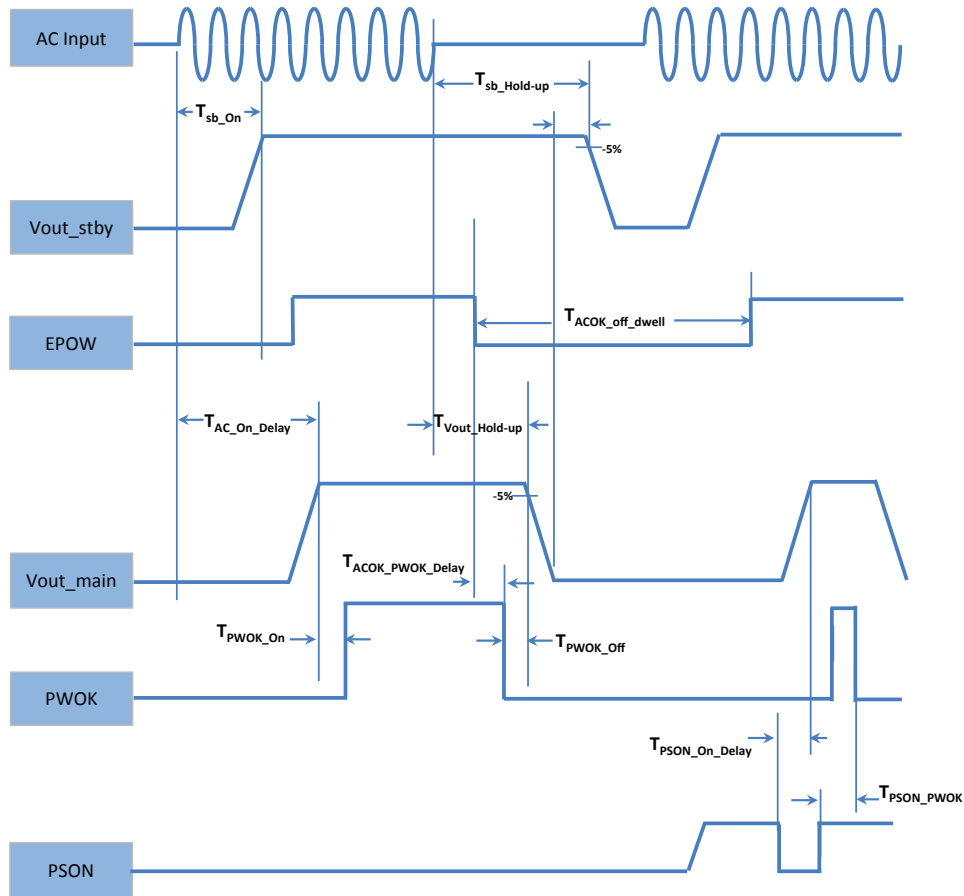
Operating temperature	5 to 50 °C <sup>1</sup>
Operating altitude	up to 10,000 feet <sup>1</sup>
Operating relative humidity	+8% to 93%, non-condensing
Non-operating temperature	-40 to +60 °C
Shipping and storage relative humidity	+5% to 100%, including condensing
Non-operating altitude	up to 50,000 feet
Vibration and shock	Standard operating/non-operating random shock and vibration
RoHS compliance	Yes
MTBF	500 k hours at 40 °C, 70% load, nominal input
Operating life	Minimum of 5 years at typical conditions

<sup>1</sup> Allowable operation up to 60°C at 70% load. PSU ambient temperature derated at 1°C per 600 ft above 3000 ft

## Ordering Information

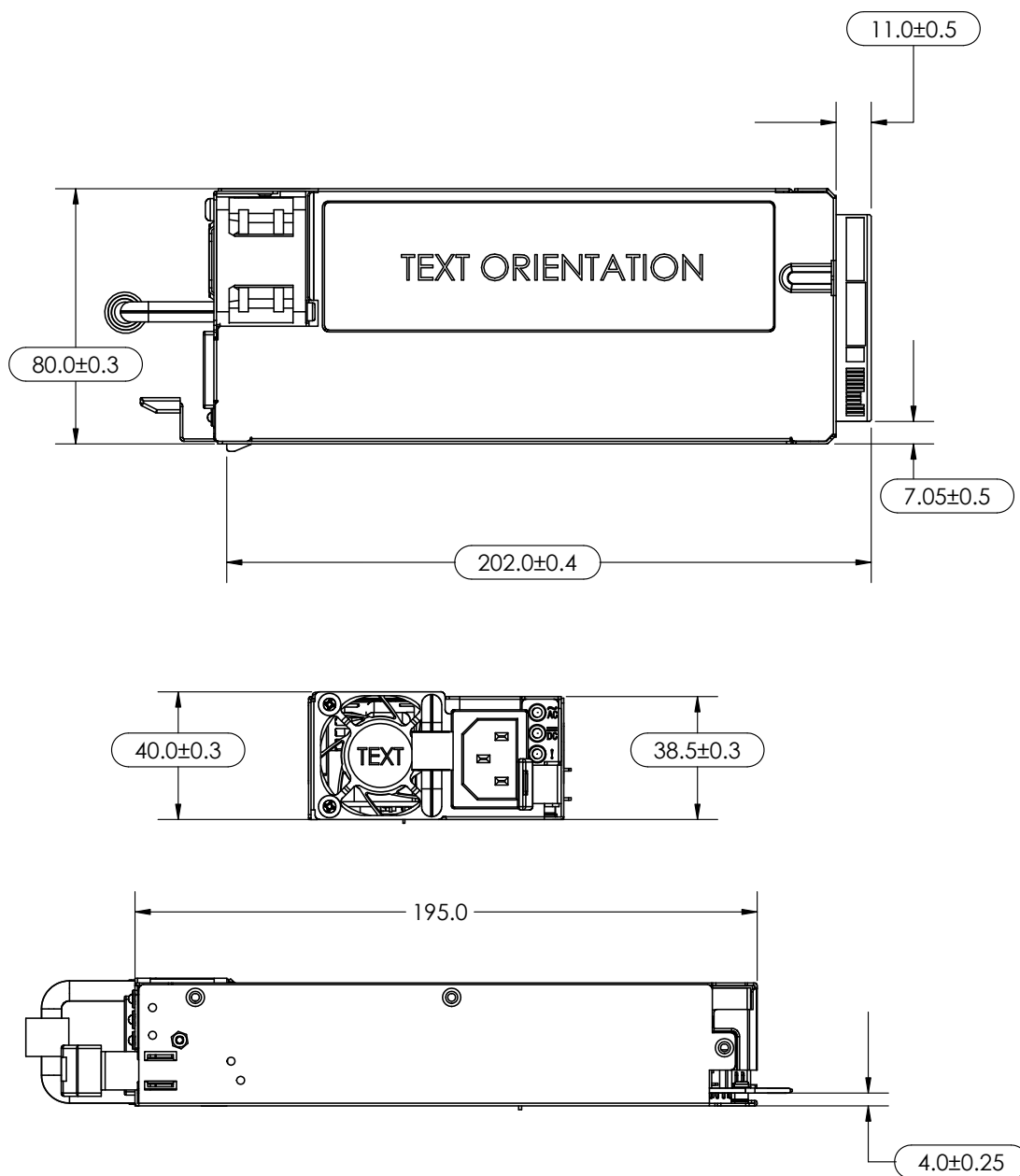
Model Name	Ordering Part Number	Nominal Main Output	Standby Output	Airflow Direction
CSV1600BP-3	700-014190-1000	12.2 V @ 131.2 A	12 V @ 3.0 A	Standard (forward)

## Timing Diagram



Timing Specifications				
	Description	Min	Max	Unit
$T_{sb\_On}$	Delay from AC being applied to standby output being within regulation		2500	ms
$T_{Vout\_rise}$	Rise time of output voltage going from 10% to 90% of the nominal regulation	1	50	ms
$T_{AC\_On\_Delay}$	Delay from AC being applied to main output being within regulation		3000	ms
$T_{PWOK\_On}$	Delay from output voltages within regulation limits to PWOK assertion	180	220	ms
$T_{ACOK\_PWOK\_Delay}$	Delay from ACOK going low to deassertion of PWOK	6		ms
$T_{Vout\_Hold-up}$	Delay from loss of AC to main output being within regulation	12		ms
$T_{sb\_Hold-up}$	Delay from loss of AC to standby output being within regulation	50	1000	ms
$T_{PWOK\_Off}$	Delay from deassertion of PWOK to output falling out of regulation	2		ms
$T_{PSON\_PWOK}$	Delay from deassertion of PSON to deassertion of PWOK		1	ms
$T_{PSON\_On\_Delay}$	Delay from PSON assertion to output being within regulation	5	100	ms

## Mechanical Outline

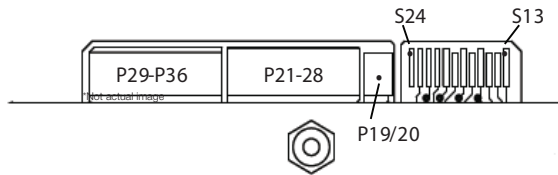


DIMENSION AND TOLERANCE NEED TO BE HELD  
AT THE EDGE OF THE STANDOFF LOCATIONS ONLY

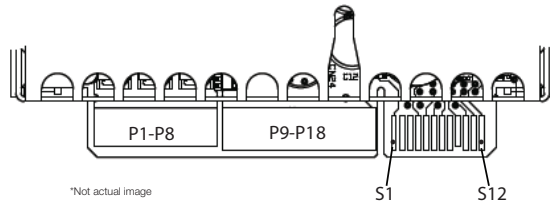
## Connector Definitions

Output connector part number	Card-edge
Mating connector part number	FCI Amphenol HPCE 10122238-320424FLF

Power Supply Output Card Edge (Top Side)



Power Supply Output Card Edge (Bottom Side)



## Output Connector Pin Configuration

S1	Reserved	S13	SMBUS_RESET
S2	Reserved	S14	Reserved
S3	+Vsense	S15	ADDRESS
S4	PSKILL	S16	PSON
S5	Reserved	S17	PSON
S6	PWOK	S18	ACOK
S7	PRESENT	S19	Reserved
S8	SMB_ALERT#	S20	THROTTLE
S9	ISHARE	S21	Reserved
S10	RETURN	S22	-Vsense
S11	SDA	S23	Reserved
S12	SCL	S24	Reserved
P1-P8	Vo	P29-P36	Vo
P9-P18	RTN	P21-P28	RTN
		P19-P20	VSB

## Power Supply Addressing (pin S15)

Resistance (pull-down at system side, 1% tol or better)	Voltage (nom)	Hex Address
OPEN	12.00 V	D0
280 k	10.49 V	D2
212 k	9.01 V	D4
68.1 k	7.55 V	D6
40.2 k	6.00 V	D8
23.7 k	4.45 V	DA
13.3 k	2.98 V	DC
5.76 k	1.50 V	DE

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