

# POWER

## CSV2000BP

2000 Watts Distributed Power System

### Data Sheet

Front-end Bulk Power  
**Total Output Power:** 2000 W<sup>1</sup>  
**Input Voltage:** 180 to 265 Vac<sup>1</sup>

### SPECIAL FEATURES

- 2000 W output power<sup>1</sup>
- 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
- CQC
- BSMI
- BIS
- TÜV



### Electrical Specifications

| Input                         |  |      |           |                   |      |           |
|-------------------------------|--|------|-----------|-------------------|------|-----------|
| Input range                   | 180 - 264 Vac <sup>1</sup> : 2000 W<br>198 - 264 Vac: 2000 W   |      |           |                   |      |           |
| Frequency                     | 47 Hz to 63 Hz   |      |           |                   |      |           |
| Efficiency                    | 94.0% peak, platinum rating                                    |      |           |                   |      |           |
| Max input current             | 11.0 A <sup>1</sup> or 10 A                                    |      |           |                   |      |           |
| 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 | 11.59 V  |      | 12.81 V   | 11.4 V            |      | 12.6 V    |
| Dynamic load regulation range | 11.59 V  |      | 12.81 V   | 11.34 V           |      | 13.05 V   |
| Output ripple                 |  |      | 120 mVp-p |                   |      | 120 mVp-p |
| Output current                | 1.0 A <sup>2</sup>   |      | 163.9 A   | 0.5 A             |      | 3.0 A     |
| Current sharing               | Within ±10% of full load rating, starting at 30% of rated load |      |           | N/A               |      |           |
| Capacitive loading            | 100 µF   |      | 25,000 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> For UL covered area that allows 11 A input current rating

<sup>2</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>  | 169 A  |     | 205 A  |
| 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> | 13.8 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            |
| OCF, or over-subscription fault, or OVP, or fan failure, or OTP   | <b>On</b>          | <b>Off</b>           | <b>On</b>      |

## Environmental Specifications

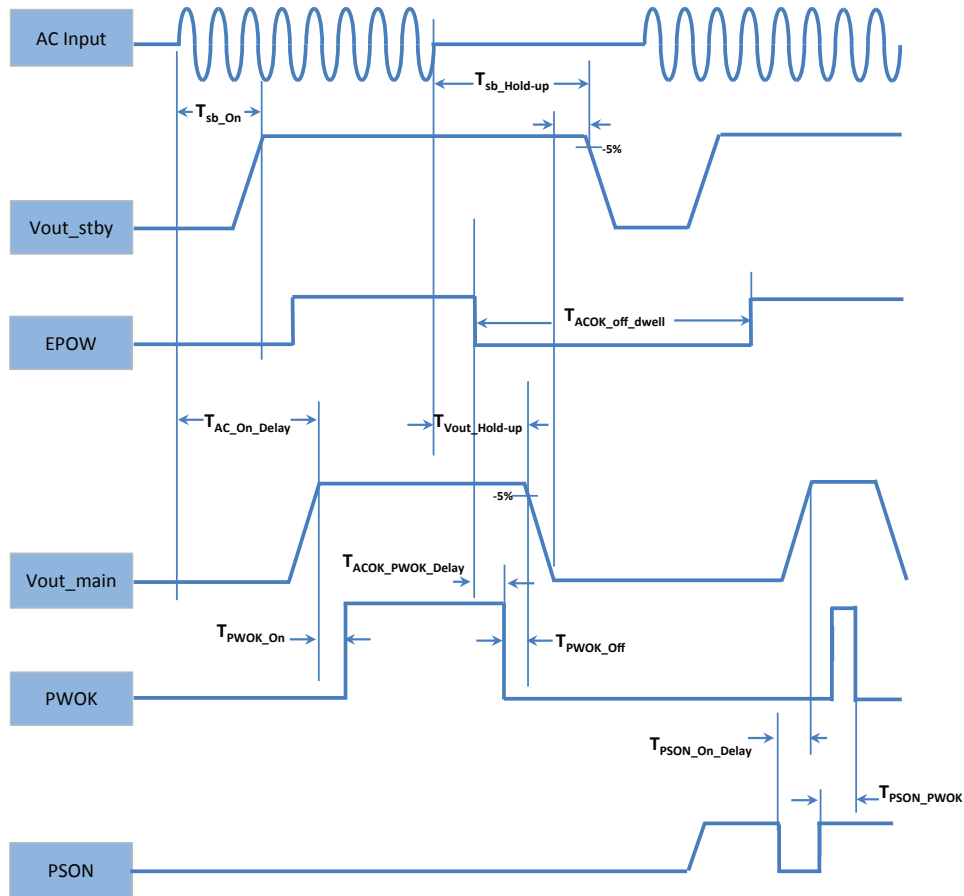
|  |   |
|--|---|
| Operating temperature                  | 5 to 50 °C <sup>1</sup>                                     |
| Operating altitude                     | up to 10,000 feet <sup>1</sup>                              |
| Operating relative humidity            | +8% to 93%, non-condensing                                  |
| Non-operating temperature              | -40 to +70 °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> PSU ambient temperature derated at 1°C per 600 ft above 3000 ft

## Ordering Information

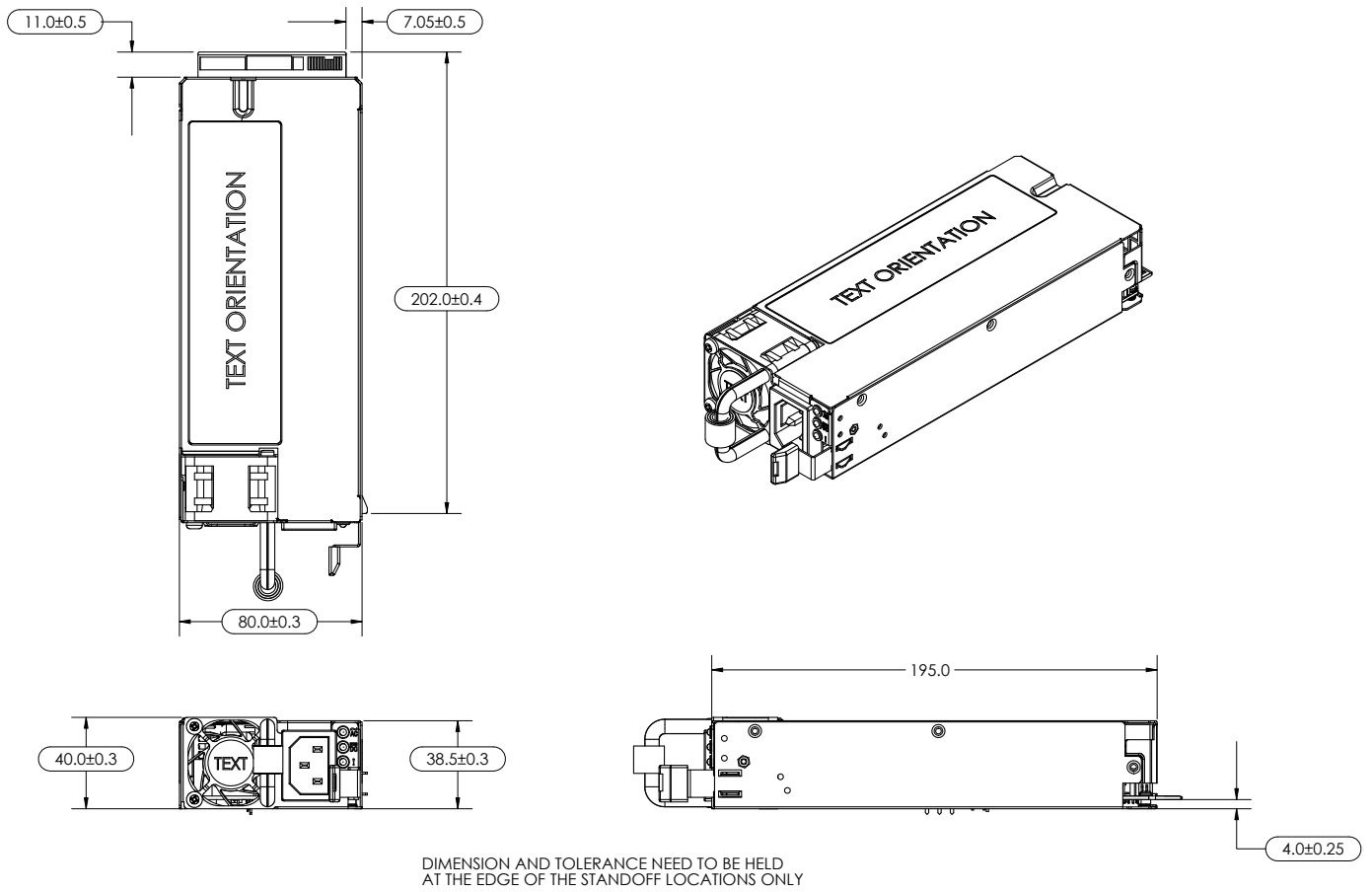
| Model Name  | Ordering Part Number | Nominal Main Output | Standby Output | Airflow Direction  |
|-------------|----------------------|---------------------|----------------|--------------------|
| CSV2000BP-3 | 700-014265-1000      | 12.2 V @ 163.9 A    | 12 V @ 3.0 A   | Standard (forward) |

## 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   |

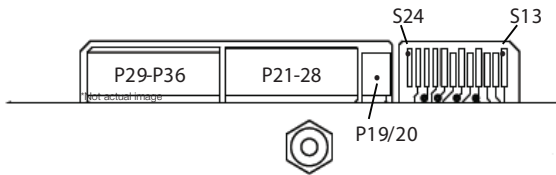
## Mechanical Outline



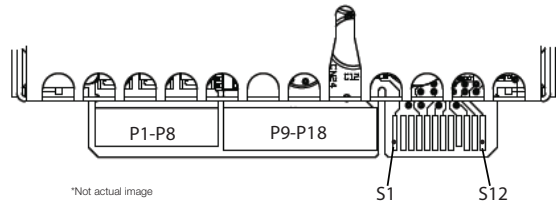
## Connector Definitions

|                              |                                      |
|------------------------------|--------------------------------------|
| 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 Assignment

| Pin Pos. | Name                          | Pin Pos. | Name                |
|----------|-------------------------------|----------|---------------------|
| S1       | Reserved                      | S13      | SMBus_RESET#        |
| S2       | Reserved                      | S14      | Reserved            |
| S3       | +MAIN_VRS / +Vsense           | S15      | ADDRESS             |
| S4       | Reserved (Gnd at system side) | S16      | PSON_L              |
| S5       | RESERVED                      | S17      | PSON_L              |
| S6       | DC_GOOD / PWOK                | S18      | EPOW# / ACOK        |
| S7       | PRESENT#                      | S19      | Reserved            |
| S8       | SMBALERT#                     | S20      | Throttle#           |
| S9       | ISHARE                        | S21      | Reserved            |
| S10      | GND / RETURN                  | S22      | -MAIN_VRS / -Vsense |
| S11      | SDA                           | S23      | Reserved            |
| S12      | SCL                           | S24      | Reserved            |
| P1-P8    | 12Vout                        | P29-P36  | 12Vout              |
| P9-P18   | RETURN                        | P21-P28  | RETURN              |
|          |                               | P19-P20  | 12Vaux              |

## 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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