

**SERIES:** PSF-100 | **DESCRIPTION:** AC-DC POWER SUPPLY

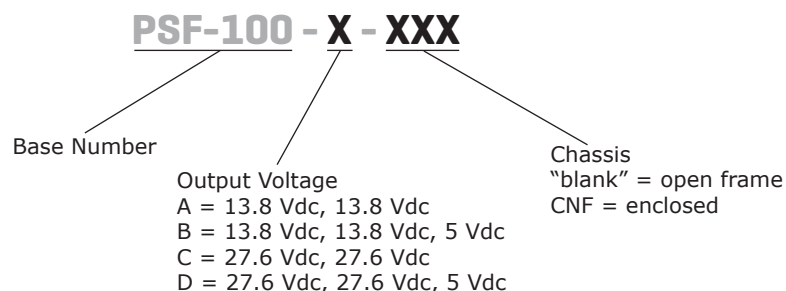
**FEATURES**

- up to 100 W continuous power
- universal input (90~264 Vac)
- built-in constant current limit circuitry
- alarm signal for AC OK and battery low
- short circuit, over load, over voltage, brown-out, battery low, and battery polarity protections
- withstand 2G vibration test
- efficiency up to 87%



| MODEL     |     | output voltage<br>(Vdc) | output current <sup>1</sup><br>max<br>(A) | output power <sup>2</sup><br>max<br>(W) | ripple and noise <sup>3</sup><br>max<br>(mVp-p) | efficiency<br>typ<br>(%) |
|-----------|-----|-------------------------|-------------------------------------------|-----------------------------------------|-------------------------------------------------|--------------------------|
| PSF-100-A | Vo1 | 13.8                    | 7.3                                       | 100                                     | 100                                             | 86                       |
|           | Vo2 | 13.8                    | 2.875                                     |                                         | 150                                             |                          |
| PSF-100-B | Vo1 | 13.8                    | 6.2                                       | 100                                     | 100                                             | 85                       |
|           | Vo2 | 13.8                    | 2.875                                     |                                         | 150                                             |                          |
|           | Vo3 | 5                       | 3                                         |                                         | 100                                             |                          |
| PSF-100-C | Vo1 | 27.6                    | 3.65                                      | 100                                     | 100                                             | 87                       |
|           | Vo2 | 27.6                    | 1.725                                     |                                         | 150                                             |                          |
| PSF-100-D | Vo1 | 27.6                    | 3.1                                       | 100                                     | 100                                             | 85                       |
|           | Vo2 | 27.6                    | 1.725                                     |                                         | 150                                             |                          |
|           | Vo3 | 5                       | 3                                         |                                         | 100                                             |                          |

Notes: 1. Vo2 battery discharge current must not exceed 50% of the rated power.  
 2. Maximum total combined power (rated power).  
 3. At 20 MHz bandwidth using a 12" twisted pair-wire, each output terminated with a 47  $\mu$ F and 0.1  $\mu$ F parallel capacitors.

**PART NUMBER KEY**


## INPUT

| parameter       | conditions/description                           | min       | typ        | max        | units      |
|-----------------|--------------------------------------------------|-----------|------------|------------|------------|
| voltage         |                                                  | 90<br>127 |            | 264<br>373 | Vac<br>Vdc |
| surge voltage   | for maximum of 5 seconds                         |           |            | 300        | Vac        |
| frequency       |                                                  | 47        |            | 63         | Hz         |
| current         | at 115 Vac<br>at 230 Vac                         |           | 2.0<br>1.2 |            | A<br>A     |
| inrush current  | at 115 Vac, cold start<br>at 230 Vac, cold start |           | 35<br>70   |            | A<br>A     |
| leakage current | at 264 Vac                                       |           |            | 1          | mA         |

## OUTPUT

| parameter               | conditions/description                           | min                                               | typ          | max | units    |
|-------------------------|--------------------------------------------------|---------------------------------------------------|--------------|-----|----------|
| line regulation         | low line to high line, at rated load<br>Vo1, Vo3 |                                                   | ±0.5         |     | %        |
| load regulation         | 10% to 100% rated load<br>Vo1<br>Vo3             |                                                   | ±0.5<br>±1.5 |     | %<br>%   |
| voltage accuracy        | Vo1<br>Vo3                                       |                                                   | ±2<br>±3     |     | %<br>%   |
| hold-up time            | at 115 Vac, full load<br>at 230 Vac, full load   |                                                   | 8<br>50      |     | ms<br>ms |
| setup time              | at 115/230 Vac, full load, cold start            | 800                                               |              |     | ms       |
| rise time               | at 115/230 Vac, full load                        |                                                   | 50           |     | ms       |
| adjustability           | Vo1                                              |                                                   | ±10          |     | %        |
| temperature coefficient | Vo1, 0°C~50°C                                    |                                                   | ±0.03        |     | %/°C     |
| AC OK                   | PSF-100-A, PSF-100-C<br>PSF-100-B, PSF-100-D     | TTL open collector output<br>relay contact output |              |     |          |
| battery low             | PSF-100-A, PSF-100-C<br>PSF-100-B, PSF-100-D     | <12 V ±3%<br><22 V ±3%                            |              |     |          |

## PROTECTIONS

| parameter               | conditions/description                        | min        | typ      | max        | units      |
|-------------------------|-----------------------------------------------|------------|----------|------------|------------|
| over voltage protection | Vo1, latch off mode                           | 115        |          | 150        | %          |
| over current protection | auto recovery, hiccup mode<br>Vo1, Vo3<br>Vo2 | 110<br>100 |          |            | %<br>%     |
| battery cut off         | PSF-100-A, PSF-100-B<br>PSF-100-C, PSF-100-D  | 9.5<br>19  | 10<br>20 | 10.5<br>21 | Vdc<br>Vdc |

## SAFETY & COMPLIANCE

| parameter            | conditions/description                                                                                             | min                   | typ | max | units             |
|----------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------|-----|-----|-------------------|
| isolation voltage    | input to output<br>input to ground<br>output to ground                                                             | 3,000<br>1,500<br>500 |     |     | Vac<br>Vac<br>Vac |
| isolation resistance | input to output at 500 Vdc                                                                                         | 100                   |     |     | MΩ                |
| safety approvals     | UL 60950-1, EN 60950-1                                                                                             |                       |     |     |                   |
| EMI/EMC <sup>1</sup> | EN 55022, EN 61000-6-(1,3), EN 61000-3-(2,3),<br>EN 55024, EN 50204, EN 61204-3, EN 61000-4-(2, 3, 4, 5, 6, 8, 11) |                       |     |     |                   |
| MTBF                 | PSF-100-A, PSF-100-B as per MIL-HDBK-217F<br>PSF-100-C, PSF-100-D as per MIL-HDBK-217F                             | 103,400<br>92,100     |     |     | hrs<br>hrs        |
| RoHS                 | 2011/65/EU                                                                                                         |                       |     |     |                   |

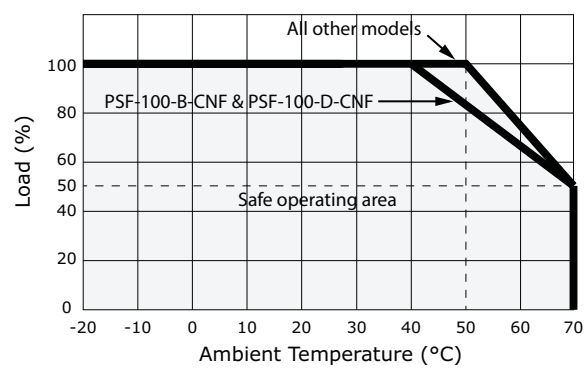
Note: 1. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

ENVIRONMENTAL

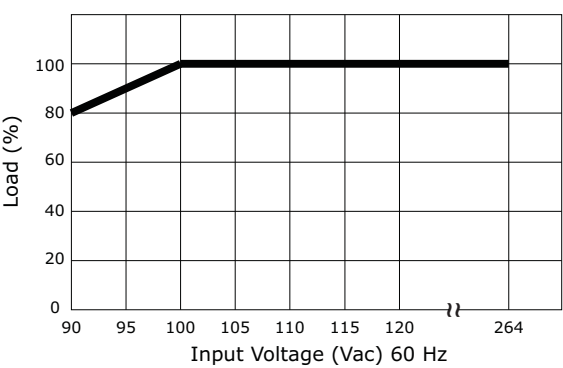
| parameter             | conditions/description                                                                | min | typ | max | units |
|-----------------------|---------------------------------------------------------------------------------------|-----|-----|-----|-------|
| operating temperature | see derating curve                                                                    | -20 |     | 70  | °C    |
| storage temperature   |                                                                                       | -40 |     | 85  | °C    |
| operating humidity    | non-condensing                                                                        | 20  |     | 90  | %     |
| storage humidity      | non-condensing                                                                        | 10  |     | 90  | %     |
| vibration             | at 10~500 Hz, 10 min per cycle for 60 minutes<br>each test along the X, Y, and Z axis |     | 2   |     | G     |

DERATING CURVES

Load vs. Temperature



Load vs. Input Voltage  
(at 25°C)



MECHANICAL

| parameter  | conditions/description                                     | min | typ          | max | units    |
|------------|------------------------------------------------------------|-----|--------------|-----|----------|
| dimensions | open frame: 123 x 95 x 31<br>enclosed: 129.5 x 97.5 x 37.5 |     |              |     | mm<br>mm |
| weight     | open frame<br>enclosed                                     |     | 0.34<br>0.47 |     | kg<br>kg |

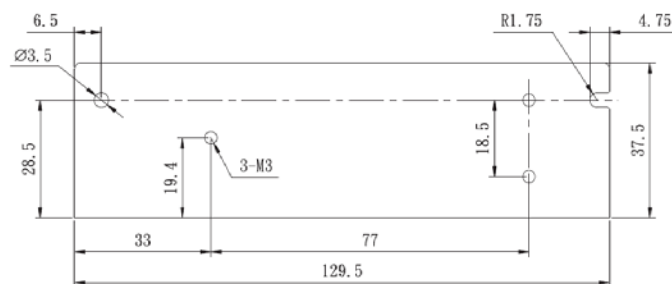
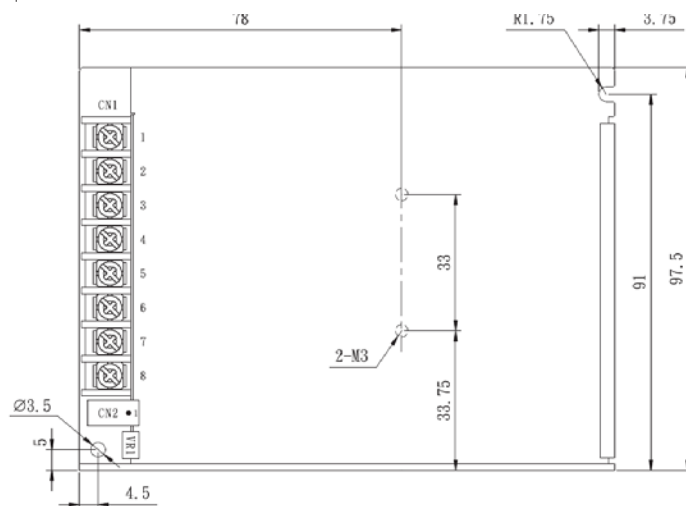
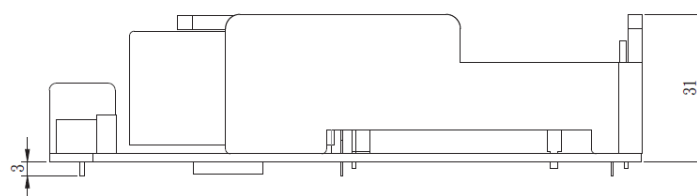
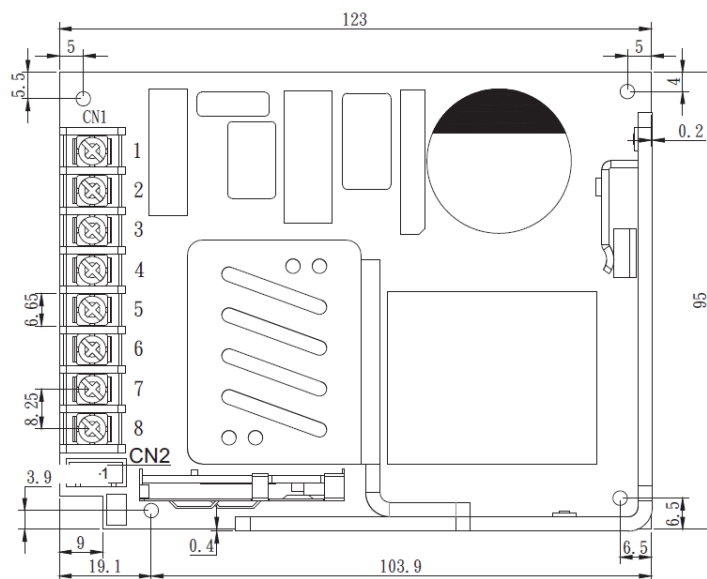
## MECHANICAL DRAWING

### OPEN FRAME

units: mm

| CN1 Pin Connections |              |
|---------------------|--------------|
| PIN                 | Function     |
| 1                   | AC/L         |
| 2                   | AC/N         |
| 3                   | FG $\perp$   |
| 4                   | -Vo1         |
| 5                   | +Vo1         |
| 6                   | +Vo2 (+ BAT) |
| 7 <sup>1</sup>      | -Vo2 (- BAT) |
| 8 <sup>2</sup>      | +Vo3 (+5 V)  |

| CN2 Pin Connections               |                                                        |
|-----------------------------------|--------------------------------------------------------|
| PIN                               | Function                                               |
| PSF-100-A, PSF-100-C <sup>3</sup> |                                                        |
| 1                                 | AC OK                                                  |
| 2                                 | BAT LOW                                                |
| 3                                 | PSF-100-A: (13.8 V/20 mA)<br>PSF-100-C: (27.6 V/20 mA) |
| PSF-100-B, PSF-100-D <sup>4</sup> |                                                        |
| 1 2                               | AC OK                                                  |
| 3 4                               | BAT LOW                                                |



### CNF

units: mm

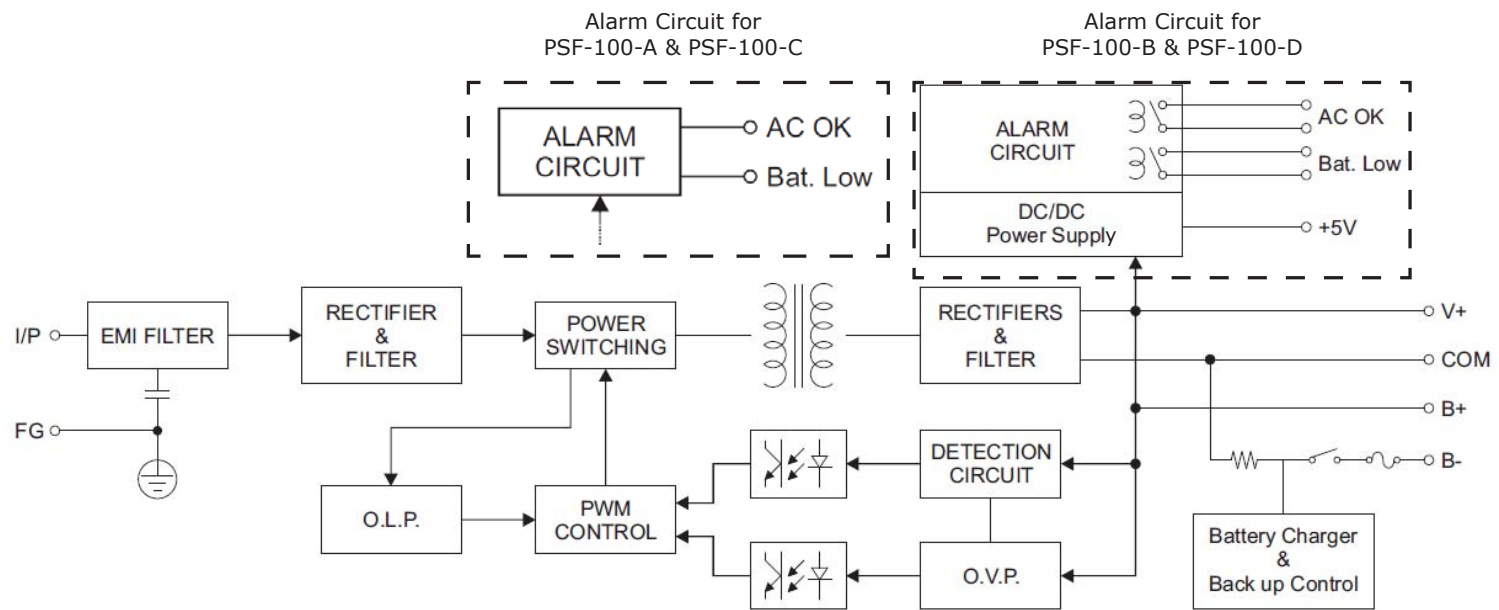
| CN1 Pin Connections |              |
|---------------------|--------------|
| PIN                 | Function     |
| 1                   | AC/L         |
| 2                   | AC/N         |
| 3                   | FG $\perp$   |
| 4                   | -Vo1         |
| 5                   | +Vo1         |
| 6                   | +Vo2 (+ BAT) |
| 7 <sup>1</sup>      | -Vo2 (- BAT) |
| 8 <sup>2</sup>      | +Vo3 (+5 V)  |

| CN2 Pin Connections               |                                                        |
|-----------------------------------|--------------------------------------------------------|
| PIN                               | Function                                               |
| PSF-100-A, PSF-100-C <sup>3</sup> |                                                        |
| 1                                 | AC OK                                                  |
| 2                                 | BAT LOW                                                |
| 3                                 | PSF-100-A: (13.8 V/20 mA)<br>PSF-100-C: (27.6 V/20 mA) |
| PSF-100-B, PSF-100-D <sup>4</sup> |                                                        |
| 1 2                               | AC OK                                                  |
| 3 4                               | BAT LOW                                                |

- Notes:
1. To protect product damage do not connect the GND port with -BAT port.
  2. PSF-100-B and PSF-100-D only.
  3. For PSF-100-A & PSF-100-C, CN2 mates with JST B3B-XH or equivalent and JST SXH-001 T-P0.6 or equivalent.
  4. For PSF-100-B & PSF-100-D, CN2 mates with JST B4B-XH or equivalent and JST SXH-001 T-P0.6 or equivalent.

BATTERY CHARGING SPECIFICATIONS

Block Diagram



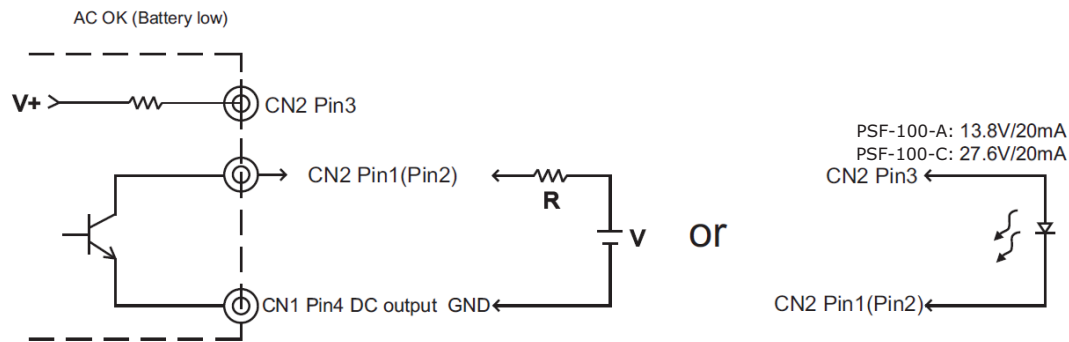
PSF-100-A & PSF-100-C

Alarm Signal for AC OK and Battery Low

| Function    | Description                                                                                        | Alarm Output                           |
|-------------|----------------------------------------------------------------------------------------------------|----------------------------------------|
| AC OK       | The signal is low when the power supply turns on                                                   | Low<br>(0.3 V max. at 30 mA)           |
|             | The signal is high when the power supply turns off                                                 | High/open<br>(external voltage < 50 V) |
| Battery Low | The signal is low when the voltage of the battery is below:<br>12 V (PSF-100-A), 22 V (PSF-100-C)  | Low<br>(0.3 V max. at 30 mA)           |
|             | The signal is high when the voltage of the battery is above:<br>12 V (PSF-100-A), 22 V (PSF-100-C) | High/open<br>(external voltage < 50 V) |

- Notes:
- 1. Alarm signal is sent out through "AC OK" and "Battery Low" pins.
  - 2. An external voltage source is required for this function. The maximum applied voltage is 50 V and the maximum sink current is 30 mA.

Internal Circuit of AC OK and Battery Low



External voltage and R

BATTERY CHARGING SPECIFICATIONS (CONTINUED)

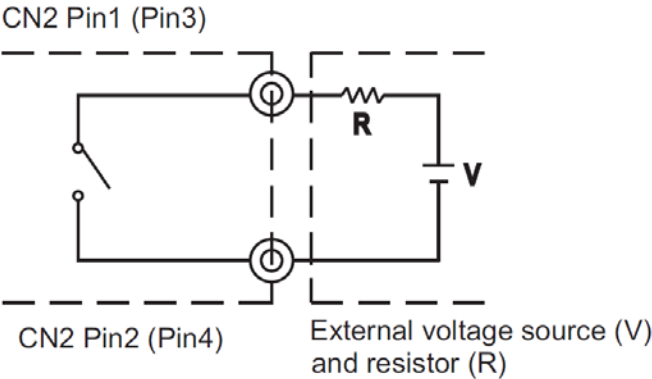
PSF-100-B & PSF-100-D

Alarm Signal for AC OK and Battery Low

| Function    | Description                                                                                        | Alarm Output                           |
|-------------|----------------------------------------------------------------------------------------------------|----------------------------------------|
| AC OK       | The signal is low when the power supply turns on                                                   | Low or short                           |
|             | The signal is high when the power supply turns off                                                 | High/open<br>(external voltage < 30 V) |
| Battery Low | The signal is low when the voltage of the battery is below:<br>12 V (PSF-100-B), 22 V (PSF-100-D)  | Low or short                           |
|             | The signal is high when the voltage of the battery is above:<br>12 V (PSF-100-B), 22 V (PSF-100-D) | High/open<br>(external voltage < 30 V) |

- Notes:
- 1. Alarm signal is sent out through "AC OK" and "Battery Low" pins (relay contact type).
  - 2. An external voltage source is required for this function. The maximum applied voltage is 30 V and the maximum sink current is 1 A.

Internal Circuit of AC OK and Battery Low



## REVISION HISTORY

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| rev. | description     | date       |
|------|-----------------|------------|
| 1.0  | initial release | 11/25/2013 |

The revision history provided is for informational purposes only and is believed to be accurate.

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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