



■ Description :

The RCP-2000 series are state of the art AC/DC front-end rectifiers with 1U compact size and 21.4 W/in<sup>3</sup> of high power density. They can provide up to 2000W per unit for the applications of servers, information technology equipment, networking, telecommunications, and wide range of industrial applications using distributed power architecture. Equipped with hot-swap function and PMBus communication protocol, RCP-2000 can be assembled in 1U 19" rack and controlled/monitored by external device such as monitoring unit (RCP-CMU-1) or PC.

■ Features :

- Universal AC input / Full range
- Built-in 5V/0.3A, 12V/0.8A auxiliary power
- Built-in active PFC function, PF>0.98
- Protections: Short circuit / Overload / Over voltage / Over temperature
- High Power density 21.4w/inch<sup>3</sup>
- Forced air cooling by built-in DC fan with fan speed control
- Low profile:1U height
- Remote control for single unit
- Built-in remote sense function
- Output voltage trimming function
- Hot-swap operation
- PMBus serial communications
- AC OK, DC OK signal, fan fail, OTP alarm signal
- 3 years warranty



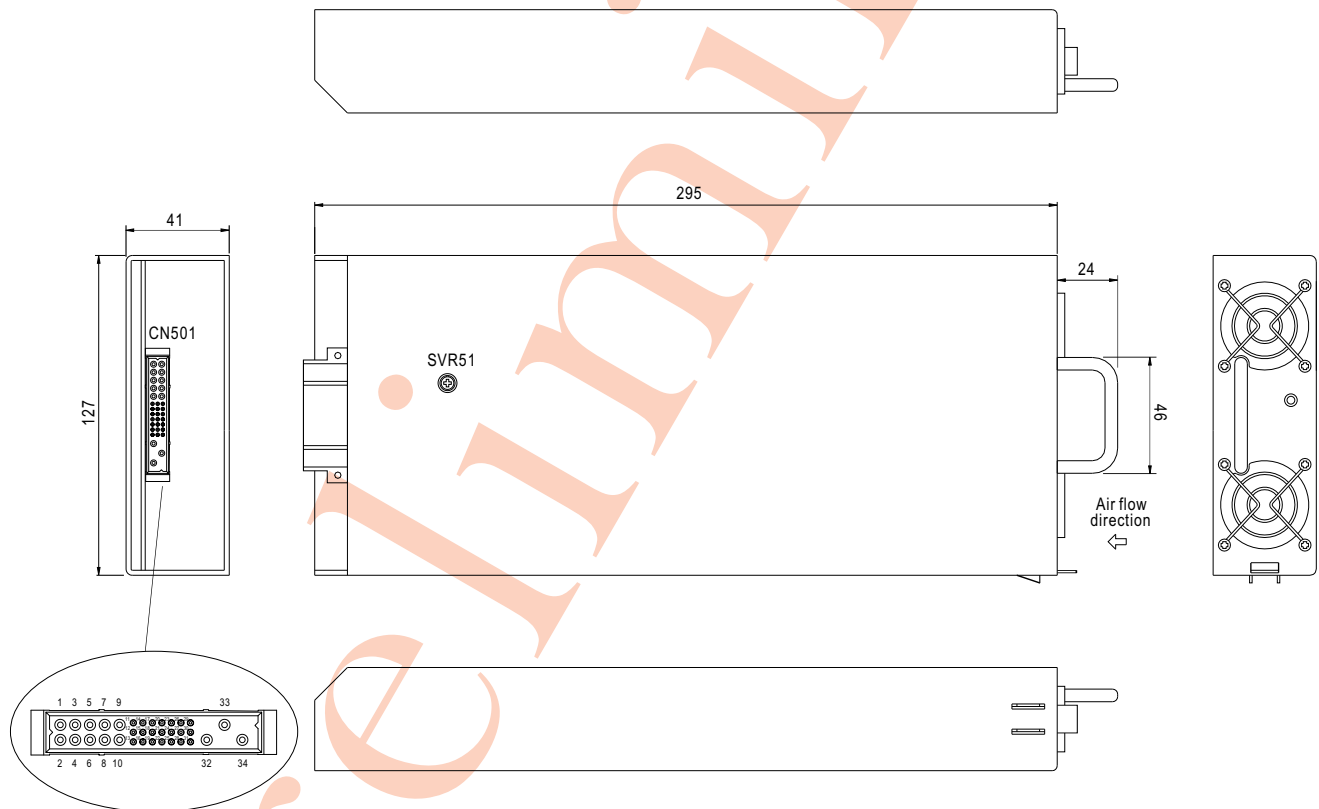
**SPECIFICATION - Single Unit**

| MODEL               |                                                              | RCP-2000-12                                                                                                                                                                                                  | RCP-2000-24              | RCP-2000-48              |
|---------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| OUTPUT              | DC VOLTAGE                                                   | 12V                                                                                                                                                                                                          | 24V                      | 48V                      |
|                     | RATED CURRENT                                                | 100A                                                                                                                                                                                                         | 80A                      | 42A                      |
|                     | CURRENT RANGE                                                | 0 ~ 100A                                                                                                                                                                                                     | 0 ~ 80A                  | 0 ~ 42A                  |
|                     | RATED POWER                                                  | 1200W                                                                                                                                                                                                        | 1920W                    | 2016W                    |
|                     | RIPPLE & NOISE (max.) Note.2                                 | 150mVp-p                                                                                                                                                                                                     | 200mVp-p                 | 300mVp-p                 |
|                     | VOLTAGE ADJ. RANGE                                           | 10.5 ~ 14V                                                                                                                                                                                                   | 21 ~ 28V                 | 42 ~ 56V                 |
|                     | VOLTAGE TOLERANCE Note.3                                     | ±1.0%                                                                                                                                                                                                        | ±1.0%                    | ±1.0%                    |
|                     | LINE REGULATION                                              | ±0.5%                                                                                                                                                                                                        | ±0.5%                    | ±0.5%                    |
|                     | LOAD REGULATION                                              | ±0.5%                                                                                                                                                                                                        | ±0.5%                    | ±0.5%                    |
|                     | SETUP, RISE TIME                                             | 1500ms, 60ms/230VAC at full load                                                                                                                                                                             |                          |                          |
| HOLD UP TIME (Typ.) | 16ms/230VAC at 75% load    10ms/230VAC at full load          |                                                                                                                                                                                                              |                          |                          |
| INPUT               | VOLTAGE RANGE Note.5                                         | 90 ~ 264VAC                                                                                                                                                                                                  | 127 ~ 370VDC             |                          |
|                     | FREQUENCY RANGE                                              | 47 ~ 63Hz                                                                                                                                                                                                    |                          |                          |
|                     | EFFICIENCY (Typ.)                                            | 86%                                                                                                                                                                                                          | 90.5%                    | 92%                      |
|                     | AC CURRENT (Typ.)                                            | 13A/115VAC    7A/230VAC                                                                                                                                                                                      | 16A/115VAC    10A/230VAC | 16A/115VAC    10A/230VAC |
|                     | INRUSH CURRENT (Typ.)                                        | COLD START 50A                                                                                                                                                                                               |                          |                          |
| LEAKAGE CURRENT     | <1.1mA / 230VAC                                              |                                                                                                                                                                                                              |                          |                          |
| PROTECTION          | OVERLOAD                                                     | 105 ~ 125% rated output power<br>Protection type : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-poewr on to recover                                                            |                          |                          |
|                     | OVER VOLTAGE                                                 | 14.7 ~ 17.5V                                                                                                                                                                                                 | 29.5 ~ 35V               | 57.6 ~ 67.2V             |
|                     | OVER TEMPERATURE                                             | 75°C ±5°C (TSW1) detect on heatsink of power transistor    85°C ±5°C (TSW2) detect on heatsink of power diode<br>Protection type : Shut down o/p voltage, recovers automatically after temperature goes down |                          |                          |
| FUNCTION            | AUXILIARY POWER                                              | 5V @ 0.3A, 12V @ 0.8A                                                                                                                                                                                        |                          |                          |
|                     | REMOTE ON/OFF CONTROL                                        | By electrical signal or dry contact    ON:short    OFF:open                                                                                                                                                  |                          |                          |
|                     | REMOTE SENSE                                                 | Compensate voltage drop on the load wiring up to 0.5V                                                                                                                                                        |                          |                          |
|                     | DC OK SIGNAL                                                 | The isolated TTL signal out, refer to function manual                                                                                                                                                        |                          |                          |
|                     | AC FAIL SIGNAL                                               | The isolated TTL signal out, refer to function manual                                                                                                                                                        |                          |                          |
|                     | OUTPUT VOLTAGE TRIM                                          | Adjustment of output voltage, possible between 90 ~ 110% of rated output                                                                                                                                     |                          |                          |
|                     | OVER TEMP WARNING                                            | Logic " High" for over temperature warning, refer to function manual, isolated signal                                                                                                                        |                          |                          |
|                     | FAN FAIL SIGNAL                                              | The isolated TTL signal out, refer to function manual                                                                                                                                                        |                          |                          |
| ENVIRONMENT         | WORKING TEMP.                                                | -25 ~ +70°C (Refer to output load derating curve)                                                                                                                                                            |                          |                          |
|                     | WORKING HUMIDITY                                             | 20 ~ 90% RH non-condensing                                                                                                                                                                                   |                          |                          |
|                     | STORAGE TEMP., HUMIDITY                                      | -40 ~ +85°C, 10 ~ 95% RH                                                                                                                                                                                     |                          |                          |
|                     | TEMP. COEFFICIENT                                            | ±0.03%/°C (0 ~ 50°C)                                                                                                                                                                                         |                          |                          |
| VIBRATION           | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes |                                                                                                                                                                                                              |                          |                          |

| MODEL                    | RCP-2000-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RCP-2000-24 | RCP-2000-48 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| SAFETY & EMC<br>(Note 4) | <b>SAFETY STANDARDS</b><br>UL60950-1, TUV EN60950-1 approved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |             |
|                          | <b>WITHSTAND VOLTAGE</b><br>I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |             |
|                          | <b>ISOLATION RESISTANCE</b><br>I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |             |
|                          | <b>EMI CONDUCTION &amp; RADIATION</b><br>Compliance to EN55022 (CISPR22) Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |             |
|                          | <b>HARMONIC CURRENT</b><br>Compliance to EN61000-3-2,-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |             |
|                          | <b>EMS IMMUNITY</b><br>Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN61000-6-2 (EN50082-2), heavy industry level, criteria A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |             |
| OTHERS                   | <b>MTBF</b><br>Khrs min. MIL-HDBK-217F (25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |             |
|                          | <b>DIMENSION</b><br>295*127*41mm (L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |             |
|                          | <b>PACKING</b><br>Kg:6pcs/ Kg/1.04CUFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |             |
| NOTE                     | <ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>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.</li> <li>Derating may be needed under low input voltages. Please check the derating curve for more details.</li> <li>Output of all the RCP-2000 modules are connected in parallel in the rack.</li> <li>Under parallel operation of more than one rack connecting together, ripple of the output voltage may be higher than the SPEC at light load condition. It will go back to normal ripple level once the output load is more than 10%.</li> </ol> |             |             |

■ Mechanical Specification (Single Unit)

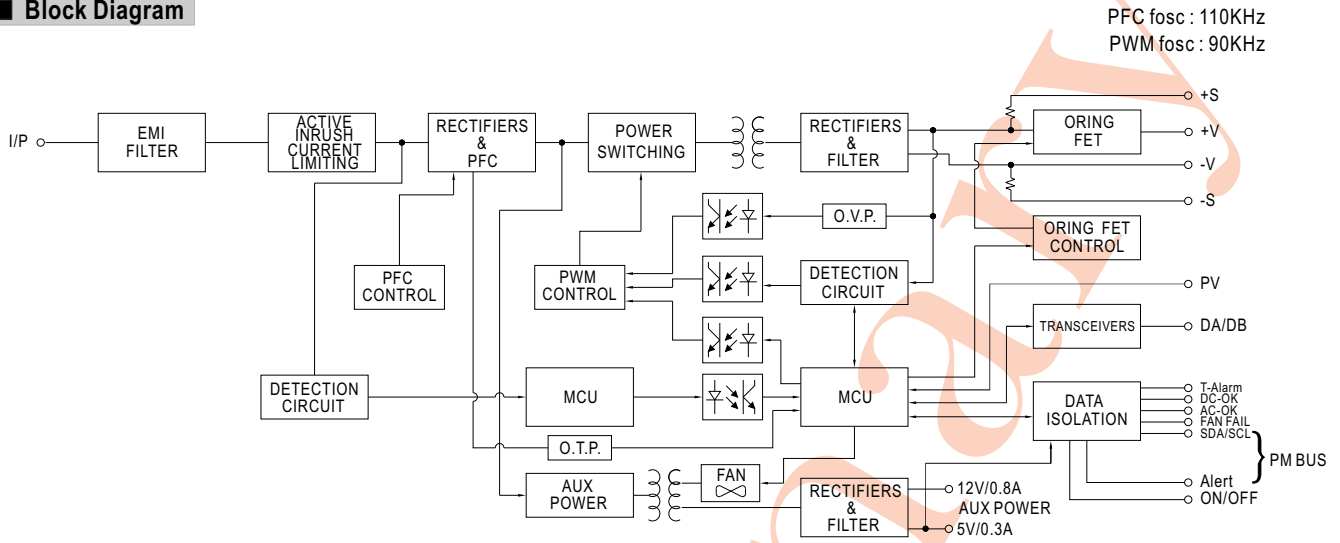
Case No. 952A Unit:mm



Input / Output Connector Pin No. Assignment(CN501) : Postronic PCIM34W13M400A1

| Pin No. | Assignment | Pin No. | Assignment | Pin No. | Assignment | Pin No. | Assignment | Pin No. | Assignment | Pin No. | Assignment | Mating Housing               |
|---------|------------|---------|------------|---------|------------|---------|------------|---------|------------|---------|------------|------------------------------|
| 1,2,3,4 | +V         | 12      | DA         | 17      | ON/OFF     | 22      | ALERT      | 27      | T-ALARM    | 32      | FG $\pm$   | Postronic<br>PCIM34W13F400A1 |
| 5,6,7,8 | -V         | 13      | DB         | 18      | A1         | 23      | SDA        | 28      | FAN-FAIL   | 33      | AC/L       |                              |
| 9       | -V(signal) | 14      | +S         | 19      | A2         | 24      | SCL        | 29      | +5V-AUX    | 34      | AC/N       |                              |
| 10      | +V(signal) | 15      | -S         | 20      | A3         | 25      | AC-OK      | 30      | +12V-AUX   |         |            |                              |
| 11      | PV         | 16      | A0         | 21      | A4         | 26      | DC-OK      | 31      | GND-AUX    |         |            |                              |

■ Block Diagram



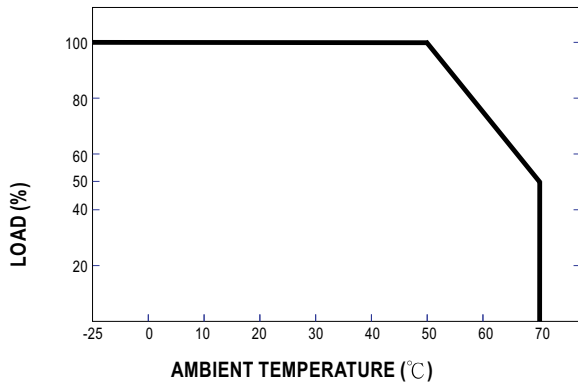
■ Function Description of CN501

| Pin No.        | Function       | Description                                                                                                                                                                                                           |
|----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1,2,3,4        | +V             | Positive output voltage                                                                                                                                                                                               |
| 5,6,7,8        | -V             | Negative output voltage.                                                                                                                                                                                              |
| 9              | -V             | -V Signal                                                                                                                                                                                                             |
| 10             | +V             | +V Signal                                                                                                                                                                                                             |
| 11             | PV             | Connection for output voltage trimming. The voltage can be trimmed within its defined range. (Note.1)                                                                                                                 |
| 12,13          | DA,DB          | Differential digital signal for parallel control. (Note.1)                                                                                                                                                            |
| 14             | +S             | Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. |
| 15             | -S             | Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. |
| 16,18,19,20,21 | A0,A1,A2,A3,A4 | PMBus interface address lines. (Note.1)                                                                                                                                                                               |
| 17             | ON/OFF         | The unit can turn the output on and off by electrical signal or dry contact. (Note.2)                                                                                                                                 |
| 22             | ALERT          | PMBus devices may notify the host that they want to communicate with the host by asserting the ALERT signal. (Note.2)                                                                                                 |
| 23             | SDA            | Serial Data used in the PMBus interface. (Note.2)                                                                                                                                                                     |
| 24             | SCL            | Serial Clock used in the PMBus interface. (Note.2)                                                                                                                                                                    |
| 25             | AC-OK          | Low : When the input voltage is $\geq 87V_{rms}$ . High : when the input voltage in $\leq 75V_{rms}$ . (Note.2)                                                                                                       |
| 26             | DC-OK          | High : When the $V_{out} \leq 80\% \pm 5\%$ . Low : When $V_{out} \geq 80\% \pm 5\%$ . (Note.2)                                                                                                                       |
| 27             | T-ALARM        | High : When the internal temperature (TSW1 or TSW2 open) exceeds the limit of temperature alarm. Low : When the internal temperature (TSW1 or TSW2 open) under the limit temperature. (Note.2)                        |
| 28             | FAN-FAIL       | High : When the internal fan fail. Low : When the internal fan is normal. (Note.2)                                                                                                                                    |
| 29             | +5V-AUX        | Auxiliary voltage output, 4.4~5.5V, referenced to GND-AUX (pin 31). The maximum load current is 0.3A. This output has the built-in "Oring diodes" and is not controlled by the remote ON/OFF control.                 |
| 30             | +12V-AUX       | Auxiliary voltage output, 10.8~13.2V, referenced to GND-AUX (pin 31). The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by the remote ON/OFF control.               |
| 31             | GND-AUX        | Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).                                                                                                                      |
| 32             | FG             | AC Ground connection.                                                                                                                                                                                                 |
| 33             | AC/L           | AC Line connection.                                                                                                                                                                                                   |
| 34             | AC/N           | AC Neutral connection.                                                                                                                                                                                                |

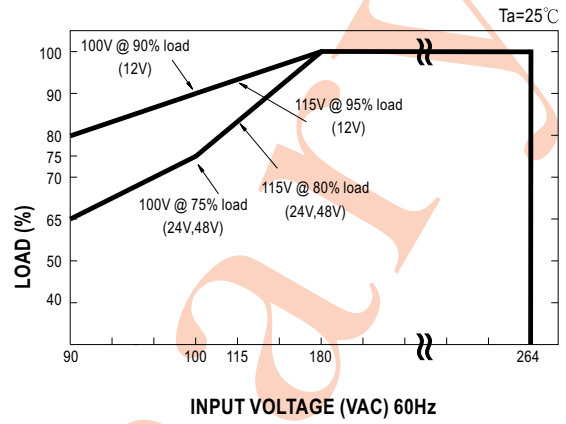
Note1: Non-isolated signal, referenced to the output terminals (-V).

Note2: Isolated signal, referenced to AUX.COM.

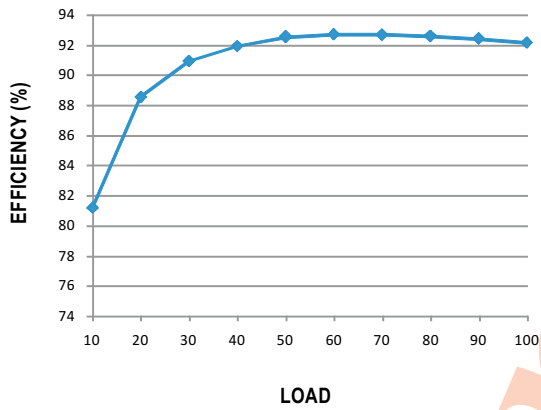
### Derating Curve



### Static Characteristics



### EFFICIENCY vs LOAD (48V Model)



Preliminary