

# AC-DC Converter

**POWER  
SOLVE**

## PP150/PP200/PP350/PP500 Series 150W - 500W Active PFC Single Output

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### Features

- Universal AC Input with active PFC
- Operating Temperature Range -20°C to +70°C
- U-bracket low profile: 38mm
- High efficiency, long life and high reliability
- Remote ON/OFF Control (PP350 & PP500)
- Output Short Circuit Protection
- Overvoltage, Overload & Over Temperature Protections



PP150: 198(L) x 68(W) x 33(H)mm  
 PP200: 202(L) x 101.5(W) x 38(H) mm  
 PP350: 231(L) x 101.5(W) x 38(H) mm  
 PP500: 254(L) x 127(W) x 38(H) mm

### Electrical Specification

|                             |   |
|-----------------------------|---|
| Input Voltage               | 90-264VAC full range, 47-63Hz / 127-370VDC  |
| Power Factor                | >0.90 at 230VAC / >0.95 at 115VAC   |
| AC Input Current (typ.)     | 2.0A at 115VAC / 1.0A at 230VAC (PP150)<br>2.4A at 115VAC / 1.2A at 230VAC (PP200)<br>4A at 115VAC / 2A at 230VAC (PP350)<br>6A at 115VAC / 3A at 230VAC (PP500)  |
| Inrush Current              | 30A at 115VAC / 60A at 230VAC (PP150)<br>25A at 115VAC / 50A at 230VAC (PP200)<br>22A at 115VAC / 44A at 230VAC (PP350)<br>30A at 115VAC / 50A at 230VAC (PP500)  |
| Leakage Current             | <1mA at 230VAC (PP150) / <2mA at 230VAC (PP200,PP350,PP500)   |
| Output Voltage              | See Table   |
| Output Current              | See Table   |
| Voltage Tolerance           | ±1% (PP150) / ±2% (PP200,PP350,PP500)   |
| Overload Protection         | >110-135% (PP150) / >105% (PP200,PP350,PP500) of rated output power.  |
| Overvoltage Protection      | 115-150% of rated output voltage.   |
| Over Temperature Protection | 90°C ±5°C (PP150 & PP200)<br>100°C ±5°C (PP350)<br>95°C ±5°C (PP500)  |
| Operating Temperature Range | -20°C to +70°C. Above 50°C, derate linearly to 50% load at 70°C (PP150,PP200)<br>-20°C to +65°C. Above 50°C, derate linearly to 50% load at 65°C (PP350)<br>-20°C to +60°C. Above 50°C, derate linearly to 65% load at 60°C (PP500) |
| Operating Humidity          | 20-90% RH non-condensing  |
| Storage Temperature Range   | -20°C to +85°C (PP150) / -40°C to +85°C (PP200,PP350,PP500)   |
| Storage Humidity            | 10-95% RH non-condensing  |
| Temperature Coefficient     | ±0.05%/°C (0-50°C) (PP150) / ±0.03%/°C (0-50°C) (PP200,PP350,PP500)   |
| Vibration                   | 10-500Hz, 2G 10min/1 cycle, period 60 mins. Each along X, Y & Z axis  |
| Safety Standards            | UL60950-1 2nd Edition, TUV EN60950-1: 2006+A11 Approved   |
| Withstand Voltage           | I/P-O/P: 4242VDC, I/P-FG: 2121VDC for 1 minute  |
| Isolation Resistance        | I/P-O/P, I/P-FG, O/P-FG: 100MΩ / 500VDC   |
| EMI Conduction & Radiation  | EN55022: 2006 Class B, EN61204-3: 2000, EN61000-6-3: 2007   |
| Harmonic Current            | EN61000-3-2: 2006 Class A, EN61000-3-3: 1995+A1: 2001+A2: 2005: 2008  |
| EMS Immunity                | EN55024: 1998+A1: 2001+A2: 2003 light industry level, criteria A, EN61204-3: 2000,  |
| Cooling                     | Convection cooling (PP150, PP200)<br>Convection cooling up to 300W, 10.5CFM fan for 350W (PP350)<br>Convection cooling up to 400W, 23.5CFM fan for 500W (PP500)   |
| Dimensions                  | 198(L) x 68(W) x 33(H) mm (PP150)<br>202(L) x 101.5(W) x 38(H) mm (PP200)<br>231(L) x 101.5(W) x 38(H) mm (PP350)<br>254(L) x 127(W) x 38(H) mm (PP500)   |
| Weight                      | 0.42Kg (PP150)<br>0.70Kg (PP200)<br>1.06Kg (PP350)<br>1.70Kg (PP500)  |

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## Output Voltage and Current Ratings

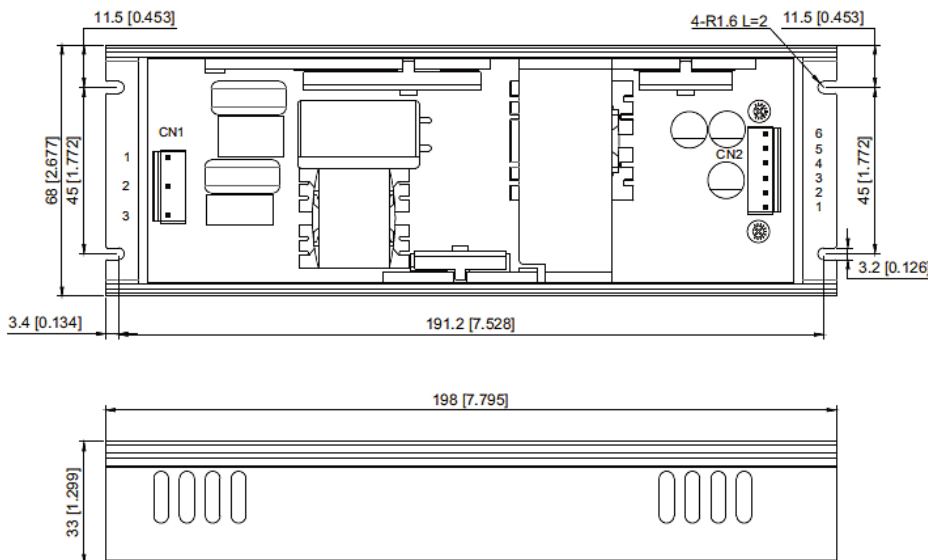
| MODEL    | OUTPUT VOLTAGE | MAX OUTPUT CURRENT | VOLTAGE Adj. RANGE | RIPPLE & NOISE | LINE REG. | LOAD REG. | POWER Max. | EFF. |
|----------|----------------|--------------------|--------------------|----------------|-----------|-----------|------------|------|
| PP150-12 | 12V            | 11A                | 10.8-13.2V         | 150mV p-p      | ±1%       | ±2%       | 132W       | 88%  |
| PP150-15 | 15V            | 10A                | 13.5-16.5V         | 150mV p-p      | ±1%       | ±2%       | 150W       | 88%  |
| PP150-20 | 20V            | 7.5A               | 18.0-22.0V         | 150mV p-p      | ±1%       | ±2%       | 150W       | 89%  |
| PP150-24 | 24V            | 6.3A               | 21.6-26.4V         | 240mV p-p      | ±1%       | ±2%       | 151.2W     | 90%  |
| PP150-30 | 30V            | 5.0A               | 27.0-33.0V         | 240mV p-p      | ±1%       | ±2%       | 150W       | 90%  |
| PP150-36 | 36V            | 4.2A               | 32.4-39.6V         | 240mV p-p      | ±1%       | ±2%       | 151.2W     | 90%  |
| PP150-48 | 48V            | 3.2A               | 43.2-52.8V         | 240mV p-p      | ±1%       | ±2%       | 153.6W     | 90%  |
| PP200-12 | 12V            | 16.7A              | 10.8-13.2V         | 120mV p-p      | ±1%       | ±2%       | 200.4W     | 87%  |
| PP200-15 | 15V            | 13.4A              | 13.5-16.5V         | 150mV p-p      | ±1%       | ±2%       | 201W       | 87%  |
| PP200-24 | 24V            | 8.4A               | 21.6-26.4V         | 180mV p-p      | ±1%       | ±2%       | 201.6W     | 88%  |
| PP200-48 | 48V            | 4.2A               | 43.2-52.8V         | 150mV p-p      | ±1%       | ±2%       | 200W       | 88%  |
| PP350-12 | 12V            | 29.2A              | 10.8-13.2V         | 150mV p-p      | ±1%       | ±2%       | 350W       | 88%  |
| PP350-15 | 15V            | 23.4A              | 13.5-16.5V         | 150mV p-p      | ±1%       | ±2%       | 351W       | 89%  |
| PP350-24 | 24V            | 14.6A              | 21.6-26.4V         | 150mV p-p      | ±1%       | ±2%       | 350.4W     | 89%  |
| PP350-48 | 48V            | 7.3A               | 43.2-52.8V         | 150mV p-p      | ±1%       | ±2%       | 350.4W     | 90%  |
| PP500-12 | 12V            | 42A                | 10.8-13.2V         | 150mV p-p      | ±1%       | ±2%       | 504W       | 90%  |
| PP500-15 | 15V            | 33.5A              | 13.5-16.5V         | 150mV p-p      | ±1%       | ±2%       | 502.5W     | 90%  |
| PP500-24 | 24V            | 21A                | 21.6-26.4V         | 150mV p-p      | ±1%       | ±2%       | 504W       | 90%  |
| PP500-48 | 48V            | 10.5A              | 43.2-52.8V         | 150mV p-p      | ±1%       | ±2%       | 504W       | 91%  |

**NOTE:**

Maximum current ratings shown for PP350 & PP500 units are with forced air cooling. See electrical specification table for required CFM and derating for convection cooling

## Mechanical & Connection Details

PP150: 198(L) x 68(W) x 33(H) mm; Weight: 424g; (Option: Screw terminals for input and output: Model No. PP150T-XX)



### Connection Details

AC Input Connector

Pin Function

1 Earth

2 Neutral

3 Live

Mating connector: JST VHR-5N

DC Output Connector

Pin Function

1-3 -Vo

4-6 +Vo

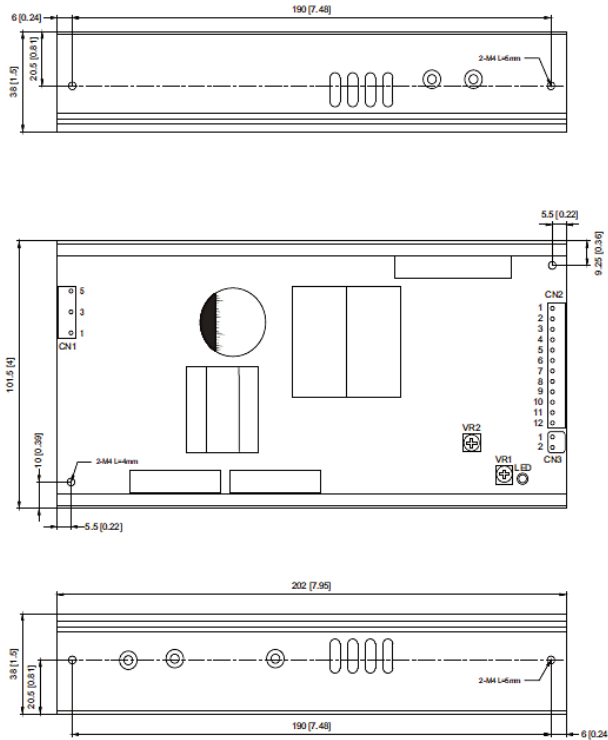
Mating connector: JST VHR-6N

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PP200: 202(L) x 101.5(W) x 38(H) mm; Weight: 700g; (Option: Screw terminals for output: Model No. PP200T-XX)



## Connection Details

CN1: AC Input Connector

Pin Function

|   |         |
|---|---------|
| 1 | Earth   |
| 2 | No Pin  |
| 3 | Neutral |
| 4 | No Pin  |
| 5 | Live    |

Mating connector: JST VHR-5N or equiv.

CN3: DC Output Connector

Pin Function

|   |      |
|---|------|
| 1 | Com  |
| 2 | N.C. |

Mating connector: JST VHR-2N or equiv.

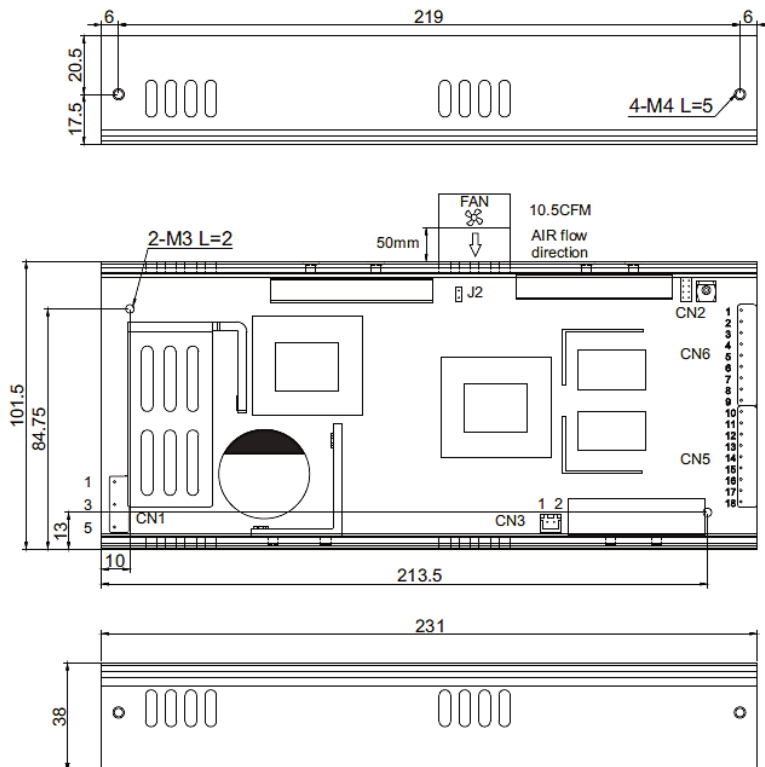
CN2: DC Output Connector

Pin Function

|      |     |
|------|-----|
| 1-6  | -Vo |
| 7-12 | +Vo |

Mating connector: JST VHR-6N (2 off)

PP350: 231(L) x 101.5(W) x 38(H) mm; Weight: 1060g; (Option: Screw terminals for output: Model No. PP350T-XX)



## Connection Details

CN1: AC Input Connector

Pin Function

|   |         |
|---|---------|
| 1 | Earth   |
| 2 | No Pin  |
| 3 | Neutral |
| 4 | No Pin  |
| 5 | Live    |

Mating connector: JST VHR-5N or equiv.

CN2: Auxiliaries Connector

Pin Function

|   |       |
|---|-------|
| 1 | +VS   |
| 2 | S GND |
| 3 | -INH  |
| 4 | N/C   |
| 5 | -VS   |
| 6 | POK   |
| 7 | +INH  |
| 8 | -VS   |

Mating connector: JST PHD-08VS or equiv.

CN3: Fan Power Connector

Pin Function

|   |       |
|---|-------|
| 1 | S GND |
| 2 | +12V  |

Mating connector: JST XHP-2 or equiv.

CN5/CN6: DC Output Connector

Pin Function

|       |     |
|-------|-----|
| 1-9   | -Vo |
| 10-18 | +Vo |

Mating connector: JST VHR-9N or equiv.

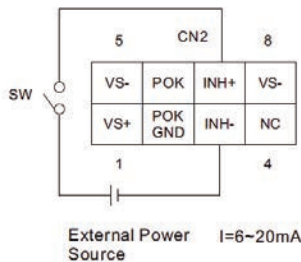
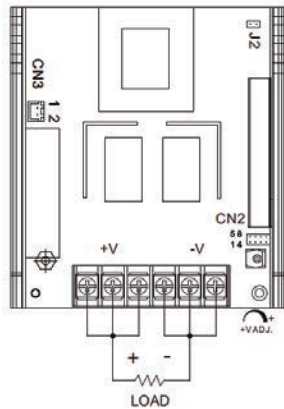


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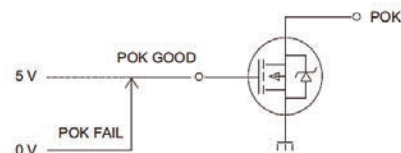
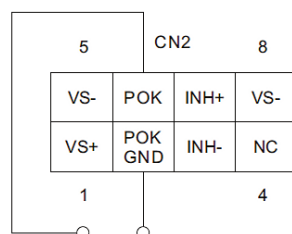
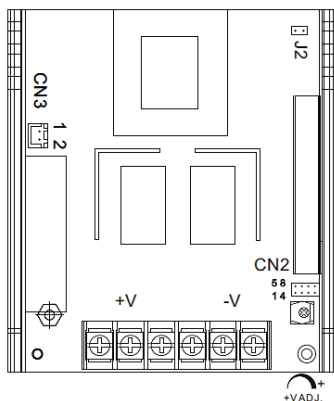
PP350 & PP500: Remote Control - PSU can be turned ON/OFF using the remote control function



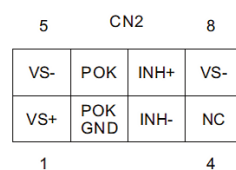
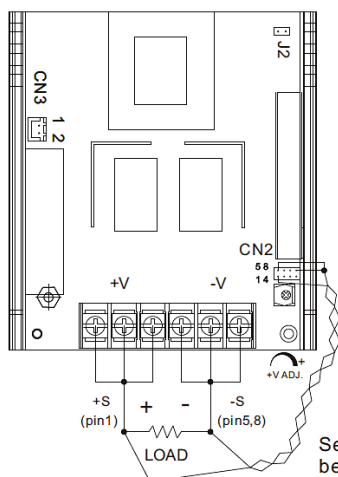
## J2 Pin & CN2 Connections

| J2     | INH+(pin 7)/INH-(pin 3) | Output Status |
|--------|-------------------------|---------------|
| Open   | SW ON (>2.5V)           | ENABLE        |
| Open   | SW OFF (<0.8V)          | DISABLE       |
| Closed | SW ON (>2.5V)           | DISABLE       |
| Closed | SW OFF (<0.8V)          | ENABLE        |

PP350 & PP500: P-OK Control - POK signal uses open drain MOSFET control, Max. 30Vds, 0.1A



PP350 & PP500: Remote Sense - compensates voltage drops in the load wiring up to 0.5V



Sense lines should be twisted in pairs

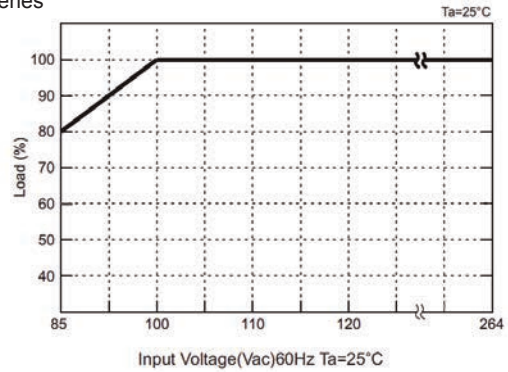
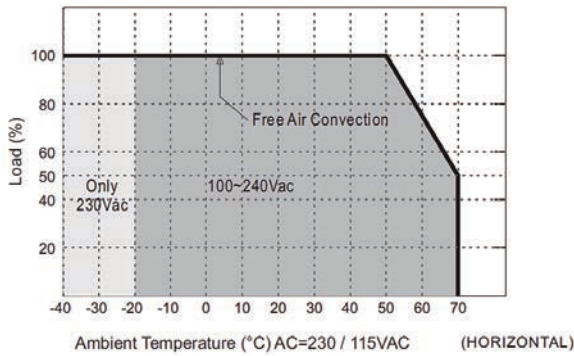
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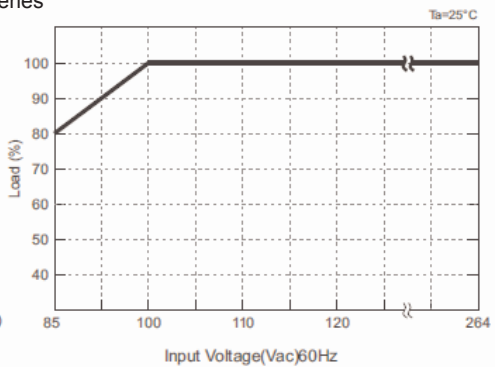
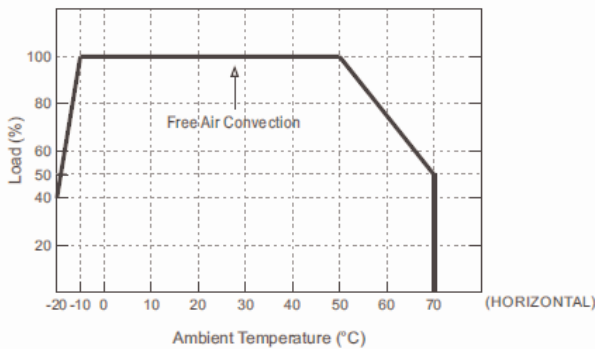
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## Derating Curves

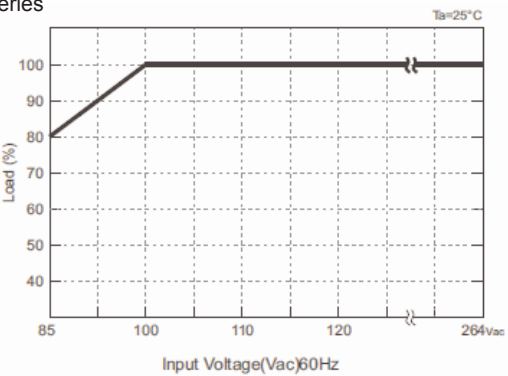
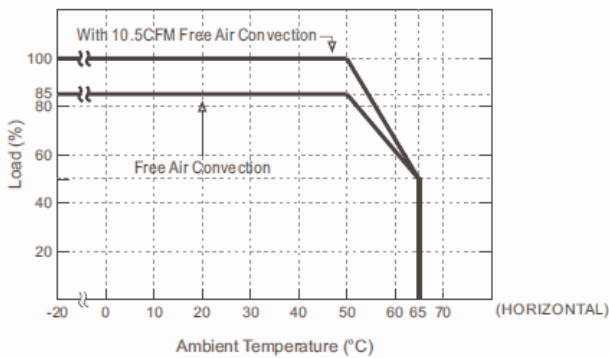
PP150 Series



PP200 Series



PP350 Series



PP500 Series

