

Section 12

AC TO DC SERIES NON-ISOLATED BULK POWER 5" X 5"

Pioneer's Modular PFC Product Series can also be used in applications where 400VDC non-isolated single output bulk power converter is required. With PFC, output power can be maintained with a 30% reduction in RMS line current. Other advantages include improved hold-up performance, reduced line harmonics, (for 1 ϕ input only) and insensitivity to voltage and frequency variations. Because they effectively eliminate harmonic currents, the converters are ideal for applications where neutral wire current exceeds recommended ratings due to waveform distortion caused by the typical off-line units.

Additional benefit of the bulk power converter is that it eliminates the need for switches and jumpers to adapt the supply for 110VAC or 220VAC operation, creating a "Universal Input" power unit. The input voltage on the bulk PFC converter is boosted to provide a nominal 400VDC output for conventional pulse width modulated (PWM) power supplies or distributed DC bus network. It meets the most stringent international safety and EMI standards, including the IEC555-2 which limits line current harmonic content to less than 5% (for 1 ϕ input only).

With wide input range, the bulk power series can deliver up to 10,000 watts. Operating temperature ranges from 0°C to +50°C at full load. Improvements in electrical and heat transfer technology allow component stresses to be kept well within manufacturers' rating, insuring high reliability.

Product Matrix

| MODEL | PM3529 | PM35210 | PM35211 | PM35213 | PM35215 | PM35216B | PM35218B | PM35220 |
|-------------------|--------|---------|------------|---------|---------|----------|----------|----------|
| POWER | 2000W | 2500W | 3000W | 4000W | 5000W | 6000W | 8000W | 10000W |
| OUTPUT | lout | lout | lout | lout | lout | lout | lout | lout |
| 250V | 8.0A | 10.0A | 12.0A | 16.0A | 20.0A | 24.0A | 32.0A | 40.0A |
| 300V | 6.6A | 8.3A | 10 | 13.2A | 16.6A | 20.0A | 16.4A | 33.2A |
| 380V | 5.2A | 6.5A | 7.9A | 10.5A | 13.0A | 15.8A | 21.0A | 26.3A |
| 400V | 5.0A | 6.3A | 7.5A | 10.0A | 12.6A | 15.0A | 20.0A | 25.2A |
| Dimensions | 5" | 5" | 12"(15.5") | 5" | 5" | 12" | 5" | 5" 15.5" |
| INPUT | 90V | to | 264V | 180V | to | 264V | 180V | to 264V |

- Notes:
1. All Models are available in Single Phase.
 2. 4kW to 10kW Models are available with 400VAC or 480VAC nominal AC Input 3 ϕ
 3. Call factory for Three Phase Models.
 4. 250V and 300V outputs require special AC Input. Call factory.

Configuration Description

The converters are housed in a self-contained, forced-air, cooled enclosure. The DC output is brought out to a 6-32 screw terminal and is protected by a 10A fuse. The AC input is via a 8-32 screw terminal barrier block and is protected by an internal fuse. Optional interface connections, where required, are available on a connector

Features:

- ◆ Power Factor (> 0.99) Corrected
- ◆ 0°C to +50°C at Full Load
- ◆ Input and Output Fuses
- ◆ Over Voltage Protection
- ◆ Over Temperature Protection
- ◆ Self-contained Forced Air Cooling

SPECIFICATION

Inputs

RANGE:

90 to 264VAC, 1 ϕ or 3 ϕ
180 to 264, 1 ϕ or 3 ϕ
365 to 528, 3 ϕ

FREQUENCY: 47 to 63 Hz.

INPUT CURRENT: Depends on Output Power, Number of Phases and PFC 0.99 or 0.95.

POWER FACTOR:

0.99 @ Full Load, 1 ϕ
0.95 @ Full Load, 3 ϕ

HARMONIC CURRENT: < 5%, 1 ϕ only

EFFICIENCY: 92% Typical @ full load and 240VAC

INTERNAL FUSE: Input fuses are provided

INITIAL OUTPUT LOAD CONDITION: No load should be applied during initial AC start-up. Output load should be enabled using the Logic Inhibit signal after the AC is applied.

Environmental

AUDIBLE NOISE: 60dBA/70dBA max at 1 meter

TEMPERATURE: Operating: 0°C to +50°C at full load.
Storage: -55°C to +85°C.

HUMIDITY: 20% to 95% non-condensing.

ALTITUDE: Operating: 5,000 feet. De-rates to 70% at 15,000 feet. Non-Operating: To 30,000 feet.

VIBRATION: Operating: From 5 to 27 Hz, 0.02 in double amplitude; from 27 Hz to 500 Hz, 0.75G, 3 Axes, 3 min per octave sweep, dwell 15 min at resonance. Non-operating: From 5 to 17 Hz, 0.10 in double amplitude, from 17 to 500Hz, 1.5G peak; 3 axes, 5 min per octave sweep; dwell 15 min at resonance.

SHOCK: Operating: 5G, half sine, 11msec, 3 axes. Non-Operating: 15G, half sine, 11msec, 3 axes.

COOLING: Forced air, internal fan. Airflow exits at connector end. Reverse airflow available.

Output

VOLTAGE: 400 VDC nominal with $\pm 5\%$ tolerance. Output load should be enabled using the Logic Inhibit signal, 2 sec after the AC is applied.

OUTPUT POWER: See Product Matrix

P-P RIPPLE AND NOISE:

15V peak (10Hz to 100KHz Bandwidth).

HOLD-UP ENERGY: When the AC input is removed from the converter, depending on the output power, 86-300 Joules minimum are available on the output.

OUTPUT FUSING: Provided per output requirement.

Internal Protection

OVER VOLTAGE PROTECTION: The over voltage circuitry limits the maximum output voltage that the converter produces. **Note:** Peak value of AC Input voltage will appear at the output even if the converter is operating or not. This circuit protects only control loop failures.

OVER TEMPERATURE PROTECTION: The over temperature circuitry shuts off the boost converter in the event of an over temperature condition. It will restart automatically after cool down. **Note:** Peak value of AC Input voltage will appear at the output even if the converter is operating or not.

Safety

SAFETY: UL1950, CSA22.2 No 950 and TUV to EN60950. CE Mark (LVD)

EMI: Conducted & Radiated: EN55022 Level A
CE Certification is Optional

