Section 4

# PROGRAMMABLE LOW VOLTAGE 2V TO 9V AC TO DC SINGLE OUTPUT

Pioneer's programmable low voltage high current series provides a wide range of single output PFC Models. The high current models come in the traditional 5"x 5" package configured as hot plug or non-plug. Individual modules can be stacked to give up to 600A of load capacity. The premium Quality, high performance, high current switchers are rugged and highly reliable. These units are featured with 20ms hold up time for the output, internal forced air-cooling and built-in protection from electrical overloads.

A single module provides continuous full power over operating temperatures of 0°C to +50°C, from a Single Phase or Three Phase AC input line ranging from 90 to 264VAC.

## Product Matrix

| MODEL | PM3356 | PM3357 | PM3358 | PM3359 | PM33510 | PM33511 |
|---|---|---|---|---|---|---|
| MAX POWER | 1000W | 1200W | 1500W | 2000W | 2500W | 3000W |
| OUTPUT Vout | Iout | Iout | Iout | Iout | Iout | Iout |
| 0V to 2V | 0A to 200A | 0A to 240A | 0A to 300A | 0A to 400A | 0A to 500A | 0A to 600A |
| 0V to 3.3V | 0A to 200A | 0A to 240A | 0A to 300A | 0A to 400A | 0A to 500A | 0A to 600A |
| 0V to 5V | 0A to 200A | 0A to 240A | 0A to 300A | 0A to 400A | 0A to 500A | 0A to 600A |
| 0V to 6V | 0A to 167A | 0A to 200A | 0A to 250A | 0A to 333A | 0A to 416A | 0A to 500A |
| 0V to 9V | 0A to 111A | 0A to 133A | 0A to 167A | 0A to 222A | 0A to 277A | 0A to 333A |
| Non-Plug | 5" x 5" x 11.25" | 5" x 5" x 11.25" | 5" x 5" x 11.25" | 5" x 6.25" x 13" | 5" x 6.25" x 13" | 5" x 8" x 13" |
| Hot Plug | 5" x 5" x 14" | 5" x 5" x 14" | 5" x 5" x 14" | 5" x 6.25" x 15" | 5" x 6.25" x 15" | 5" x 8" x 15" |
| AC Input | 90V | to | 264V | 180V | to | 264V |

Notes:
1. All Models are available with wide input range 90 to 264VAC (option –6) or high input 180 to 264VAC (option –5)
2. All Models are available in 1φ or 3φ AC Input.
3. Input Current formula: 1φ Iin = Pout/(Vin x Efficiency x 0.99PFC)
   3V Iin = Pout/(Vin x Efficiency x 0.95PFC x √3)

## Features:

- Power Factor Correction
- 0°C to +50°C at full load
- De-rated @ 70°C
- Output fully floating
- Over current protection
- Over voltage protection
- Remote sense
- Over temperature protection
- Internal forced Air Cooling

## Options:

- (-128L) DC OK with LED indicator
- (-1CL) AC Fail with LED indicator
- (-2T) Unit enable/disable
- (-5LO) ±10% Output voltage adjust
- (-6B) Single wire current sharing
- (-6D) Slope/Droop current sharing
- (-20C) Isolation diodes
- (-25) Constant current limit
- (-33) Current monitor

Note: Refer to Section 26 for list of all standard options

# SPECIFICATION

## Inputs

**RANGE:** 90 to 264 VAC, 1φ or 3φ
**FREQUENCY:** 47 to 63 Hz. 400Hz also available as an option
**POWER FACTOR:**
0.99 @ Full Load for 1φ
0.95 @ Full Load for 3φ
**INRUSH CURRENT:** < 25A when averaged over 1/2 cycle.
**HARMONIC CURRENT:** < 5% for 1φ only
**HOLD UP TIME:** At least 20msec from loss of input to loss of regulation.

## Environmental

**AUDIBLE NOISE:** 63dBA/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 75% 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.

## Output

**ADJUSTMENT RANGE:** See Product matrix for Programmable Range
**POLARITY:** Output is isolated. It may be referenced plus/minus as required.
**REMOTE SENSE:** Compensates for up to 0.5V total loop drop, in the output line.
**STATIC REGULATION:**
Line: ±0.25% over full line range.
Load: ±0.25% zero load to full load.
**VOLTAGE STABILITY**: ±0.1% for 24 hour period after 30 minute warm up.
**TEMP COEFFICIENT**: ±0.02%/°C from 0°C to +50°C.
**P-P RIPPLE AND NOISE**: 1% (20Hz to 50MHz Bandwidth).
**MINIMUM LOAD:** Not Required.
**TURN ON DELAY:** 1sec max from application of AC line.

## Internal Protection

**OVER VOLTAGE PROTECTION:** 125% ±5% of nominal. OVP shutdown is latched until the input line is removed for 30 seconds and then reapplied. OVP sensing is done at the output terminals.
**OVERCURRENT PROTECTION:** Current Limit Point: 110% to 120% of full load.
**SHORT CIRCUIT CURRENT:** Fold back type to 40%-80% of full rated current. Unit will recover when overload is removed.
**REVERSE VOLTAGE PROTECTION**: Protected to rated load with the fan running.
**OVERTEMPERATURE PROTECTION**: The unit automatically shuts down in the event of an over temperature condition. After cool down, power must be recycled to restart unit. Optionally, non-latchable protection is also available.

## Safety

**SAFETY**: UL1950, CSA22.2 No 950 and TUV to EN60950. CE Mark (LVD)
**EMI:** Conducted & Radiated: EN55022 Level A
CE Certification is Optional

5" x 5" x 11.25"
Up to 1500W
DC Bus Bars
AC Terminal Block
Option Connector DB25

5" x 5" x 14"
Up to 1500W
Elcon Top Drawer
Hot Plug Connector