



## 20W Output Switching Power Supply

## PM-20 series



### ■ Features :

- Universal AC input / Full range
- Low leakage current <200uA
- Protections: Short circuit / Overload / Over voltage
- Ultra-miniature size, light weight
- Cooling by free air convection
- UL60601-1/IEC60601-1/EN60601-1 medical safety approved
- No load power consumption<0.75W
- 100% full load burn-in test
- Fixed switching frequency at 90KHz
- High reliability
- 3 years warranty

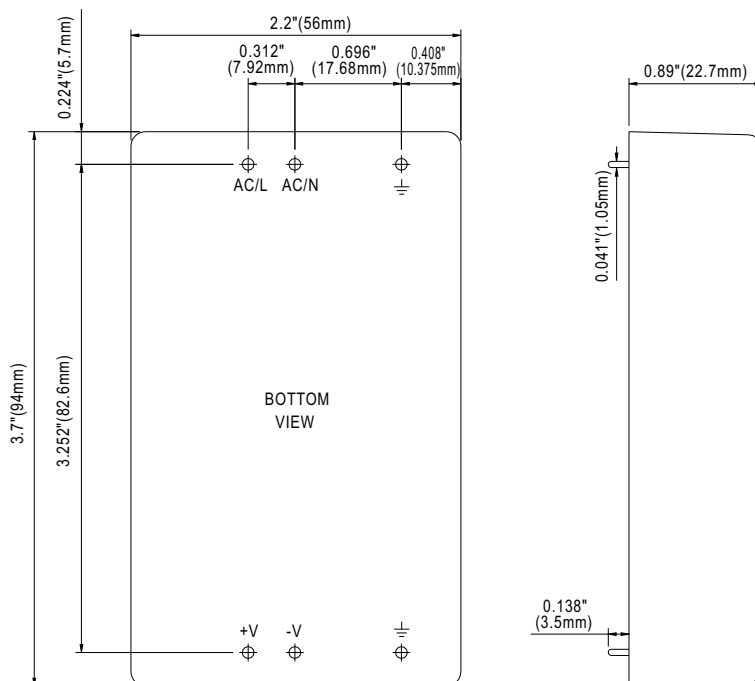


### SPECIFICATION

| MODEL                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PM-20-3.3                                                                                                               | PM-20-5      | PM-20-12     | PM-20-15       | PM-20-24     |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------|--------------|----------------|--------------|
| OUTPUT                                  | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3.3V                                                                                                                    | 5V           | 12V          | 15V            | 24V          |
|                                         | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4.5A                                                                                                                    | 4.4A         | 1.8A         | 1.4A           | 0.92A        |
|                                         | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0 ~ 4.5A                                                                                                                | 0 ~ 4.4A     | 0 ~ 1.8A     | 0 ~ 1.4A       | 0 ~ 0.92A    |
|                                         | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 14.85W                                                                                                                  | 22W          | 21.6W        | 21W            | 22.08W       |
|                                         | RIPPLE & NOISE (max.) <small>Note.2</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 80mVp-p                                                                                                                 | 80mVp-p      | 150mVp-p     | 150mVp-p       | 240mVp-p     |
|                                         | VOLTAGE TOLERANCE <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ±3.0%                                                                                                                   | ±2.0%        | ±2.0%        | ±2.0%          | ±2.0%        |
|                                         | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ±1.0%                                                                                                                   | ±1.0%        | ±0.5%        | ±0.5%          | ±0.5%        |
|                                         | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ±1.5%                                                                                                                   | ±1.5%        | ±1.0%        | ±1.0%          | ±0.5%        |
|                                         | SETUP, RISE TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 500ms, 20ms/230VAC      500ms, 20ms/115VAC at full load                                                                 |              |              |                |              |
| HOLD UP TIME (Typ.)                     | 50ms/230VAC      16ms/115VAC at full load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                         |              |              |                |              |
| INPUT                                   | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 85 ~ 264VAC      120 ~ 370VDC                                                                                           |              |              |                |              |
|                                         | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 47 ~ 440Hz                                                                                                              |              |              |                |              |
|                                         | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 71%                                                                                                                     | 75%          | 81%          | 83%            | 84%          |
|                                         | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.6A/115VAC      0.4A/230VAC                                                                                            |              |              |                |              |
|                                         | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | COLD START 30A/115VAC      65A/230VAC                                                                                   |              |              |                |              |
|                                         | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <200uA / 240VAC                                                                                                         |              |              |                |              |
| PROTECTION                              | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Above 105% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed |              |              |                |              |
|                                         | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3.8 ~ 4.46V                                                                                                             | 5.75 ~ 6.75V | 13.8 ~ 16.2V | 17.25 ~ 20.25V | 27.6 ~ 32.4V |
| ENVIRONMENT                             | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -20 ~ +60℃ (Refer to output load derating curve)                                                                        |              |              |                |              |
|                                         | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 20 ~ 90% RH non-condensing                                                                                              |              |              |                |              |
|                                         | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -40 ~ +85℃, 10 ~ 95% RH                                                                                                 |              |              |                |              |
|                                         | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ±0.03%/℃ (0 ~ 50℃)                                                                                                      |              |              |                |              |
|                                         | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                 |              |              |                |              |
| SAFETY & EMC<br><small>(Note 4)</small> | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | UL60601-1, TUV EN60601-1, IEC60601-1 approved                                                                           |              |              |                |              |
|                                         | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | I/P-O/P:4KVAC    I/P-FG:1.5KVAC    O/P-FG:1.5KVAC                                                                       |              |              |                |              |
|                                         | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH                                                               |              |              |                |              |
|                                         | EMI CONDUCTION & RADIATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Compliance to EN55011(CISPR11),EN55022 (CISPR22) Class B                                                                |              |              |                |              |
|                                         | HARMONIC CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Compliance to EN61000-3-2,-3                                                                                            |              |              |                |              |
|                                         | EMS IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN60601-1-2, EN61204-3, medical level, criteria A            |              |              |                |              |
| OTHERS                                  | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 487.8Khrs min.    MIL-HDBK-217F (25℃)                                                                                   |              |              |                |              |
|                                         | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 94*56*22.7mm (L*W*H)                                                                                                    |              |              |                |              |
|                                         | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.18Kg; 90pcs/17.2Kg/0.97CUFT                                                                                           |              |              |                |              |
| NOTE                                    | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. 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. |                                                                                                                         |              |              |                |              |

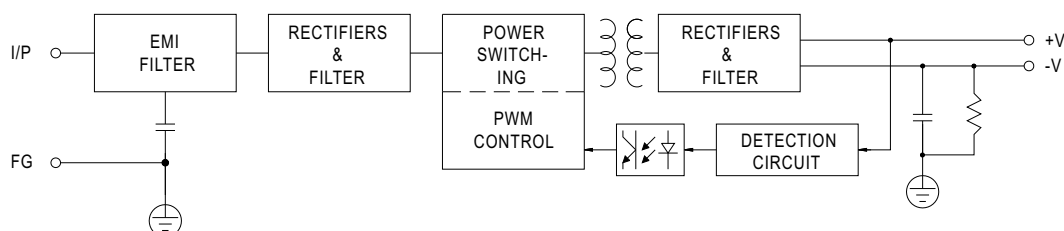
## ■ Mechanical Specification

Case No. 951A Unit:inch(mm)

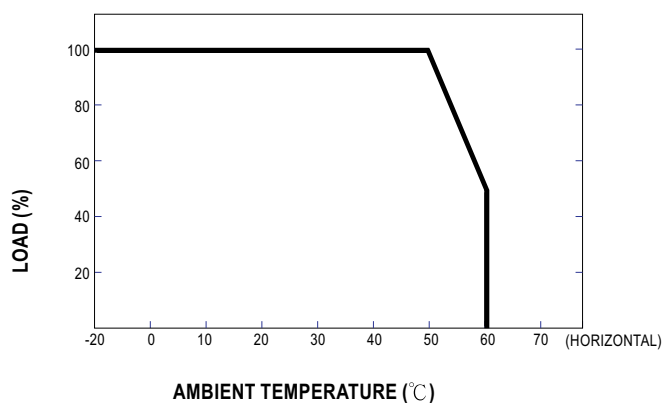


### ■ Block Diagram

fosc : 90KHz



### Derating Curve



### ■ Output Derating VS Input Voltage

