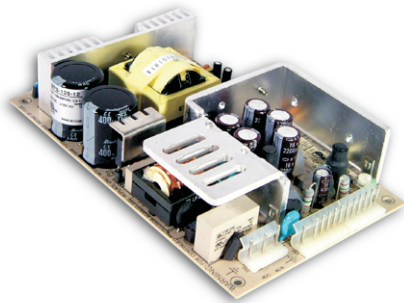




1~4 Output Medical Type

# 120W Medical series



## Specification

### AC INPUT VOLTAGE

90~264 VAC, 47~440Hz / 127~370VDC.

### AC INPUT CURRENT (Typ.)

Maximum input current 2.9A at 115VAC, 60Hz or 1.7A at 230VAC, 60Hz with 100% output load.

### INRUSH CURRENT (Typ.)

Inrush current is less than 22A at 115VAC or less than 45A at 230VAC under cold start conditions. Limiting provided by internal thermistors.

### SETUP, RISE TIME

MPS-120: 800ms, 20ms / 230VAC at full load  
2000ms, 50ms / 115VAC at full load  
MPD,T,Q-120:500ms, 20ms / 230VAC at full load  
1200ms, 50ms / 115VAC at full load

### HOLD-UP TIME (Typ.)

80ms / 230VAC at full load  
14ms / 115VAC at full load

### LEAKAGE CURRENT

Leakage current is less than 180 $\mu$ A at 264VAC

### DC OUTPUT ADJ. RANGE

DC output voltage (or Ch1 of multiple output models) can be adjusted between -5%~+10% rated output voltage by potential meter.

### OVERLOAD PROTECTION

Fully protected against short circuit and output overload. The hiccup type protection will be activated at 110~150% (For MPD,T,Q-120), 120~160% (For MPS-120) rated load and recovers automatically after fault condition is removed.

### OVER VOLTAGE PROTECTION

Provided on output channel 1 only at 115%~135% rated output voltage. (120%~140% for MPS-120-15/24/48). Output will be shut down when this protection is activated.

### POWER GOOD / FAIL SIGNAL (OPTIONAL)

TTL logic high for power good and TTL low for power fail. When the output voltage reaches 90% of rated value, a +5V TTL signal will be sent out with a 10~500ms delay; At least 1ms before the output voltage goes below 90% of the rated value, the TTL signal will be turned off.

\* MPS-120-3.3 does not have this optional function.

### WORKING TEMP.

Whole series can operate from -20~70 $^{\circ}$ C. Please refer to the derating curves.

### WORKING HUMIDITY

20~90% RH non-condensing.

### STORAGE TEMP., HUMIDITY

-40~+85 $^{\circ}$ C, 10~90% RH

## Features

- Universal AC input / Full range
- Low leakage current <180 $\mu$ A
- Protections: Short circuit / Overload / Over voltage
- UL60601-1 medical safety approved
- With power good and fail signal output (Optional)
- 100% full load burn-in test
- Fixed switching frequency at 45KHz
- 3 years warranty



### TEMP. COEFFICIENT

$\pm$ 0.04%/ $^{\circ}$ C on all outputs at full load between 0~50 $^{\circ}$ C of ambient temperature.

### VIBRATION

2G of acceleration, vibrating frequency adjust from 10Hz ~500Hz within a 10-minute cycle. 6 testing cycles (60 minutes) each along X, Y, Z axes.

### SAFETY STANDARDS

Medical : UL60601-1, TUV EN60601-1, IEC60601-1 approved  
Commercial : Also design refer to UL60950-1, TUV EN60950-1

### WITHSTAND VOLTAGE

4000VAC between input and output  
1500VAC between input and F.G.  
500VAC between output and F.G.

### ISOLATION RESISTANCE

>100M Ohms for I/P-O/P, I/P-FG, O/P-FG by using 500VDC test voltage.

### EMI COMPLIANCE

EMI Specifications  
Conducted & Radiation  
  
Harmonic distortion  
Voltage flicker

Compliance Level  
EN55011, Class B  
EN55022, Class B  
EN61000-3-2  
EN61000-3-3

### EMS COMPLIANCE

EMS Specification  
ESD air  
ESD contact  
RF field susceptibility

Compliance Level  
EN61000-4-2, Level 3, 8KV  
EN61000-4-2, Level 2, 4KV  
EN61000-4-3, Level 2, 3V/m  
Level 3, 10V/m  
EN61000-4-4, Level 2, 1KV/5KHz  
Level 3, 2KV/5KHz  
EN61000-4-5, Level 4, 2KV/Line-Line  
4KV/Line-Earth  
EN61000-4-6, Level 2, 3Vrms/m  
Level 3, 10Vrms/m  
EN61000-4-8, Level 2, 3A/m  
Level 3, 10A/m  
EN61000-4-11, Compliance  
ENV50204, Level 2, 3V/m, 900MHz  
Level 3, 10A/m, 900MHz

EFT(Electrical Fast Transient)/Burst

Lightning/Surge

Conducted RF susceptibility

Magnetic field immunity

Voltage dip, interruption

Digital phone carrier immunity

### MTBF

262,100 hours min. at full load and 25 $^{\circ}$ C of ambient temperature, calculated per MIL-HDBK-217F.

### DIMENSION (L\*W\*H)

177.8x107.95x35.5mm or 7"x4.25"x1.4"

### PACKING

0.55Kg; 24pcs/14.5Kg/1.04CUFT



1~4 Output Medical Type

# 120W Medical series

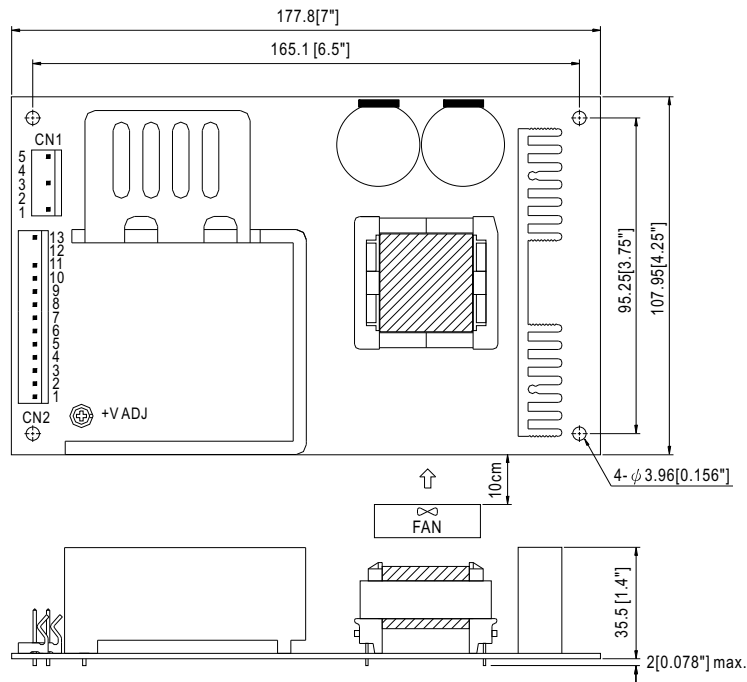
## Output Chart

| MODEL       | OUTPUT VOLTAGE | RATED CURRENT | OUTPUT CURRENT |                   |                  |                                   | RIPPLE & NOISE (Max.) (Note 2) | VOLTAGE TOLERANCE (Note 3) | LINE REGULATION | LOAD REGULATION | EFFICIENCY |
|-------------|----------------|---------------|----------------|-------------------|------------------|-----------------------------------|--------------------------------|----------------------------|-----------------|-----------------|------------|
|             |                |               | MINIMUM LOAD   | CONVECTION (max.) | WITH FAN (25CFM) | PEAK LOAD WITH 25CFM FAN (Note 4) |                                |                            |                 |                 |            |
| MPS-120-3.3 | 3.3V           | 24A           | 0A             | 16A               | 24A              | 26A                               | 80mVp-p                        | ±3.0%                      | ±1.0%           | ±3.0%           | 68%        |
| MPS-120-5   | 5V             | 22A           | 0A             | 14.7A             | 22A              | 26A                               | 80mVp-p                        | ±3.0%                      | ±1.0%           | ±3.0%           | 73%        |
| MPS-120-12  | 12V            | 10A           | 0A             | 6.7A              | 10A              | 11A                               | 100mVp-p                       | ±2.0%                      | ±1.0%           | ±2.0%           | 77%        |
| MPS-120-15  | 15V            | 8A            | 0A             | 5.3A              | 8A               | 8.8A                              | 100mVp-p                       | ±2.0%                      | ±1.0%           | ±2.0%           | 79%        |
| MPS-120-24  | 24V            | 5A            | 0A             | 3.3A              | 5A               | 5.5A                              | 120mVp-p                       | ±2.0%                      | ±1.0%           | ±2.0%           | 81%        |
| MPS-120-48  | 48V            | 2.5A          | 0A             | 1.7A              | 2.5A             | 2.8A                              | 120mVp-p                       | ±2.0%                      | ±1.0%           | ±2.0%           | 82%        |
| MPD-120A    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 12A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 75%        |
|             | 12V            | 5A            | 0.5A           | 3.6A              | 5A               | 6A                                | 120mVp-p                       | ±7.0%                      | ±2.0%           | ±3.5%           |            |
| MPD-120B    | 5V             | 10A           | 2A             | 7A                | 10A              | 12A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 76%        |
|             | 24V            | 2.9A          | 0.3A           | 1.9A              | 2.9A             | 3.2A                              | 250mVp-p                       | ±8.0%                      | ±2.0%           | ±4.0%           |            |
| MPT-120A    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 12A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±1.0%           | 72%        |
|             | 12V            | 4.8A          | 0.4A           | 3.5A              | 4.8A             | 5.8A                              | 120mVp-p                       | +8,-6%                     | ±1.5%           | ±3.5%           |            |
|             | -5V            | 0.6A          | 0A             | 0.3A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPT-120B    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 12A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±1.0%           | 73%        |
|             | 12V            | 4.4A          | 0.4A           | 3.2A              | 4.4A             | 5.3A                              | 120mVp-p                       | ±6.0%                      | ±1.5%           | ±3.5%           |            |
|             | -12V           | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPT-120C    | 5V             | 10A           | 2A             | 7A                | 10A              | 11A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±1.0%           | 72%        |
|             | 15V            | 4A            | 0.4A           | 2.6A              | 4A               | 4.4A                              | 150mVp-p                       | +6,-7%                     | ±2.0%           | ±3.5%           |            |
|             | -15V           | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPT-120D    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 12A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±1.0%           | 74%        |
|             | 24V            | 2.2A          | 0.4A           | 1.6A              | 2.2A             | 2.64A                             | 300mVp-p                       | +8,-6%                     | ±3.0%           | +4,-3%          |            |
|             | 12V            | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 120mVp-p                       | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPQ-120B    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 11A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 71%        |
|             | 12V            | 4.2A          | 0.5A           | 3.1A              | 4.2A             | 5A                                | 120mVp-p                       | ±6.0%                      | ±1.5%           | ±3.5%           |            |
|             | -5V            | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
|             | -12V           | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPQ-120C    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 11A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 71%        |
|             | 15V            | 3.2A          | 0.5A           | 2.4A              | 3.2A             | 3.8A                              | 150mVp-p                       | +6,-7%                     | ±2.0%           | ±3.5%           |            |
|             | -5V            | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
|             | -15V           | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPQ-120D    | 5V             | 10A           | 2A             | 7A                | 10A              | 11A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 74%        |
|             | 12V            | 1A            | 0.2A           | 0.7A              | 1A               | 1.1A                              | 150mVp-p                       | +8,-6%                     | ±2.0%           | ±3.5%           |            |
|             | 24V            | 2.1A          | 0.3A           | 1.4A              | 2.1A             | 2.3A                              | 300mVp-p                       | ±8.0%                      | ±2.0%           | ±3.5%           |            |
|             | -12V           | 0.6A          | 0A             | 0.3A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |
| MPQ-120E    | 5V             | 10A           | 2A             | 7.3A              | 10A              | 11A                               | 80mVp-p                        | ±2.0%                      | ±0.5%           | ±0.5%           | 73%        |
|             | 12V            | 3A            | 0.5A           | 2.3A              | 3A               | 3.3A                              | 120mVp-p                       | ±6.0%                      | ±2.0%           | ±3.0%           |            |
|             | 15V            | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±8.0%                      | ±2.0%           | ±3.0%           |            |
|             | 24V            | 0.6A          | 0A             | 0.4A              | 0.6A             | 1A                                | 80mVp-p                        | ±5.0%                      | ±0.5%           | ±1.0%           |            |

- Notes :
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
  2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.
  3. Tolerance : includes set up tolerance, line regulation and load regulation.
  4. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.
  5. 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

Unit:mm



## Pin Assignment

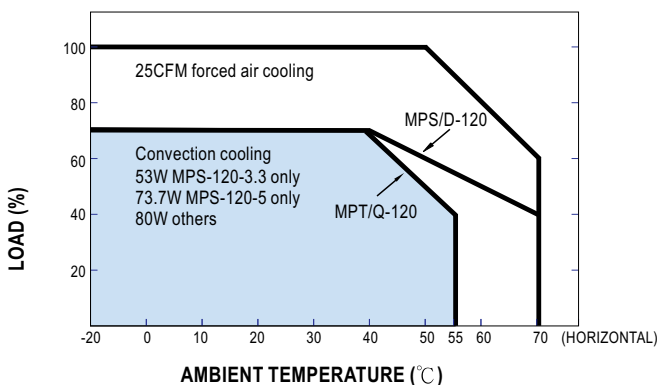
AC Input Connector (CN1) : Molex 5273-05 or equivalent

| Pin No. | MPS-120 | MPD-120 | MPT-120 | MPQ-120 | Mating Housing           | Terminal                 |
|---------|---------|---------|---------|---------|--------------------------|--------------------------|
| 1       | FG      | FG      | FG      | FG      | Molex 5195 or equivalent | Molex 5194 or equivalent |
| 2,4     | No Pin  | No Pin  | No Pin  | No Pin  |                          |                          |
| 3       | AC/N    | AC/N    | AC/N    | AC/N    |                          |                          |
| 5       | AC/L    | AC/L    | AC/L    | AC/L    |                          |                          |

DC Output Connector (CN2) : Molex 5273-13 or equivalent

| Pin No. | MPS-120 | MPD-120 | MPT-120 | MPQ-120 | Mating Housing           | Terminal                 |
|---------|---------|---------|---------|---------|--------------------------|--------------------------|
| 1       | +V      | V1      | V1      | V1      | Molex 5195 or equivalent | Molex 5194 or equivalent |
| 2       | +V      | V1      | V1      | V1      |                          |                          |
| 3       | +V      | V1      | V1      | V1      |                          |                          |
| 4       | -V      | COM     | COM     | COM     |                          |                          |
| 5       | -V      | COM     | COM     | COM     |                          |                          |
| 6       | -V      | COM     | COM     | COM     |                          |                          |
| 7       | -V      | COM     | COM     | COM     |                          |                          |
| 8       | +V      | V2      | V2      | V2      |                          |                          |
| 9       | +V      | V2      | V2      | V2      |                          |                          |
| 10      | P.F.D.  | P.F.D.  | P.F.D.  | P.F.D.  |                          |                          |
| 11      | NC      | NC      | V3      | V3      |                          |                          |
| 12      | No Pin  | No Pin  | No Pin  | No Pin  |                          |                          |
| 13      | NC      | NC      | NC      | V4      |                          |                          |

## Derating Curve



## Static Characteristics

