



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 μ 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 μ 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 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 | Compliance Level |
| Conducted & Radiation | EN55011, Class B |
| | EN55022, Class B |
| Harmonic distortion | EN61000-3-2 |
| Voltage flicker | EN61000-3-3 |

EMS COMPLIANCE

| | |
|--------------------------------------|---|
| EMS Specification | Compliance Level |
| ESD air | EN61000-4-2, Level 3, 8KV |
| ESD contact | EN61000-4-2, Level 2, 4KV |
| RF field susceptibility | EN61000-4-3, Level 2, 3V/m Level 3, 10V/m |
| EFT(Electrical Fast Transient)/Burst | EN61000-4-4, Level 2, 1KV/5KHz Level 3, 2KV/5KHz |
| Lightning/Surge | EN61000-4-5, Level 4, 2KV/Line-Line 4KV/Line-Earth |
| Conducted RF susceptibility | EN61000-4-6, Level 2, 3Vrms/m Level 3, 10Vrms/m |
| Magnetic field immunity | EN61000-4-8, Level 2, 3A/m Level 3, 10A/m |
| Voltage dip, interruption | EN61000-4-11, Compliance |
| Digital phone carrier immunity | ENV50204, Level 2, 3V/m, 900MHz Level 3, 10A/m, 900MHz |

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



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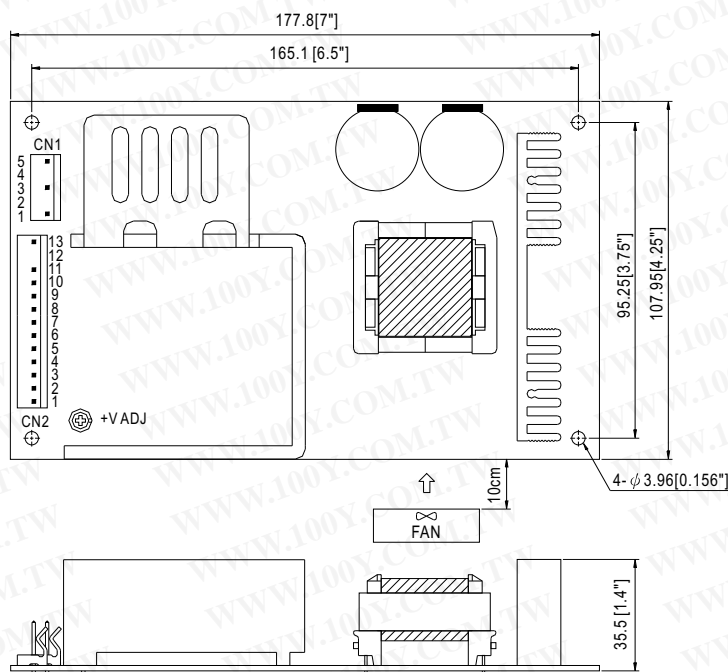
Output Chart

| 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

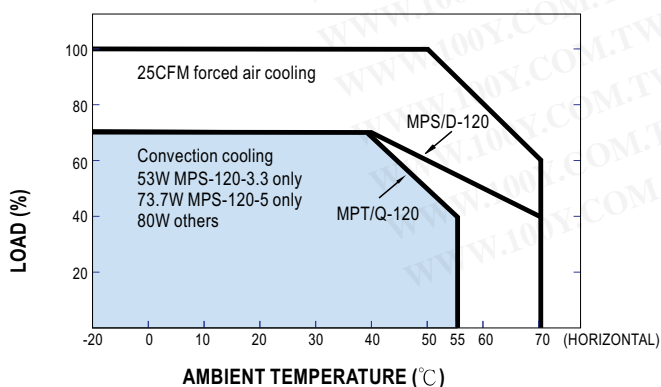
AC Input Connector (CN1) : Molex 5273-05 or equivalent

| 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

