



## 1~4 Output Medical Type

# 200W Medical series



### Specification

#### AC INPUT VOLTAGE

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

#### POWER FACTOR (Typ.)

PF>0.95/230VAC PF>0.98/115VAC at full load

#### AC INPUT CURRENT (Typ.)

Maximum input current 3.5A at 115VAC, 60Hz or 1.6A at 230VAC, 60Hz with 100% output load.

#### INRUSH CURRENT (Typ.)

Inrush current is less than 25A at 115VAC or less than 40A at 230VAC under cold start conditions. Limiting provided by internal thermistors.

#### SETUP, RISE TIME

1000ms, 20ms / 230VAC at full load  
3000ms, 20ms / 115VAC at full load

#### HOLD-UP TIME (Typ.)

16ms / 230VAC at full load  
16ms / 115VAC at full load

#### LEAKAGE CURRENT

Leakage current is less than 180 $\mu$ A at 264VAC for earth leakage current  
Leakage current is less than 100 $\mu$ A at 264VAC for patient leakage current

#### 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 120~160% 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. Output will be shut down when this protection is activated.

#### OVER TEMPERATURE PROTECTION

When the temperature of TSW1 which detect on heat sink of power transistor reaches 95 $^{\circ}$ C, This protection is activated. Then output will be shut down and recovers automatically after temperature goes down.

#### POWER GOOD / FAIL SIGNAL

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-200-3.3 does not have this function.

#### REMOTE CONTROL

RC+/RC-:0 ~ 0.8V=power on; 4 ~ 10V=power off sink current<4~10mA

### Features

- Universal AC input / Full range
- Low leakage current <180 $\mu$ A
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Free air convection for 140W and forced air convection for 200W
- UL60601-1 medical safety approved
- With power good and fail signal output
- Built-in remote ON-OFF control
- Built-in remote sense function
- Fixed switching frequency at 100KHz
- 3 years warranty



#### 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

#### 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.  
1500VAC 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)

177.8x107.2x35.5mm or 7"x4.22"x1.4"

#### PACKING

0.66Kg; 24pcs/16.8Kg/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 (typ.)
			MINIMUM LOAD	CONVECTION (max.)	WITH FAN (25CFM)	PEAK LOAD WITH 25CFM FAN					
MPS-200-3.3	3.3V	40A	0A	28A	40A	48A	80mVp-p	±2.0%	±0.5%	±1.0%	77%
MPS-200-5	5V	40A	0A	28A	40A	48A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
MPS-200-12	12V	16.7A	0A	11.7A	16.7A	20A	100mVp-p	±2.0%	±0.5%	±1.0%	84%
MPS-200-15	15V	13.4A	0A	9.4A	13.4A	16A	100mVp-p	±2.0%	±0.5%	±1.0%	85%
MPS-200-24	24V	8.4A	0A	5.9A	8.4A	10A	150mVp-p	±1.0%	±0.5%	±1.0%	86%
MPS-200-48	48V	4.2A	0A	3A	4.2A	5A	200mVp-p	±1.0%	±0.5%	±1.0%	87%
MPD-200A	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	82%
	12V	8A	0.8A	5.4A	8A	9.6A	120mVp-p	+8,-5%	±1.0%	±4.0%	
MPD-200B	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	83%
	24V	4A	0.4A	2.7A	4A	4.8A	180mVp-p	±6.5%	±1.0%	+4,-6%	
MPT-200A	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	12V	7.5A	0.8A	5A	7.5A	9A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200B	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	12V	6A	0.6A	4.4A	6A	7.2A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200C	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	80%
	15V	4.7A	0.5A	3.3A	4.7A	5.6A	150mVp-p	±8.0%	±1.0%	±5.0%	
	-15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPT-200D	5V	20A	4A	15A	20A	24A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
	24V	3A	0.3A	2.2A	3A	3.6A	180mVp-p	±8.0%	±1.0%	±5.0%	
	12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200B	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	78%
	12V	7A	0.7A	5.3A	7A	8.4A	120mVp-p	±8.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200C	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	78%
	15V	5A	0.5A	4A	5A	6A	150mVp-p	±6.0%	±1.0%	±5.0%	
	-5V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200D	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	79%
	24V	3A	0.3A	2.3A	3A	3.6A	180mVp-p	±8.0%	±1.0%	±5.0%	
	12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-12V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
MPQ-200F	5V	15A	3A	12A	15A	18A	80mVp-p	±2.0%	±0.5%	±1.0%	81%
	24V	2.7A	0.3A	2.1A	2.7A	3.3A	180mVp-p	±8.0%	±1.0%	±5.0%	
	15V	2A	0A	1A	2A	2.4A	80mVp-p	±5.0%	±0.5%	±1.0%	
	-15V	2A	0A	1A	2A	2.4A	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 0.1µ f & 4µ f 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.
  6. Derating may be needed under low input voltages. Please check the derating curve for more details.

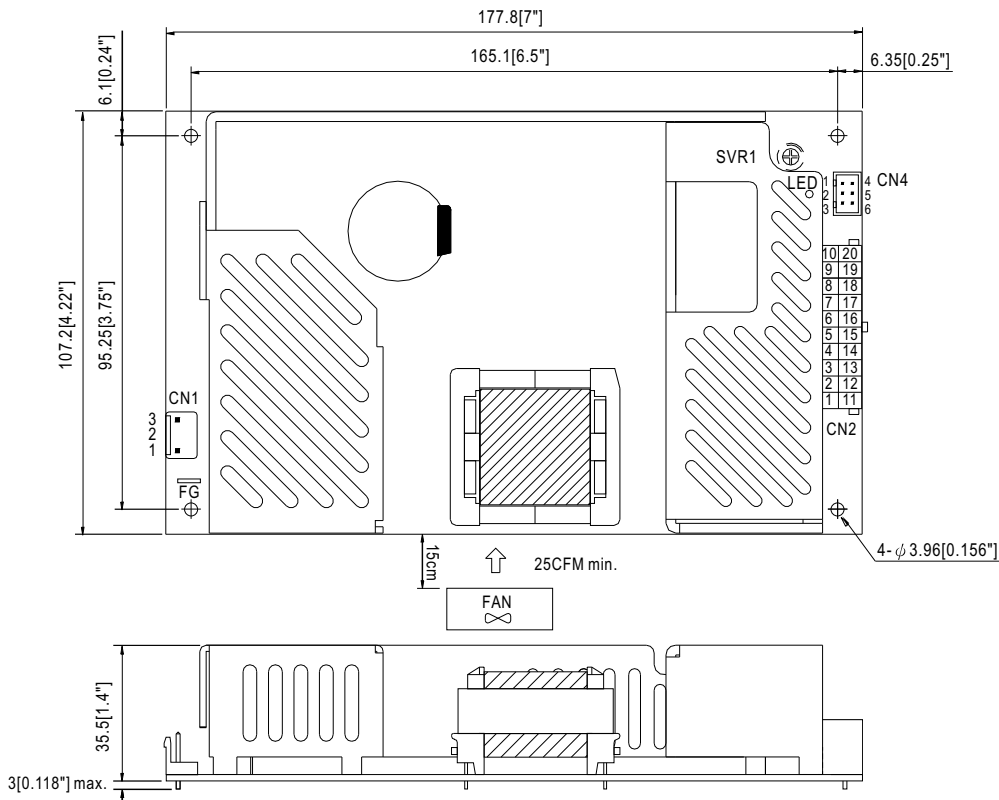


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## Mechanical Specification(MPS-200)

Unit:mm



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

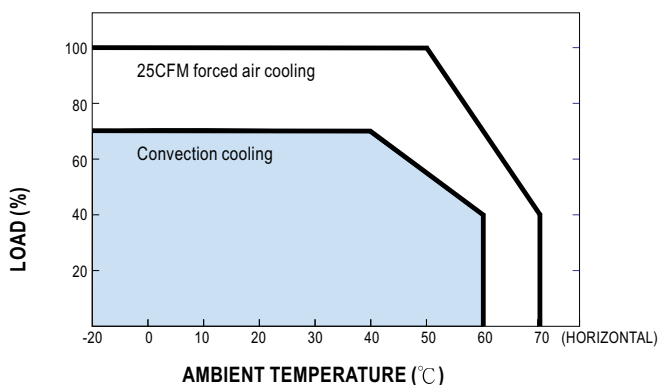
DC Output Connector (CN4) : TKP DH2I-2\*3 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	PG	TKP DH2-2*3 or equivalent	TKP DHT or equivalent
2	RS-		
3	GND		
4	RC+		
5	RS+		
6	RC-		

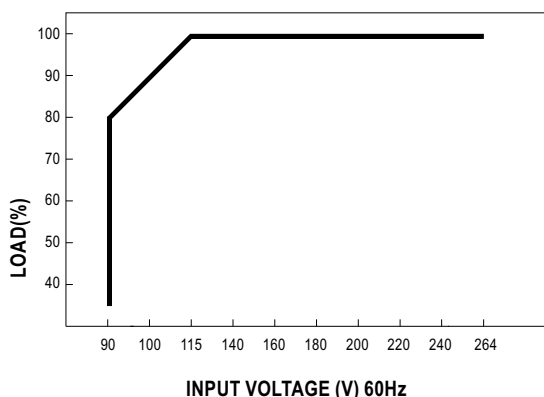
DC Output Connector (CN2) : MOLEX 5566-20 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1~5,11~15	DC OUTPUT -V	MOLEX 5557 or equivalent	MOLEX 5556 or equivalent
6~10,16~20	DC OUTPUT +V		

## Derating Curve (MPS-200)



## Static Characteristics (MPS-200)

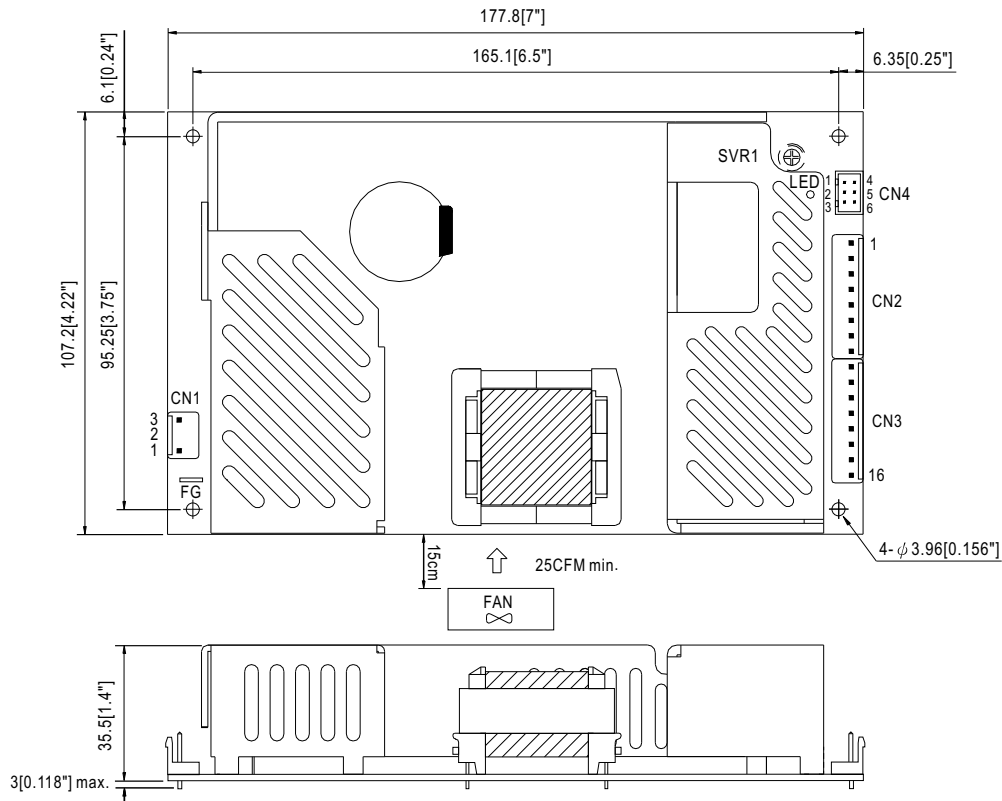




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## Mechanical Specification(MPD/T/Q-200)



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

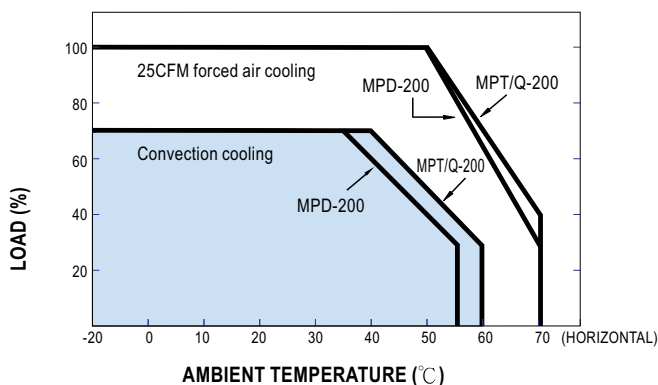
DC Output Connector (CN4) : TKP DH2I-2\*3 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	PG	TKP DH2-2*3 or equivalent	TKP DHT or equivalent
2	RS-		
3	GND		
4	RC+		
5	RS+		
6	RC-		

DC Output Connector (CN2,3) : JST B8P-VH\*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3,4	V1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
5-11	COM		
12,13	V2		
14	V3		
15	No pin		
16	V4		

## Derating Curve (MPD/T/Q-200)



## Static Characteristics (MPD,T,Q-200)

