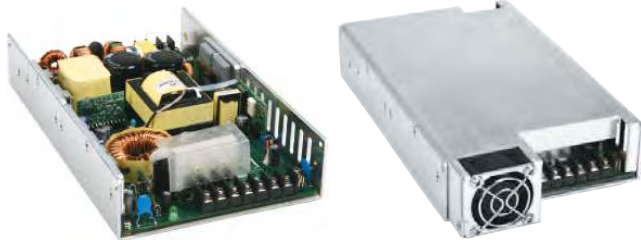


Medical 450 Watt Enclosed & U-Channel Power Supplies with PFC **PMMK450** series



- 450 Watts Output Power
- Single Output
- Universal 90-264VAC Input
- 12VDC to 48VDC Output
- 5656VDC Input to Output Isolation
- Active Power Factor Correction
- 5 Volt Standby Power
- \*\*Optional Current Share (CS) Capability



*Model Number	Output V	Output I	Line Reg (nom/max)	Load Reg (nom/max)	Ripple & Noise	Efficiency (min/nom)
<b>SINGLE OUTPUT</b>						
PMMK450S-12 U,E,D(-CS)	12 VDC	37.5 Amps	0.3% / 1.0%	0.3% / 1%	120mV pk-pk	77% / 85%
PMMK450S-24 U,E,D(-CS)	24 VDC	18.75 Amps	0.2% / 0.5%	0.2% / 0.5%	240mV pk-pk	78% / 86%
PMMK450-1464	21.6 VDC	20.83Amps	0.2% / 0.5%	0.2% / 0.5%	240mV pk-pk	78% / 86%
PMMK450S-36 U,E,D(-CS)	36 VDC	12.5 Amps	0.1% / 0.5%	0.1% / 0.5%	360mV pk-pk	79% / 86%
PMMK450S-48 U,E,D(-CS)	48 VDC	9.375 Amps	0.1% / 0.5%	0.1% / 0.5%	480mV pk-pk	81% / 88%

\*Available in a U-Channel Package (i.e. PMMK450S-12U), an Enclosed Package (i.e. PMMK450S-12E) or an Enclosed Package with a DIN Rail Clip (i.e. PMMK450S-12D)

\*\* The PMMK450S Series power supplies are available with current-sharing (CS) option for N+1 paralleling and redundant power applications. To receive this option with your product simply add "-CS" to the end of the Model Number. For example PMMK450S-12U-CS. Please see the application note at the end of this specification for instructions on how to utilize.

\*\*\*The PMMK450-1464 is the (PMMK450S-24E) modified to 21.6V output. This part number also consist of an 18inch AWG28,10 conductor ribbon cable used to mate to the 10 pin aux header on the power supply.

## Medical 450 Watt Enclosed & U-Channel Power Supplies with PFC **PMMK450** series

### INPUT SPECIFICATIONS

Input Voltage Range	90-264VAC (100-240VAC Nom.)
Frequency Range	47-63Hz (50-60 Hz Nom.)
Inrush Current, typ: (cold start)	30A at FL, 115VAC
	60A at FL, 230VAC
Input Current (90Vin/264Vin)	7A / 2.5A max
Power Factor (Nom I/P, FL)	0.95 min
Leakage current	Less than 0.3mA @ 240VAC, 50Hz

### OUTPUT SPECIFICATIONS

Voltage and Current	See Selection Chart
5 Volt Standby (+5Vsb)	0~2.0A (See Page 9)
Preset Accuracy	1%
Line Regulation (LL-HL)	See Selection Chart
Load Regulation (20%-FL)	See Selection Chart
DC Output Power	450W, Max (See Derating Curve)
Ripple/Noise	See Selection Chart
	20MHz bandwidth with parallel
	0.1uF ceramic capacitor
	47uF electrolytic capacitor
Hold Up Time, typ.	16mS at nominal input voltage range
Turn On Delay Time	< 4S
Rise Time	< 25mS @110 Vin
Short Curcuit Protection	Auto-recovery*
Over Voltage Protection	130% (max) Auto-recovery*
Over Current Protection	150% (max) Auto-recovery*
Efficiency (without Oring Diode)	See Selection Chart

### PHYSICAL SPECIFICATIONS

Size (PMMK450S-xxU)	
Millimeters / Inches	203.2x 127x 38 / 8"x 5"x 1.5"
Size (PMMK450S-xxE, D)	
Millimeters / Inches	224.9x 127x 40 / 8.85"x 5"x 1.57"
Weight	U-Bracket (PMMK450S-xxU) 33.97 oz (963g)
	Enclosed (PMMK450S-xxE) 37.32 oz (1058g)
	Enclosed w. DIN Clip (PMMK450-xxD) 38 oz (1077g)

\* These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long term reliability. Proper operation under conditions other than the standard operating conditions is neither warranted nor implied.

### ENVIRONMENTAL SPECIFICATIONS

Oper. Temperature	0°C to 70°C (See Derate Curve)	
Storage Temperature	-40°C to 85°C	
Oper. Humidity	10 - 90% for nominal input range	
	Non-condensing	
Storage Humidity	5 - 95%	
MTBF @ 25°C	100K Hrs min. MIL-HDBK-217F	
Vibration*	4G'S pk, 50~500Hz, 3 AXES. 30 Min	
Drop Test*	70 cm no damage	
EMS	Harmonics	61000-3-2 Class D
	Fluctuations	61000-3-3
ESD	Contact 6KV Air 8KV	61000-4-2
	RS	FR: 80MHz-2.5GHz
EFT	Field Strength: 3V / M	61000-4-3
	2KV on AC power line	61000-4-4
Surge	1KV (L-N) & 2KV (L-PE, N-PE)	
		61000-4-5
CS	3V (EMF)	61000-4-6
DIPS	95% 250Cy , 70% 25 Cy	
	40% 5Cy , 5% 0.5Cy	61000-4-11
EMI	CISPR/EN55011 Class B	

### GENERAL SPECIFICATIONS

Safety	UL/cUL:	ANSI/AAMI ES60601-1 3rd ed.
		CSA C22.2 No. 60601-1 3rd ed.
	UL-EU:	EN60601-1 3rd ed.
	CB:	IEC60601-1 3rd ed.
	CE:	EN60601-1-2
Over-Shoot and under shoot	Less than 10% of nominal output	
Remote sense	0.5V drop. max at terminals	
Hi-pot test (60S max)	5656VDC I/P - O/P	
	2121 VDC I/P - GND	
	707VDC O/P - GND	
Insulation Resistance (I/P-O/P)	500VDC, 1S, ≥ 20MΩ	

### REMOTE SHUTDOWN

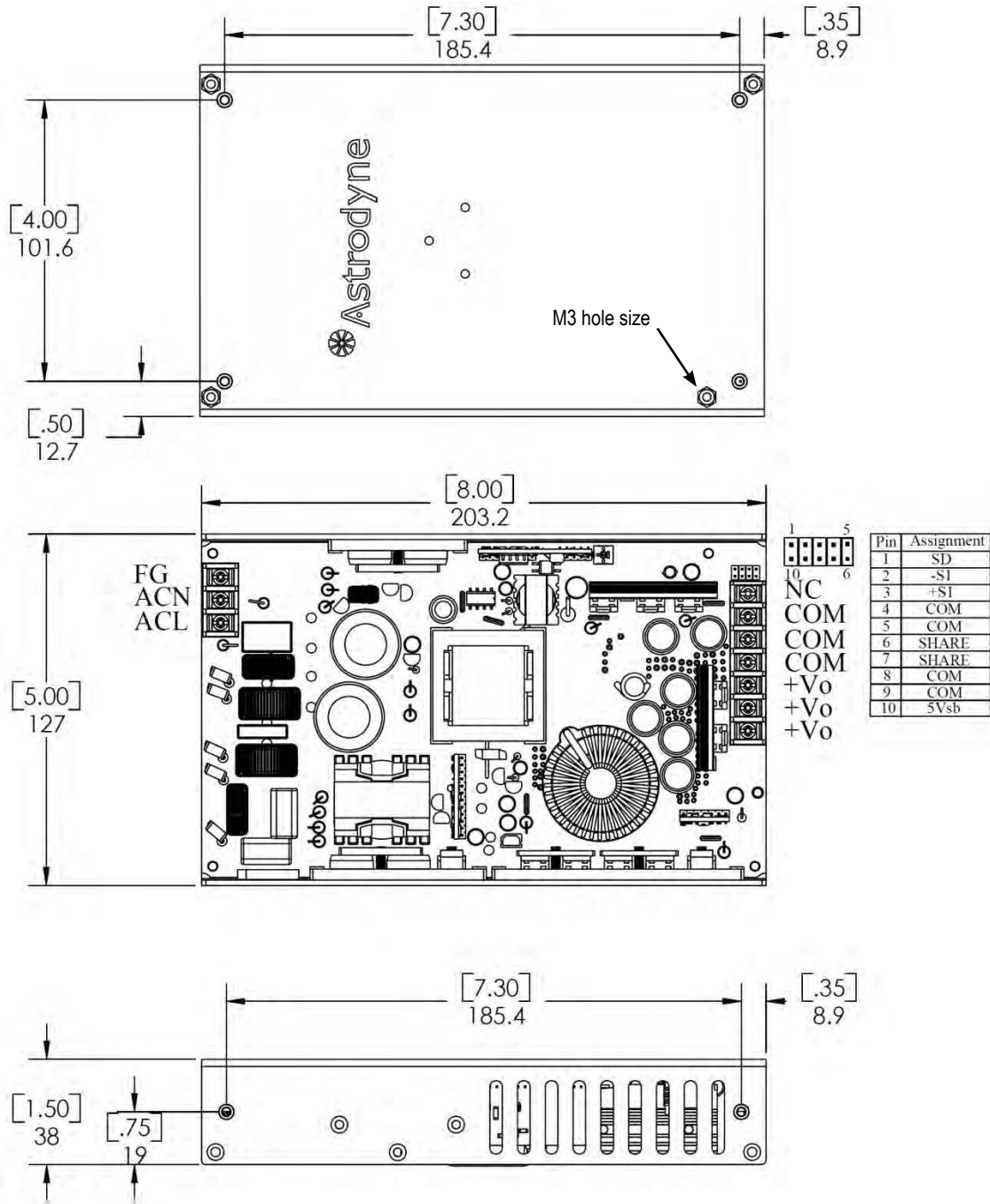
1. Open Collector, Logic "1"=On, "0"=Off. No termination with S/D pin to maintain constant "On" operation.

*All specifications are typical at nominal input, full load, and 25°C unless otherwise noted*

Medical 450 Watt Enclosed & U-Channel Power Supplies with PFC **PMMK450** series

MECHANICAL DIMENSIONS

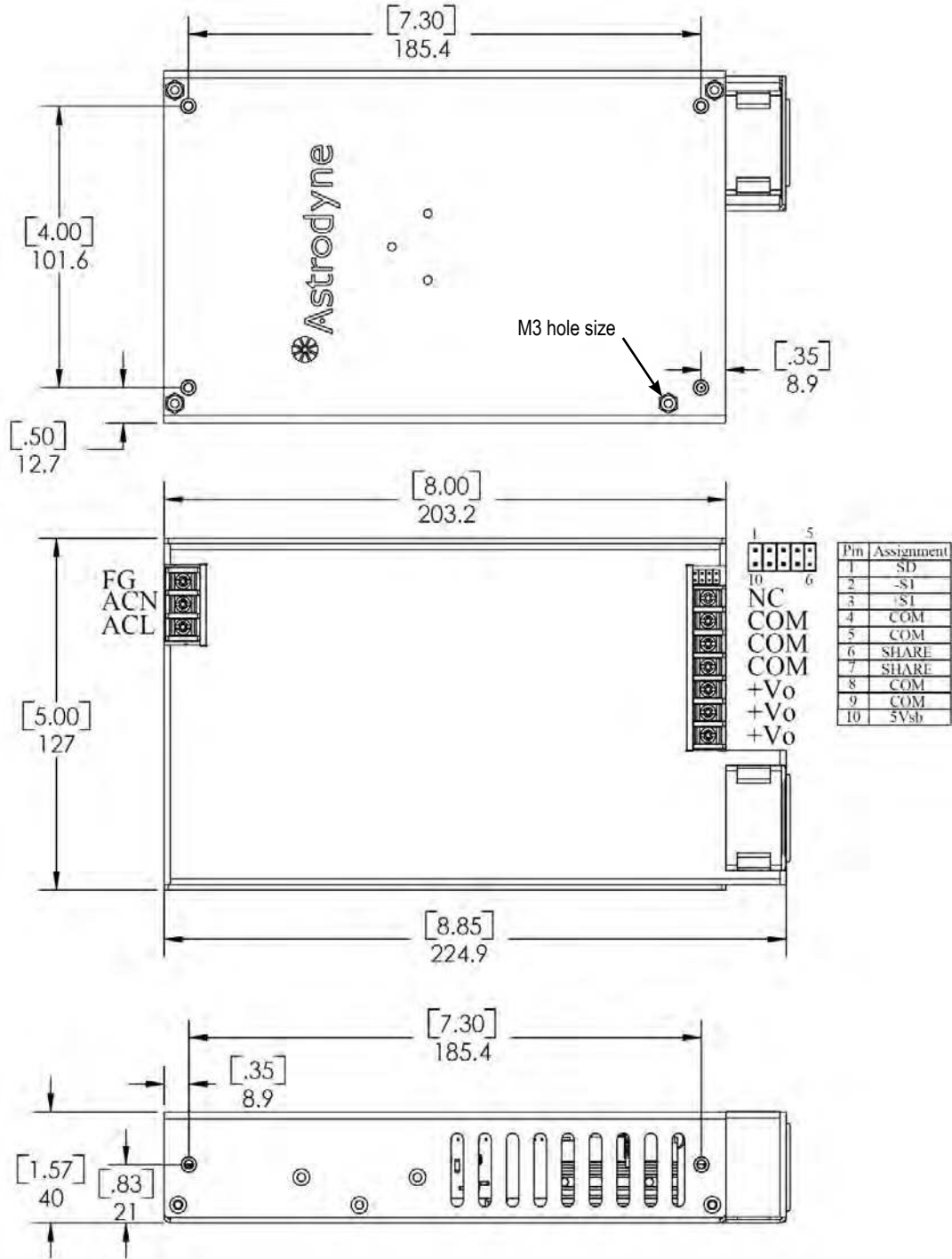
U-Bracket (PMMK450S-xxU)



Input connector : 3P/ 8.25 mm pitch terminal block  
Output connector : 7P/ 8.25 mm pitch terminal block

Medical 450 Watt Enclosed & U-Channel Power Supplies with PFC **PMMK450** series

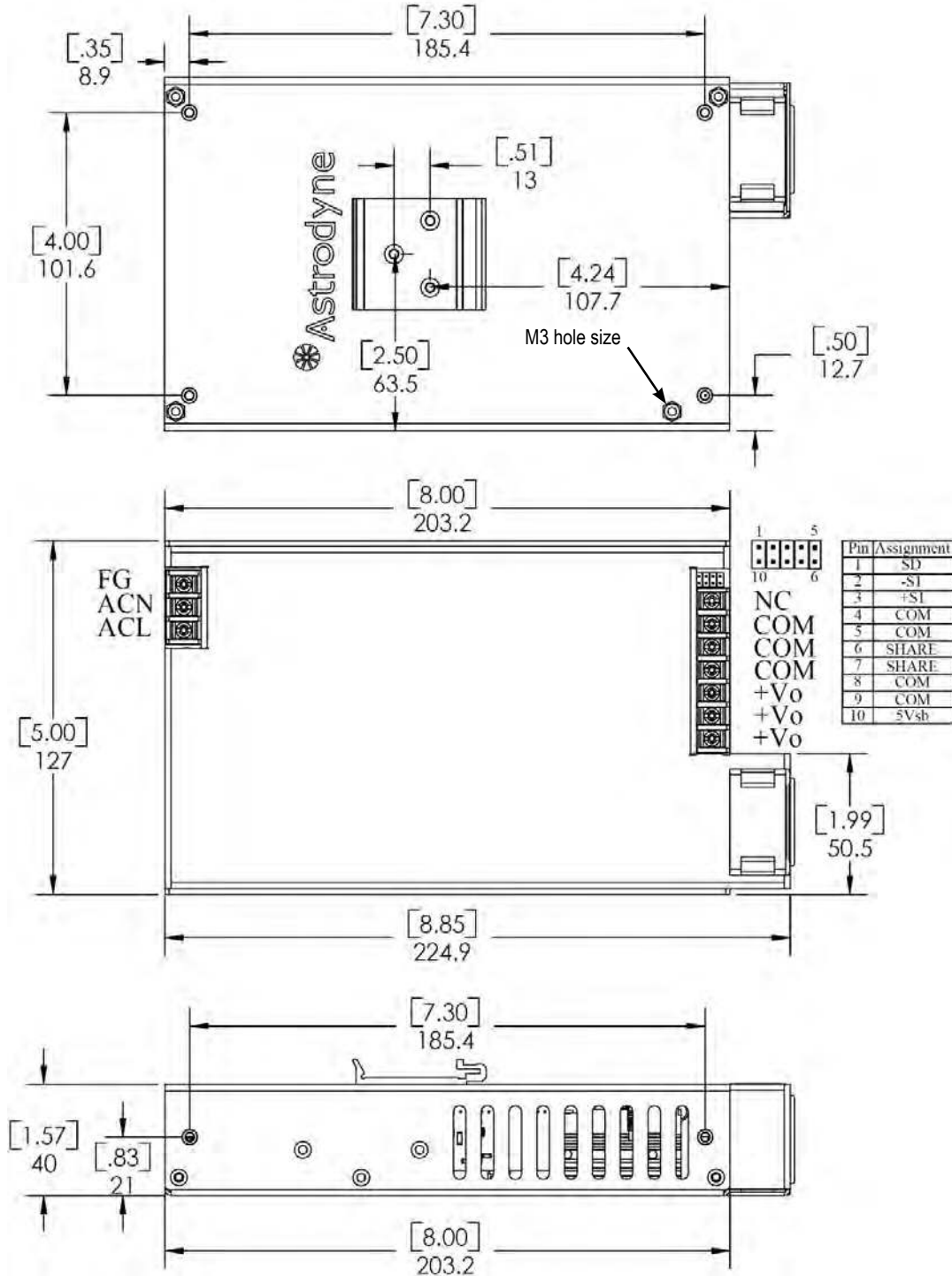
Enclosed with Fan (PMMK450S-xxE) :



Input connector : 3P/ 8.25 mm pitch terminal block  
Output connector : 7P/ 8.25 mm pitch terminal block

Medical 450 Watt Enclosed & U-Channel Power Supplies with PFC **PMMK450** series

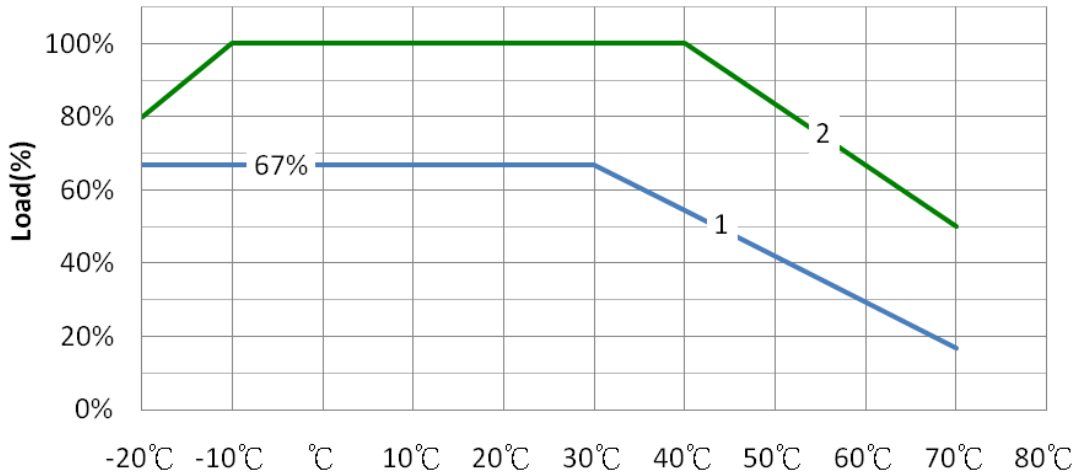
Din-rail with Fan (PMMK450S-xxD) :



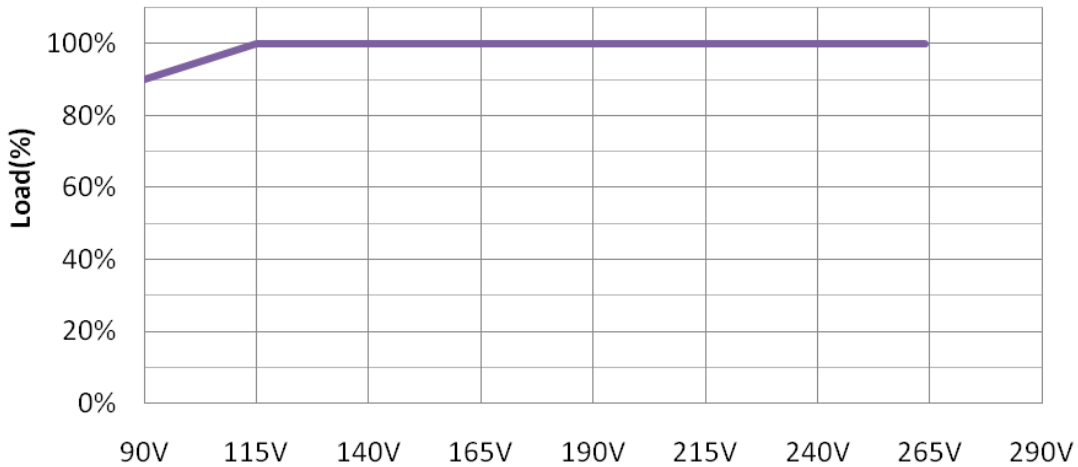
Input connector : 3P/ 8.25 mm pitch terminal block  
Output connector : 7P/ 8.25 mm pitch terminal block

U-Bracket (PMMK450S-xxU) :

Ambient Temperature Derating Curve



1. Convection air
2. Forced air cooling (30CFM air flow is required)

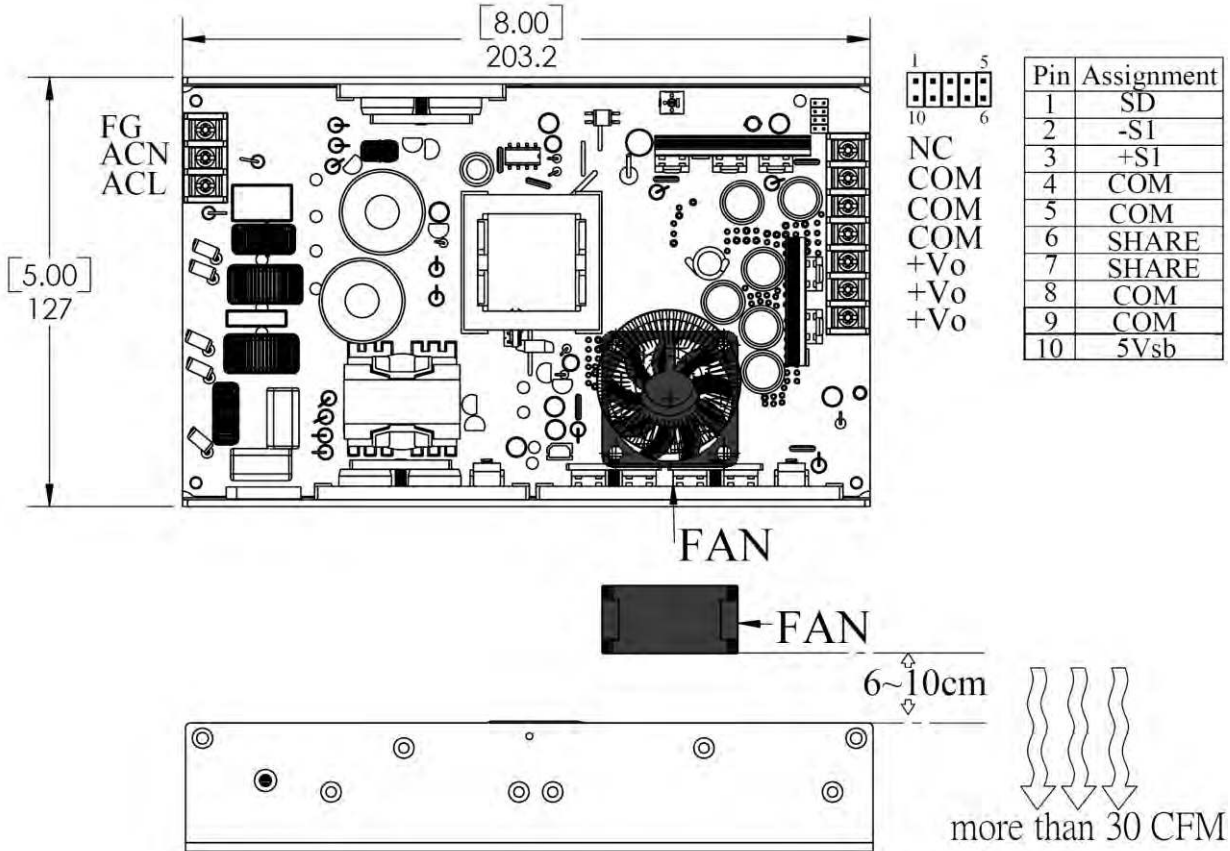


Static Characteristics: Input voltage vs. Output Loading



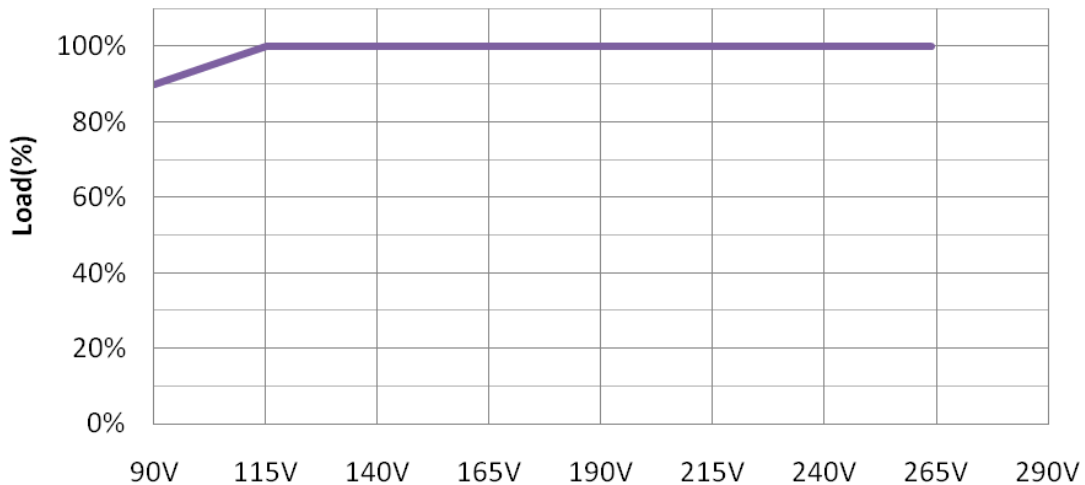
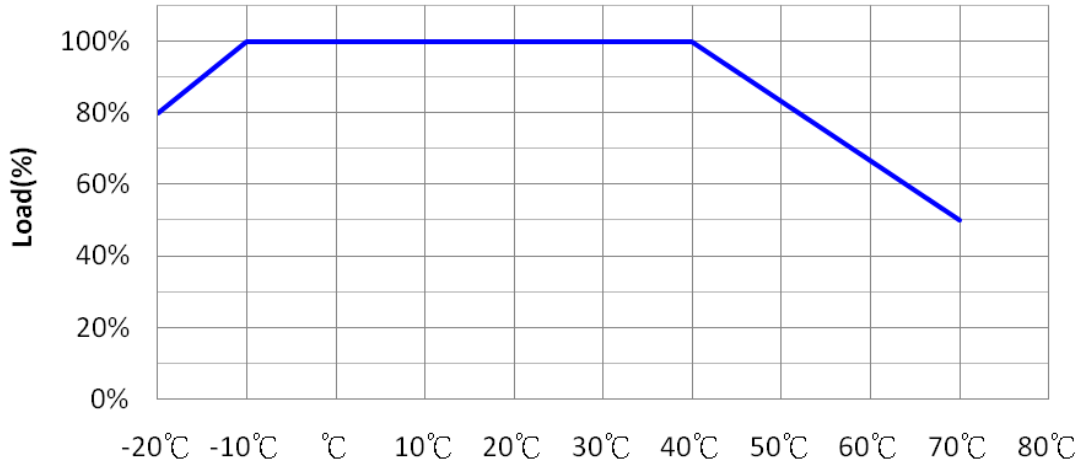
Diagram of external fan placement

U-Bracket (PMMK450S-xxU) :



Enclosed & Din-rail (PMMK450S-xxE/D) :

Ambient Temperature Derating Curve



Static Characteristics (Input voltage vs. Output Loading)



**+5Vsb Standby Power:**

SPECIFICATION \ PMMK450S-xx	5Vsb		
	Min	Nom	Max
DC OUTPUT VOLTAGE (V)	4.85	5	5.15
PRESET ACCURACY (%)		1	
OUTPUT CURRENT (A)	0	1.0	2.0
O/P NOISE (P-P, mV) *1			75
REGULATION (%) *2			1
LOAD REGULATION (%) *3		1.0	2.0

+5Vsb is a standby output voltage that is always active whenever AC power is present. +5Vsb supplies 1.0A current in normal operation and is capable of withstanding maximum 10W (2 Amps) peak power for 10 seconds. +5Vsb provides a power source for circuits that must remain operational when DC main output is in sleep/ off state. +5Vsb over current protection is built internal to its controller. 5Vsb OCP trip point is set to be within 2.5A - 5A. 5Vsb OVP is clamp.

**Parallel Operation Instructions \***

- 1.) Follow wiring diagram below
- 2.) No external oring diodes needed, oring diodes are built in with current share option
- 3.) Keep wires as short as possible to avoid noise pickup

\*Notes: Applications for increased power not to exceed 800 Watts  
Parallel operation of PMK450 not recommended for Medical Applications due to increased leakage current

