

## HPU180A series

V1.0

## 180W External Medical Grade Power Supply

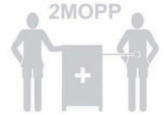
The HPU180A series of AC/DC switching mode power supplies provide 180 Watts of continuous output power. All supplies are UL94V-1 min compliant. All models meet FCC Part-18, CISPR-11 and EN55011 class B emission Limits, IEC 60601-1-2:2014 and are designed to comply with UL/cUL and conformity assessment in CE marking. All units are 100% burned in and tested.

**RoHS2**  
2011/65/EU



### FEATURES:

- \* Wide Operating Voltage, 90 to 260 VAC, 47 to 63 Hz
- \* IEC-320-C14 Input Inlet
- \* Single Output
- \* Crowbar Mode Over Voltage Protection
- \* Input to Output : 2MOPP
- \* ON/OFF SWITCH (Optional)
- \* Active Power Factor Correction
- \* High ESD immunity
- \* Suitable professional healthcare facility
- \* Low earth leakage current < 0.25mA
- \* 3 year warranty



### APPLICATIONS:

- \* Patient Monitor
- \* Ultrasound system
- \* Portable medical device
- \* Blood chemistry analyzer
- \* Medical Image

### GENERAL SPECIFICATION:

- \* **Short Circuit Protection:** Auto Recovery
- \* **Cooling:** Free Air Convection
- \* **Flammability Rating:** UL94V-1
- \* **Protection Classes:** Class I
- \* **Safety:** IEC60601-1 Edition3.1, ES60601-1:2005(R2012), CSAC22.2 NO.60601-1:14,

### APPROVALS:



### Electrical Characteristics:

Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
Vins	Safety Approval Input Voltage Range	Safety Approval & Specification in Label	100		240	VAC
Vin	Input Operate Voltage Range	Detail to see Fig.1	90		260	VAC
Fi	Input Frequency	Sine wave	47		63	Hz
PF	Power Factor Correction		0.95		1	
Po	Output Power Range	See Rating Chart			180	W
Iil	Low Line Input Current	Full Load, Vin=100VAC			2.2	A
Iih	High Line Input Current	Full Load, Vin=240VAC			0.9	A
Irl	Low Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=100VAC			60	A
Irh	High Line Input Inrush Current	Full Load, 25°C, Cool start, Vin=240VAC			120	A
Ik	Safety Ground Leakage Current	Vin=240VAC, Fi=60Hz			0.25	mA
η	Efficiency	Full Load, Vin=230VAC, Detail to see Rating Chart	See Rating Chart			
ΔVoi	Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC			1	%
OVP	Over Voltage Protection		112		132	%
OLP	Over Load Protection	Recovers automatically after fault condition is removed	110		150	%
ttr	Time of Transient Response	Full Load, Vin=110VAC			4	ms
thu	Hold-Up Time	Full Load, Vin=110VAC	See Rating Chart			
ts	Start-up time	Full Load, Vin=100~240VAC			2	s
Ris	Insulation Resistance	Primary to Secondary, 500VDC, 25°C/ 70% RH	50			MΩ
Tc	Temperature Coefficient	All Condition			±0.04	%/°C
HV	Dielectric Withstanding Voltage (P-S)	Primary to Secondary, limit current <10mA			4000	VAC
Vpg	Dielectric Withstanding Voltage (P-G)	Primary to PE, limit current <10mA			1500	VAC
EMI	EMC Emission	Compliance to EN55011 (CISPR11), EN60601-1-2	B			Class

### Environmental:

Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
To	Operating Temperature	Detail to see Fig.2 (Derate linearly from 100% load at 40°C to 50% load at 70°C)	-10		70	°C
Ts	Storage Temperature	10 ~ 95% RH	-40		85	°C
Ho	Operating Humidity	non-condensing	0		95%	RH
Hs	Storage Humidity		0		95%	RH
ESDa	Electro Static Discharge	Air Discharge, IEC61000-4-2			15	kV
ESDc	Electro Static Discharge	Contact Discharge, IEC61000-4-2			8	kV
MTBF	Mean Time Between Failure	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F	100k			h
ELEV	Operating Altitude (Elevation)	All condition			3000	m
VBR	Vibration	10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes			5	G
Vsl	Surge Voltage	Line-Neutral			1	kV
Vsg	Surge Voltage	Line-PE & Neutral-PE			2	kV

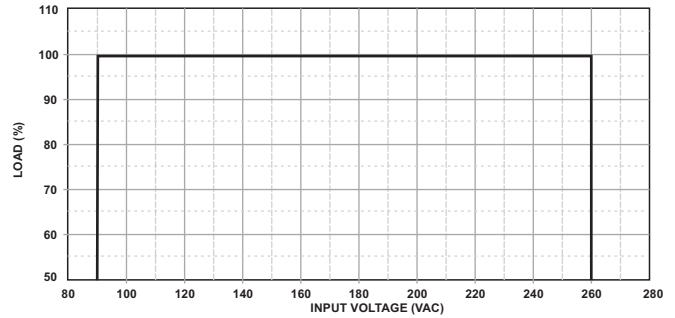
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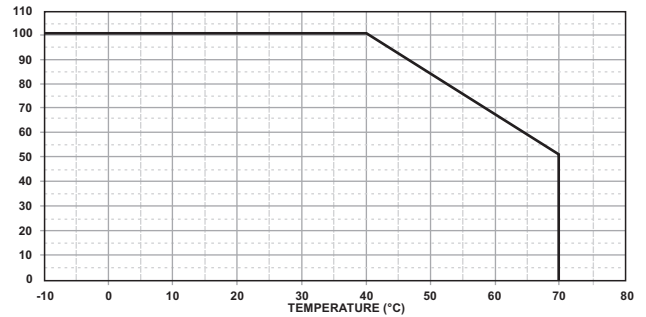
## 180W External Medical Grade Power Supply

### SPECIFICATION NOTE :

- Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
- At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
- Line regulation is defined by changing  $\pm 10\%$  of input voltage from nominal line at rated load.
- Load regulation is defined by changing  $\pm 40\%$  of measured output load from 60% rated load.
- Ripple & noise is measured by using 20MHz bandwidth limited oscilloscope and terminated each output with a 0.47uF capacitor at rated load and nominal line.
- Hold up time is measured from the end of the last charging pulse to the time which the main output drops down to low limit of main output at rated load and nominal line.
- Efficiency is measured at rated load, and nominal line.

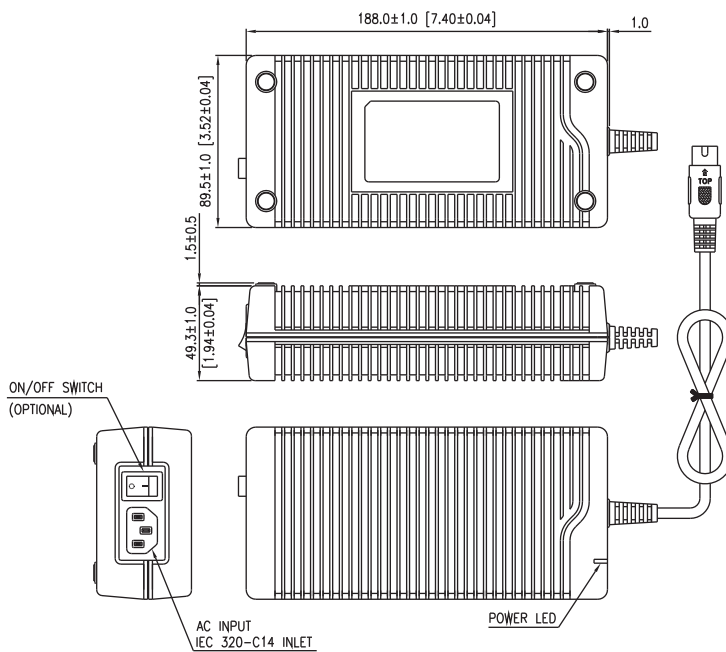


(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

### MECHANICAL DIMENSIONS: ( UNIT: mm )



### OUTPUT CABLE RECOMMEND :

- Selected output connectors and wire, please refer to Appendix.
- This series is required to use AWG#16/5C/4FT output cable.
- The regulation and efficiency will be changed by modified output cable.

### PACKING :

- Net weight: 894~952g approx.
- Optional output connectors available contact sales for details.

### Rating Chart:

MODEL NO.	Setting Voltage Range (Factory setting, can't be adjusted)	Output Current (Based on the output volt.)	Maximum Output Power	Ripple & Noise		Total Regulation	Typ. Efficiency	Typ. No Load Consumption	Hold-Up Time	Protection Mode
				(mVp-p)						
				Min.~Max. Load	NO ~Min. Load					
HPU180A-105	12.0	14.0	168	100	120	$\pm 5$	89	0.5	20	Hiccup
HPU180A-107	19.0	9.47	180	100	190	$\pm 5$	91	0.5	20	Hiccup
HPU180A-108	24.0	7.50	180	100	240	$\pm 4$	91	0.5	20	Hiccup
HPU180A-109	30.0	6.00	180	100	300	$\pm 3$	92	0.5	20	Hiccup
HPU180A-110	33.0	5.455	180	100	330	$\pm 3$	93	0.5	20	Hiccup
HPU180A-111	48.0	3.75	180	100	480	$\pm 3$	93	0.5	20	Hiccup