

## HPU180A series

V1.5

## 180W External Medical Grade Power Supply

The HPU180A series of AC/DC switching mode power supplies provide 180 Watts of continuous output power. All models meet FCC Part-18, CISPR-11 and EN55011 class B emission Limits, IEC 60601-1-2 and are designed to comply with UL/cUL and conformity assessment in CE marking. All units pass burn-in test at full load condition.



### 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
- \* **Protection Classes:** Class I
- \* **Safety:** IEC 60601-1 Edition 3.1, IEC 60601-1 Edition 3.2, ANSI/AAMI ES60601-1, CSAC22.2 NO.60601-1, EN 60601-1

### APPROVALS:



### Electrical Characteristics:

Characteristic	Condition	Min.	Typ.	Max.	Unit
Safety Approval Input Voltage Range	Safety Approval & Specification in Label	100		240	VAC
Input Operate Voltage Range	Detail to See Fig.1	90		260	VAC
Input Frequency	Sine Wave	47		63	Hz
Power Factor Correction		0.95		1	
Output Power Range	See Rating Chart			180	W
Low Line Input Current	Full Load, Vin=100VAC		2.2		A
High Line Input Current	Full Load, Vin=240VAC		0.9		A
Low Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=100VAC			60	A
High Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=240VAC			120	A
Safety Ground Leakage Current	Vin=240VAC, Fi=60Hz			0.25	mA
Efficiency	Full Load, Vin=230VAC, Detail to See Rating Chart	See Rating Chart			
Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC			1	%
Over Voltage Protection		112		132	%
Over Load Protection	Recovers Automatically After Fault Condition is Removed	110		150	%
Time of Transient Response	Io=Full Load to Half Load, Vin=110VAC			4	ms
Hold-Up Time	Full Load, Vin=110VAC	See Rating Chart			
Start-up time	Full Load, Vin=100~240VAC			2	s
Insulation Resistance	Primary to Secondary, 500VDC, 25°C/ 70% RH	50			MΩ
Temperature Coefficient	All Condition			±0.04	%/°C
Dielectric Withstanding Voltage (P-S)	Primary to Secondary, Limit Current <10mA			4000	VAC
Dielectric Withstanding Voltage (P-G)	Primary to PE, Limit Current <10mA			1500	VAC
EMC Emission	Compliance to EN55011 (CISPR11), EN60601-1-2	B			Class

### Environmental:

Characteristic	Condition	Min.	Typ.	Max.	Unit
Operating Temperature	Detail to See Fig.2 (Derate Linearly from 100% Load at 40°C to 50% Load at 70°C)	-10		70	°C
Storage Temperature	10 ~ 95% RH	-40		85	°C
Operating Humidity	Non-Condensing	0		95%	RH
Storage Humidity		0		95%	RH
Electro Static Discharge	Air Discharge, IEC61000-4-2			15	kV
Electro Static Discharge	Contact Discharge, IEC61000-4-2			8	kV
Mean Time Between Failure	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F	200k			h
Operating Altitude (Elevation)	All Condition			3000	m
Vibration	10 ~ 500Hz, 10min./1Cycle, 60min. Each Along X, Y, Z Axes			5	G
Surge Voltage	Line-Neutral			1	kV
Surge Voltage	Line-PE & Neutral-PE			2	kV

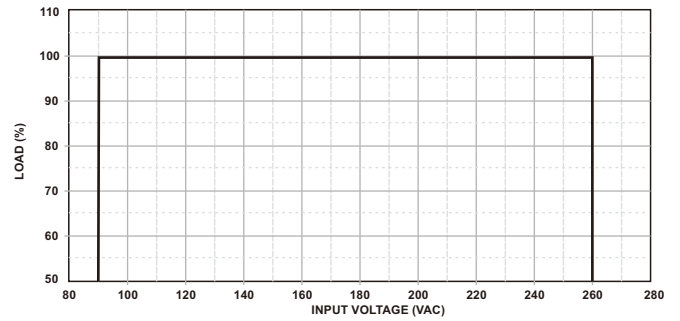
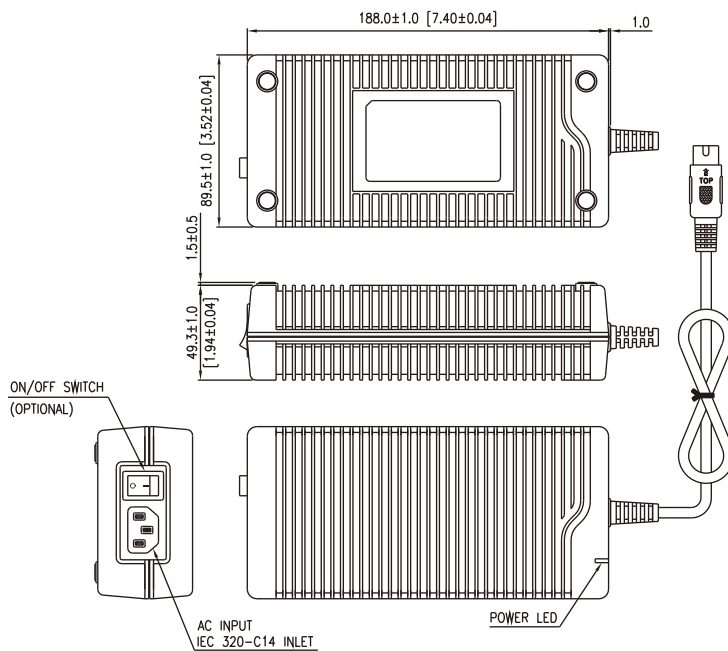
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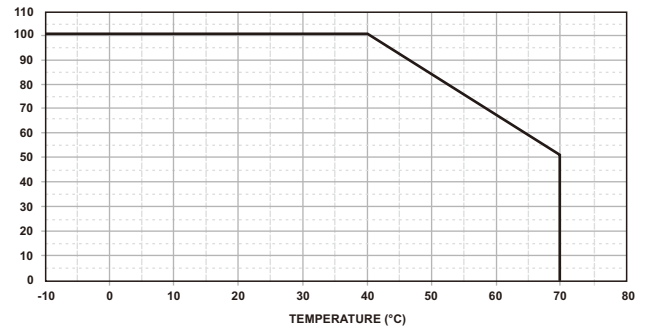
### SPECIFICATION NOTE :

1. Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
2. At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
3. Line regulation is defined by changing  $\pm 10\%$  of input voltage from nominal line at rated load.
4. Load regulation is defined by changing  $\pm 40\%$  of measured output load from 60% rated load.
5. The ripple is measured from peak to peak with a bandwidth-limit of 20MHz (Measured at the output connector with a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor).
6. 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.
7. Efficiency is measured at rated load, and nominal line.

### MECHANICAL DIMENSIONS: ( UNIT: mm )



(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

### OUTPUT CABLE RECOMMEND :

1. This series is required to use AWG#16/5C/4FT output cable.
2. The regulation and efficiency will be changed by modified output cable.

NET WEIGHT : 894~952g approx.

### Rating Chart:

MODEL NO.	Setting Voltage Range (Factory setting, can't be adjusted)	Output Current (Based on the output volt.)	Maximum Output Power (W)	Ripple & Noise		Total Regulation (%)	Typ. Efficiency (%)	Typ. No Load Consumption (W)	Hold-Up Time (ms)	Protection Mode
				(mVp-p)						
	(VDC)	(A)	(W)	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	5.45	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

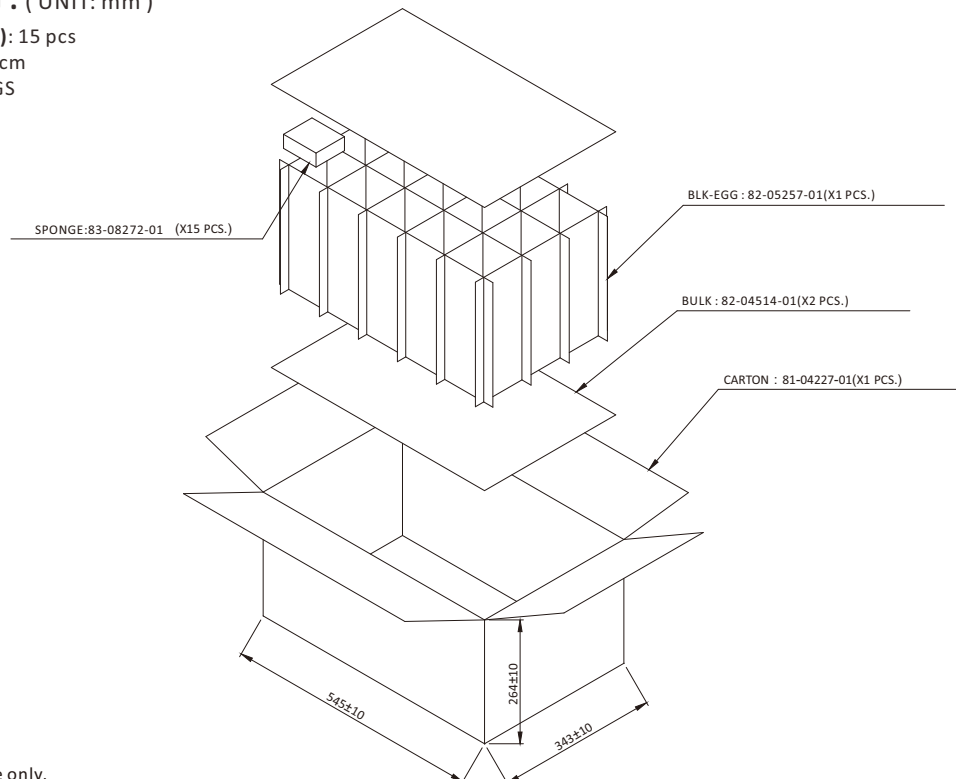
### EMC Specifications:

		EMISSION	
ITEM		STANDARD	RESULT
Conducted		EN55011	CLASS B
Radiated		EN55011	CLASS B
Harmonics		EN61000-3-2	CLASS A
Flicker		EN61000-3-3	PASS

	ITEM	STANDARD	RESULT	CRITERION	
IMMUNITY	ESD	EN61000-4-2	15KV air discharge, 8KV contact discharge	A	
	RS	EN61000-4-3	PASS	A	
	EFT	EN61000-4-4	2KV	A	
	SURGE	EN61000-4-5	1KV line to line, 2KV line to ground	A	
	CS	EN61000-4-6	3Vrms, 6Vrms	A	
	PFMF	EN61000-4-8	PASS	A	
	Voltage dips		EN61000-4-11	i) 0% reduction for 0.5 cycle at 50Hz	B
				ii) 0% reduction for 1 cycle at 50Hz	B
iii) 70% reduction for 25/30 cycles at 50/60Hz				C (240VAC)	
Voltage interruptions		EN61000-4-11	0% reduction for 250/300 cycles at 50/60Hz	C	

### STANDARD PACKAGING : ( UNIT: mm )

- \* Power Supplies per Box (full box): 15 pcs
- \* Box Dimensions: L55\*W34\*H26 cm
- \* Gross Weight (full box): 15.62 KGS
- \* Packaging Part No: 84-13565-01



\* Note the above packing is for reference only, please contact sales for a confirm packing information.

### Standard Connector:

Barrel Female Plug	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P05B	P1,P2,P4=RTN P3,P5=OUT SHIELD=GND	UL2464 + CORE	105~111:16AWG*5C/4FT

### Optional Connector:

Barrel Female Plug	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P05F	P3,P5,P7,P8=OUT P1,P2,P4,P6=RTN SHIELD=GND	UL2464 + CORE	105~111:16AWG*5C/4FT

\* Optional output connectors available contact sales for details.