

## HPU32A series

V1.6

## 30W External Medical Grade Power Supply

The HPU32A series of AC/DC switching mode power supplies provide 30 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, TUV T-mark and conformity assessment in CE marking. All units pass burn-in test at full load condition.

### FEATURES:

- \* Wide Operating Voltage, 80 to 275 VAC, 47 to 63 Hz
- \* IEC-320-C18 Input Inlet
- \* Single Output
- \* Crowbar Mode Over Voltage Protection
- \* Input to Output : 2MOPP
- \* High ESD Immunity
- \* Suitable for Professional Healthcare Facility
- \* 3-Year Warranty



### APPLICATIONS:

- \* Breathing Therapy Device
- \* Blood Pressure System
- \* Portable Medical Device
- \* ECG \ EEG
- \* Medical Tablet

### GENERAL SPECIFICATION:

- \* **Short Circuit Protection:** Auto Recovery
- \* **Cooling:** Free Air Convection
- \* **Protection Classes:** Double Insulated, Class II
- \* **Safety:** IEC60601-1 Edition 3.1, IEC60601-1 Edition 3.2, ANSI/AAMI ES60601-1, CSAC22.2 NO.60601-1, EN60601-1

### 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 (Derate Linearly from 100% Load at 90VAC to 80% Load at 80VAC)	80		275	VAC
Input Frequency	Sine Wave	47		63	Hz
Output Power Range	See Rating Chart			30	W
Low Line Input Current	Full Load, Vin=100VAC		0.6		A
High Line Input Current	Full Load, Vin=240VAC		0.4		A
Low Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=100VAC			28	A
High Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=240VAC			67	A
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=100VAC	See Rating Chart			
Start-up time	Full Load, Vin=100~240VAC			2	s
Temperature Coefficient	All Condition			±0.04	
Dielectric Withstanding Voltage (P-S)	Primary to Secondary, Limit Current <10mA			4000	VAC
EMC Emission	Compliance to EN55011 (CISPR11), EN60601-1-2	B			Class

### Environmental:

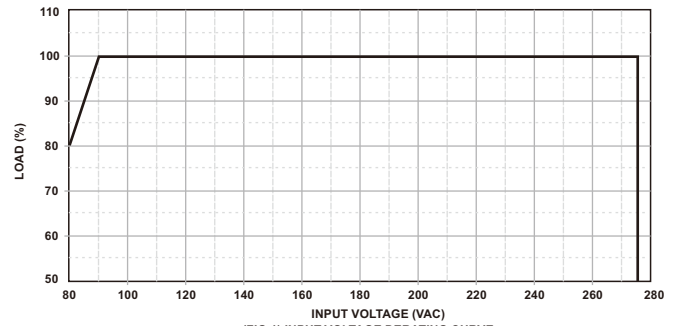
Characteristic	Condition	Min.	Typ.	Max.	Unit
Operating Temperature	Detail to see Fig.2 (Derate Linearly from 100% Load at 40°C to 50% Load at 70°C)	-10		70	°C
Storage Temperature	10 ~ 95% RH	-40		85	°C
Operating Humidity	Non-Condensing	0		95%	RH
Storage Humidity		0		95%	RH
Electro Static Discharge	Air 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

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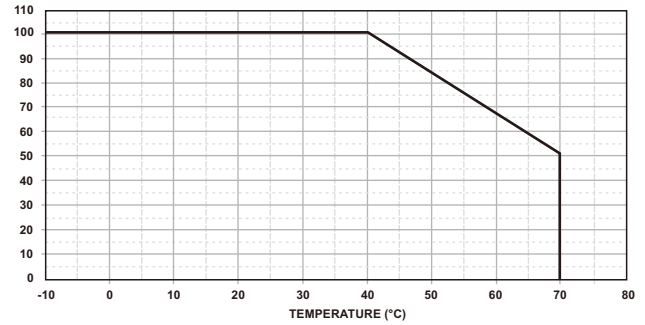
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### SPECIFICATION NOTE :

- 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.
- 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).
- 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.

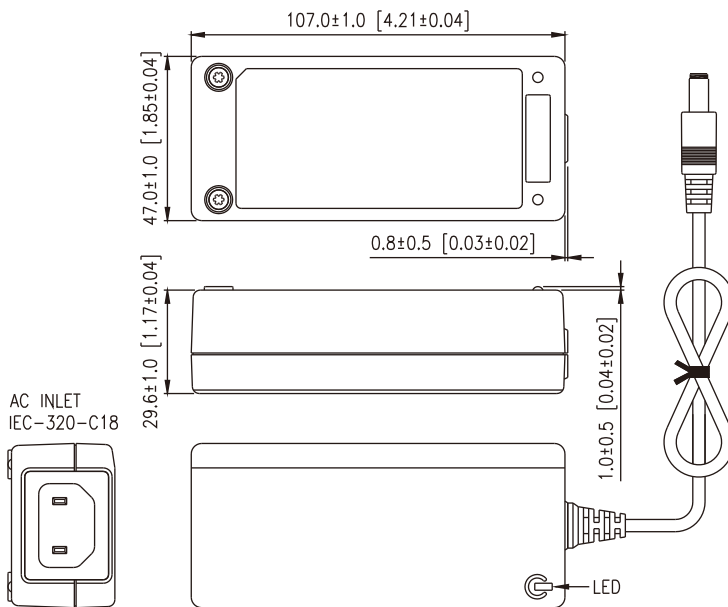


(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

### MECHANICAL DIMENSIONS: ( UNIT: mm [inch] )



### OUTPUT CABLE RECOMMEND :

- Selected output connectors and wire, please refer to Appendix.
- HPU32A-102~104 are required to use AWG#16/ 4FT output cable.
- HPU32A-105~111 are required to use AWG#18/ 6FT output cable.
- The regulation and efficiency will be changed by modified output cable.

NET WEIGHT : 265~280g 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 (mVp-p)	Total Regulation (%)	Typ. Efficiency (%)	Typ. No Load Consumption (W)	Hold-Up Time (ms)	Protection Mode
	min	max	min	max							
	(VDC)	(VDC)	(A)	(A)							
HPU32A-102	5.0	5.99	3.33	4.00	20	50	±5	78.8	0.3	16	Hiccup
HPU32A-103	6.0	8.0	2.87	3.83	23	60	±5	80.0	0.3	12	Hiccup
*HPU32A-104	8.0	11.0	2.45	3.38	27	80	±5	81.0	0.3	12	Hiccup
HPU32A-105	11.0	13.0	2.30	2.74	30	100	±5	83.5	0.3	12	Hiccup
HPU32A-106	13.0	16.0	1.88	2.30	30	100	±5	83.5	0.3	12	Hiccup
*HPU32A-107	16.0	21.0	1.43	1.88	30	100	±5	85.0	0.3	12	Hiccup
HPU32A-108	21.0	27.0	1.11	1.43	30	100	±3	86.0	0.3	12	Hiccup
*HPU32A-109	27.0	33.0	0.91	1.11	30	100	±3	87.0	0.3	12	Hiccup
HPU32A-110	33.0	40.0	0.75	0.91	30	100	±3	87.0	0.3	12	Hiccup
HPU32A-111	40.0	48.0	0.63	0.75	30	100	±3	87.0	0.3	12	Hiccup

[\*] =MOQ is required. Please contact sales.

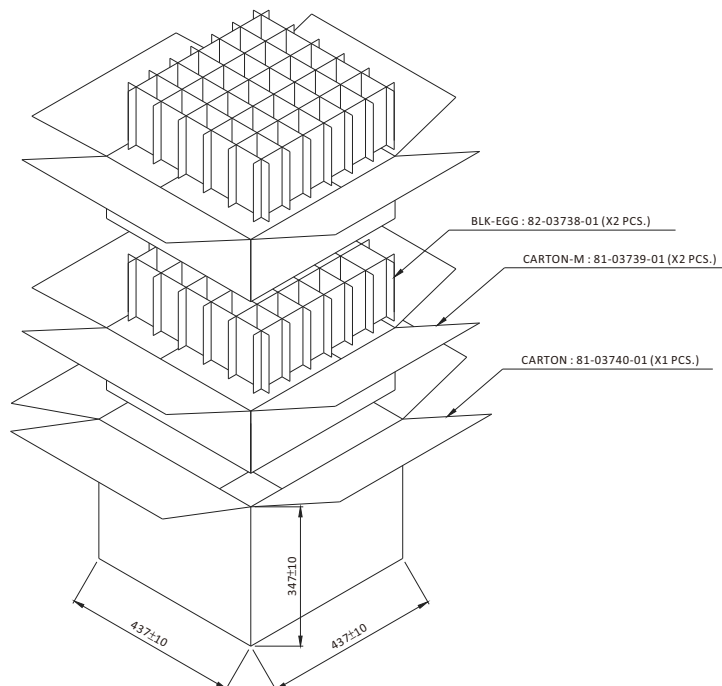
### EMC Specifications:

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) 100% reduction for 0.5 cycle at 50Hz	A
			ii) 100% reduction for 1 cycle at 50Hz	A
			iii) 30% reduction for 25/30 cycles at 50/60Hz	A ( 240VAC)
Voltage interruptions	EN61000-4-11	100% reduction for 250/300 cycles at 50/60Hz	B	

### STANDARD PACKAGING : ( UNIT: mm )

- \* Power Supplies per Box (full box): 60 pcs
- \* Box Dimensions: L44\*W44\*H34 cm
- \* Gross Weight (full box): 13.67 KGS
- \* Packaging Part No: 84-03741-01



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### Standard Connector:

Barrel Female Plug	Plug PN	OD	ID	L	Standard Connection(Default)	Wire Material	Wire Type
	P01K	5.5	2.1	11	Center=OUT(+) Sleeve=RTN(-)	UL2464 UL1185 SPT-1	102~104:16AWG/4FT 105~111:18AWG/6FT

### Optional Connector:

Barrel Female Plug	Plug PN	OD	ID	L	Standard Connection(Default)	Wire Material	Wire Type
	P01J	5.5	2.1	9.5	Center=OUT(+) Sleeve=RTN(-)	UL2464 UL1185 SPT-1	102~104:16AWG/4FT 105~111:18AWG/6FT
	P01M	5.5	2.5	9.5			
	P01N	5.5	2.5	11			

Barrel Angle Female Plug	Plug PN	OD	ID	L	Standard Connection(Default)	Wire Material	Wire Type
	P02J	5.5	2.1	9.5	Center=OUT(+) Sleeve=RTN(-)	UL2464 UL1185 SPT-1	102~104:16AWG/4FT 105~111:18AWG/6FT
	P02K	5.5	2.1	11			
	P02M	5.5	2.5	9.5			
	P02N	5.5	2.5	11			

POWER DIN-4 + Lock	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P09B	P1,P3=OUT P2,P4,SHIELD=RTN	UL2464 UL1185	102~104:16AWG/4FT 105~111:18AWG/6FT

DIN-5 MALE PLUG	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P05B	P1,P2,P4=RTN P3,P5=OUT	UL2464	102~104:16AWG/4FT 105~111:18AWG/6FT

MICRO USB B TYPE	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P88D	P1=OUT P2,P3,P4=N/C P5=RTN	UL1185	107~109:18AWG/4FT Rated Voltage:30V

USB TYPE-C	Plug PN	Standard Connection(Default)	Wire Material	Wire Type
	P88H	A4,A9,B4,B9=OUT A1,A12,B1,B12,SHIELD=RTN A6,A7=SHORT B6,B7=SHORT A2,A3,A5,A8,A10,A11, B2,B3,B5,B8,B10,B11=N/C	UL1185	107~109:18AWG/4FT Rated Voltage:30V

\* Optional output connectors available contact sales for details.