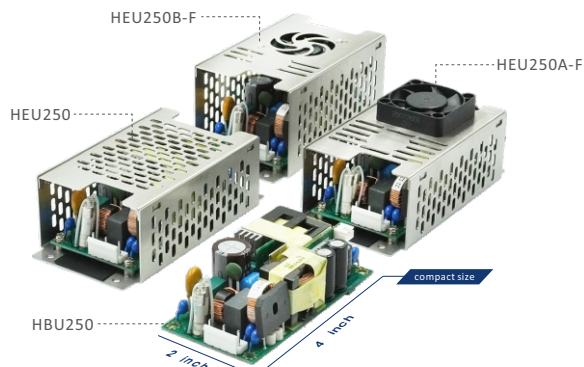


HBU250 / HEU250 series

V1.0

HBU250 / HEU250 series is a power supply with medical and ITE safety approvals that provides 250 Watts output power and is available in 12V-48V output with options for open-frame (2"x4"x1.23") and cover with fan. The series features a wide operating temperature of -40°C to +70°C.



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	See Fig.1 for Detail	85		264	VAC
Fi	Input Frequency	Sine Wave	47		63	Hz
PF	Power Factor Correction	Io=Full Load, Vin=Vins	0.9		1	
Po	Output Power Range	See Rating Chart			250	W
Iil	Low Line Input Current	Full Load, Vin=100VAC		3.1		A
Iih	High Line Input Current	Full Load, Vin=240VAC		1.3		A
Irl	Low Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=100VAC			20	A
Irh	High Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=240VAC			50	A
Ik	Safety Ground Leakage Current	Vin=240VAC, Fi=60Hz		0.25		mA
Eff	Efficiency	Full Load, Vin=230VAC, See Rating Chart for Detail	See Rating Chart			
ΔVoi	Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC			1	%
OTP	Over Temperature Protection	Main Nominal Output, Recovers automatically when the fault condition is removed				
OVP	Over Voltage Protection	Main Nominal Output, Latch Protection	112		132	%
OLP	Over Load Protection	Recovers automatically when the fault condition is removed @250W	120		150	%
ttr	Time of Transient Response	Io=Full Load to Half Load, Vin=110VAC			4	ms
thu	Hold-Up Time	Full Load, Vin=110VAC@250W			10	ms
ts	Start-Up Time	Full Load, Vin=100~240VAC		1		s
Ris	Insulation Resistance		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			2828	VAC
EMI	EMC Emission	Compliant with EN55011 (CISPR11), EN60601-1-2, EN55032(CISPR 32)	B			Class

Environmental:

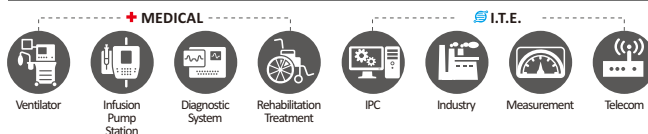
Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
To	Operating Temperature	See Fig.2 for Detail (Derate linearly from 100% load at 50°C to 50% load at 70°C)	-40		70	°C
Ts	Storage Temperature	10 ~ 95% RH	-40		85	°C
Ho	Operating Humidity	Non-Condensing	0		95%	RH
Hs	Storage Humidity		0		95%	RH
ESDa	Electro 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, Nominal Line, Calculated per MIL-HDBK-217F	300k			h
ELEV	Operating Altitude (Elevation)				5000	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

FEATURES:

- * Wide Operating Voltage, 85 to 264VAC, 47 to 63 Hz
- * Single Output from 12V to 48V
- * Protection: OVP, OLP, OTP, SCP
- * Size : 2"x4"x1.2", 25.41W/in³
- * Input to Output:2MOPP
- * High Surge Immunity
- * Efficiency Up to 93%
- * Peak 300W(90 to 264 VAC)(See FIG.3 On Page 2)
- * 3-Year Warranty for Power Supply



APPLICATIONS:

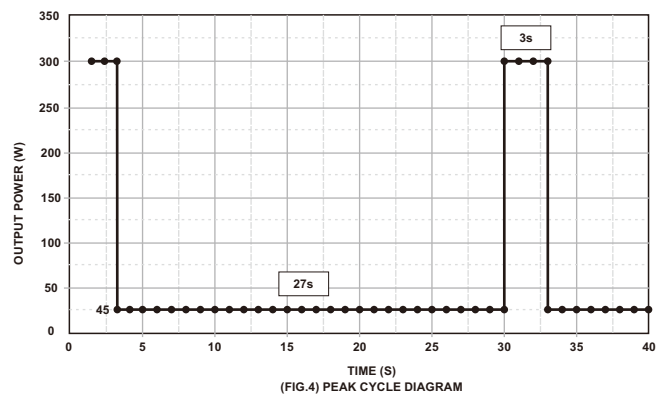
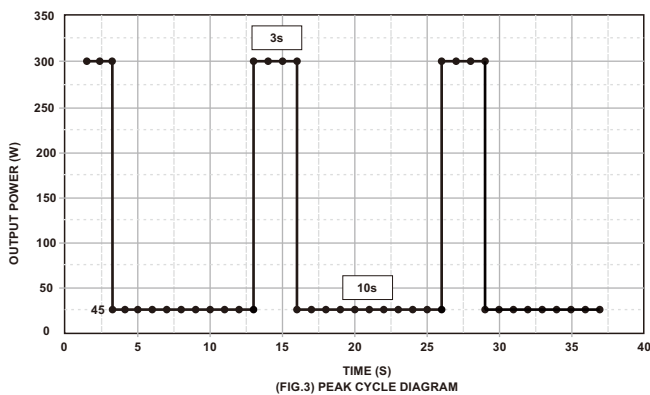
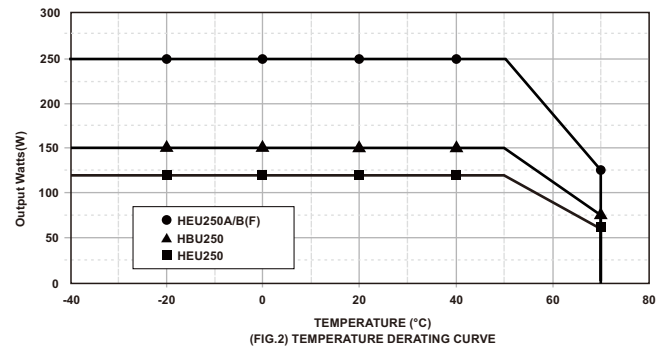
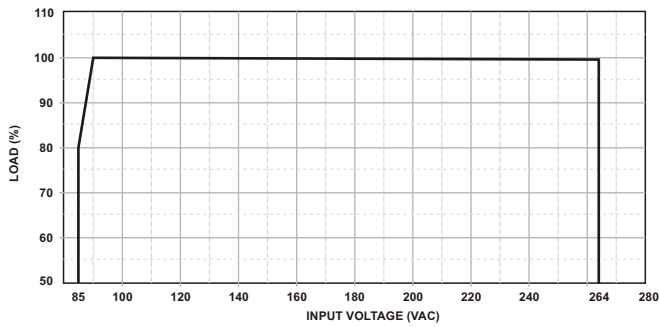


GENERAL SPECIFICATION:

- * 150W full load at free air convection, 250W with 8CFM forced air.
- * Protection Classes: Class I or Class II (See specification Note 9. at page 2)
- * Safety: IEC62368-1 Edition2.0, UL62368-1, CAN/CSA-C22.2 NO.62368-1-14, EN62368-1:2014, IEC60601-1 Edition3.2, IEC 60601-1 Edition 3.1, ES60601-1:2005(R2012), CAN/CSA-C22.2 NO.60601-1:14, EN60601-1:2016/A1:2013

SPECIFICATION NOTE :

- HEU250A-F and HEU250B-F series support a peak load 3 sec. max of 300 W for 3 seconds in every 13 seconds.(Refer FIG 3.)
- HBU250 and HEU250 series support a peak load 3 sec. max of 300 W for 3 seconds in every 30 seconds.(Refer FIG 4.)
- 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.
- Compliance with the requirement of EMC (Class II equipment) shall be insert appropriate ferrite core, please contact us for more information.



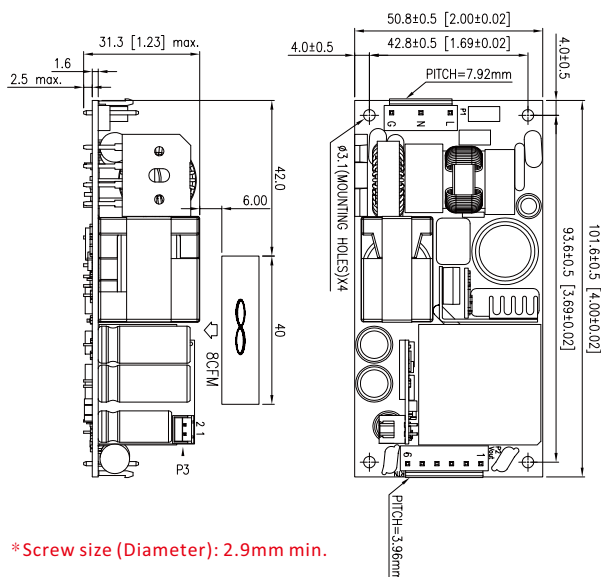
EMC SPECIFICATIONS:

EMISSION		
ITEM	STANDARD	RESULT
Conducted	EN55011, EN55032	CLASS B
Radiated	EN55011, EN55032	CLASS B
Harmonics	EN61000-3-2	CLASS A, CLASS D
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	Power line 2KV, 5 or 100KHz	A
	SURGE	EN61000-4-5	1KV line to line 2KV line to PE	A
	CS	EN61000-4-6	3Vrms, 6Vrms	A
	PFMF	EN61000-4-8	30A/m, 50Hz	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
	Voltage interruptions	EN61000-4-11	100% reduction for 250/300 cycles at 50/60Hz	B

MECHANICAL DIMENSIONS: (UNIT: mm [inch])

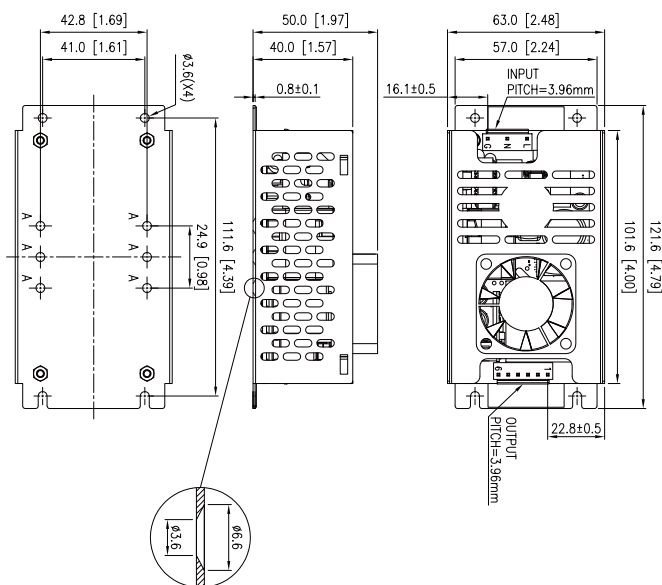
NET WEIGHT: 200g approx.



*Screw size (Diameter): 2.9mm min.

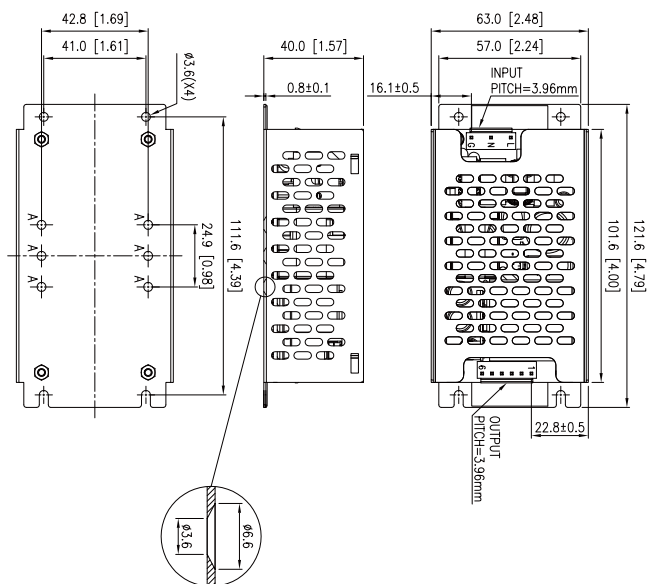
HEU250A-F

NET WEIGHT: 330g approx.



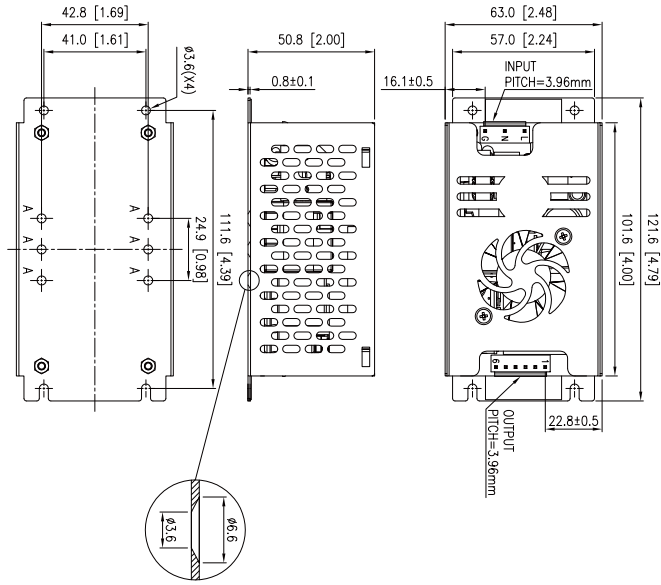
* For the rail mount option, contact our sales.

NET WEIGHT: 325g approx.



HEU250B-F

NET WEIGHT: 340g approx.



PIN CHART

MODEL	Connector Definition	PIN					
		1	2	3	4	5	6
HBU250 HEU250	P2 Single Output	OUT	OUT	OUT	RTN	RTN	RTN
	P3 Fan Output	OUT	RTN				
HEU250A-F HEU250B-F	P2 Single Output	OUT	OUT	OUT	RTN	RTN	RTN

OUTPUT CABLE REMARK :

1. Input connector mates with JST housing VHR-5N and JST SVH series crimp terminal.
2. Output connector mates with JST housing VHR-6N and JST SVH series crimp terminal.
3. Fan connector mates with JOINT_TECH housing A2501H-02P-N and JOINT A2501-XX-A series crimp terminal.
4. Fan comes with a 1-year warranty. The specifications of the fan are: (1) DC FAN, YEN SUN, #FD124010EB (2) DC FAN, SUNON, MF40101V1-10000-A99

Rating Chart - HBU250 :

MODEL NO.	Voltage Range		Output Current			Maximum Output Power	Ripple & Noise (Vo1)	Load regulation (Vo1)	Typ. No Load Consumption	Typ. Efficiency
	Vo1	Fan Output	Vo1		Fan Output					
			Max1	Max2						
	(VDC)	(VDC)	(A)	(A)	(A)	(W)	(mVp-p max.)	(%)	(W)	(%)
HBU250-105	12.0	12.0	12.50	20.83	0.5	250	108	±3	0.21	91
HBU250-106	15.0	12.0	10.00	16.66	0.5	250	135	±3	0.21	91
HBU250-107	19.0	12.0	7.89	13.15	0.5	250	170	±3	0.21	91
HBU250-108	24.0	12.0	6.25	10.41	0.5	250	210	±3	0.21	92
HBU250-109	30.0	12.0	5.00	8.32	0.5	250	270	±3	0.21	92
HBU250-110	36.0	12.0	4.16	6.94	0.5	250	300	±3	0.21	93
HBU250-111	48.0	12.0	3.12	5.20	0.5	250	300	±3	0.21	93

* With 8 CFM Forced Air to max load

* Max.1: Convection cool Max.2: Forced Air

* HBU250-105~107 0~10% Load ripple ≤240mVp-p ; HBU250-108~111 0~10% Load ripple ≤1% Vo1

* Under convection cool, fan output cannot be used.

* Vo1 min. load = 5% Max.2 load

* Temperature controlled fan output voltage: 7V-12V.

Rating Chart - HEU250 :

MODEL NO.	Voltage Range	Output Current	Maximum Output Power	Ripple & Noise	Load regulation	Typ. No Load Consumption	Typ. Efficiency
	(VDC)	(A)	(W)	(mVp-p max.)	(%)	(W)	(%)
HEU250-105	12.0	10.00	120	108	±3	0.21	91
HEU250-106	15.0	8.00	120	135	±3	0.21	91
HEU250-107	19.0	6.31	120	170	±3	0.21	91
HEU250-108	24.0	5.00	120	210	±3	0.21	92
HEU250-109	30.0	4.00	120	270	±3	0.21	92
HEU250-110	36.0	3.33	120	300	±3	0.21	93
HEU250-111	48.0	2.50	120	300	±3	0.21	93

* HBU250-105~107 0~10% Load ripple ≤240mVp-p ; HBU250-108~111 0~10% Load ripple ≤1% Vo

* HEU250 series output for fan cannot be used.

Rating Chart - HEU250A-F / HEU250B-F :

MODEL NO.	Voltage Range	Output Current	Maximum Output Power	Ripple & Noise	Load regulation	Typ. No Load Consumption	Typ. Efficiency
	(VDC)	(A)	(W)	(mVp-p max.)	(%)	(W)	(%)
HEU250A-105F HEU250B-105F	12.0	20.83	250	108	±3	3	91
HEU250A-106F HEU250B-106F	15.0	16.66	250	135	±3	3	91
HEU250A-107F HEU250B-107F	19.0	13.15	250	170	±3	3	91
HEU250A-108F HEU250B-108F	24.0	10.41	250	210	±3	3	92
HEU250A-109F HEU250B-109F	30.0	8.32	250	270	±3	3	92
HEU250A-110F HEU250B-110F	36.0	6.94	250	300	±3	3	93
HEU250A-111F HEU250B-111F	48.0	5.20	250	300	±3	3	93

* With 8 CFM Forced Air

* 0 ~ 10% Load ripple ≤ 1% Vo

