

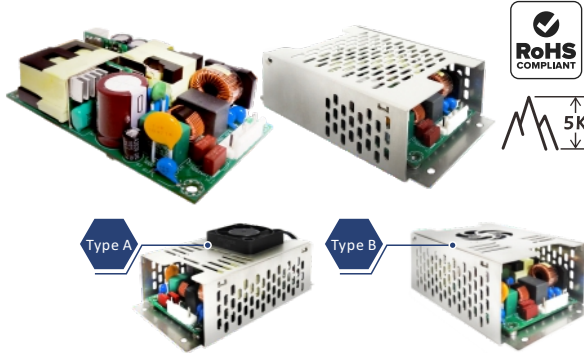
HBU250/HEU250 series v1.0

250W Medical Power Supply

HBU250/HEU250 series, an open frame size of 2"x4"x1.2", are medical and ITE safety approved. They feature a broad input voltage range of 85~264VAC, 25.41W/in³ power density, 93% efficiency performance, a wide range of operating temperatures from -40 to +70°C, and can be used in high-altitude areas of 5000m. All units pass burn-in test at full load condition.

FEATURES:

- * Wide Operating Voltage, 85 to 264VAC, 47 to 63 Hz
- * Single Output
- * Protection: OVP, OLP, OTP
- * Size : 2"x4"x1.2"
- * Input to Output:2MOPP
- * High ESD immunity
- * Suitable for professional healthcare facility
- * Peak Load 300W(90 to 264 VAC)(See FIG.3)
- * 3 year warranty



APPLICATIONS:

- * Medical Ventilator
- * Diagnostic Imaging System
- * Biochemistry Analysis
- * Rehabilitation Treatment
- * Infusion Pump Station

GENERAL SPECIFICATION:

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

APPROVALS:

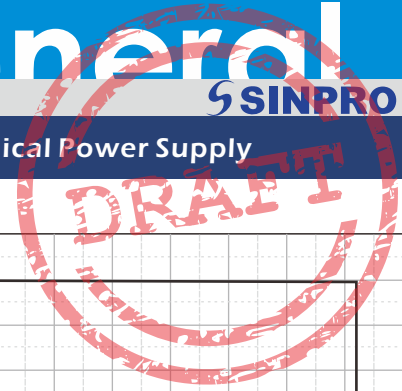


Electrical Characteristics:

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	85		264	VAC
Fi	Input Frequency	Sine wave	47		63	Hz
PF	Power Factor Correction		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, Detail to see Rating Chart	See Rating Chart			
ΔVoi	Line Regulation	Full Load, Vin=100~120VAC or 200~240VAC			1	%
OTP	Over Temperature Protection	Main Nominal Output, Restarting after Power Unit cool down				
OVP	Over Voltage Protection	Main Nominal Output, Latch Protection	112		132	%
OLP	Over Load Protection	Recovers automatically after 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	Compliance to EN55011 (CISPR11), EN60601-1-2, EN55032(CISPR 32)	B			Class

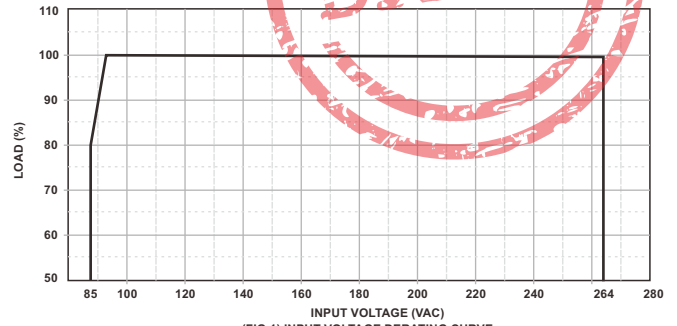
Environmental:

Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
To	Operating Temperature	Detail to see Fig.2 (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)	All Condition			5000	m
VBR	Vibration	10 ~ 500Hz, 10min./1cycle, 60min. each along X, Y, Z axes			5	G
Vsl	Surge Voltage	Line-Neutral			2	kV
Vsg	Surge Voltage	Line-PE & Neutral-PE			4	kV

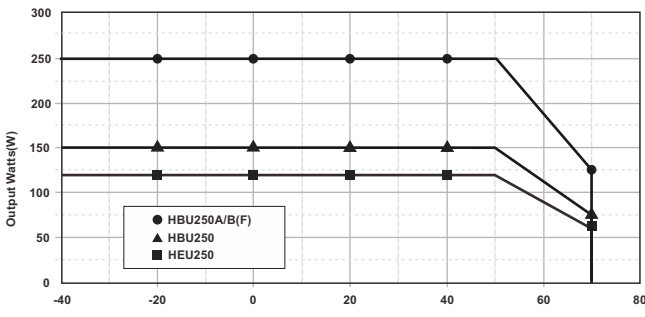


SPECIFICATION NOTE :

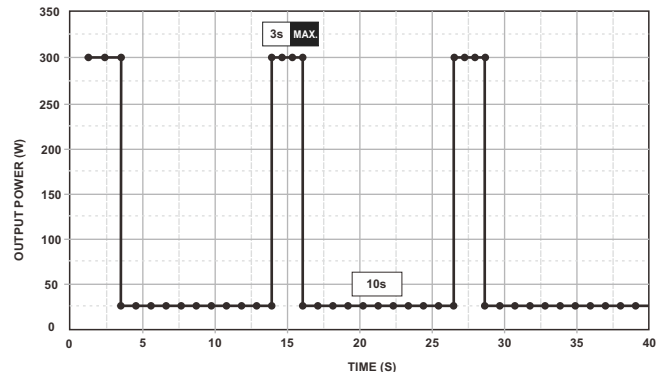
1. This power supports a peak load 3 sec.max of 300W for 3 seconds in every 10 seconds (Refer FIG 3.)
2. At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
3. Line regulation is defined by changing $\pm 10\%$ of input voltage from nominal line at rated load.
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.
8. Compliance with the requirement of EMC (Class II equipment) shall be insert appropriate ferrite core, please contact us for more information.



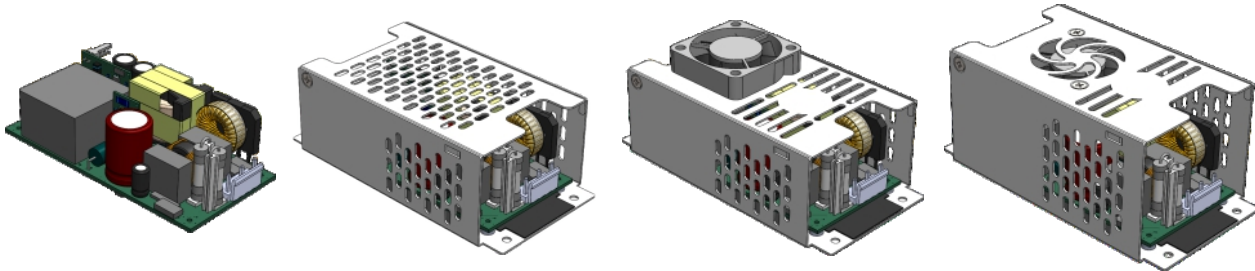
(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE



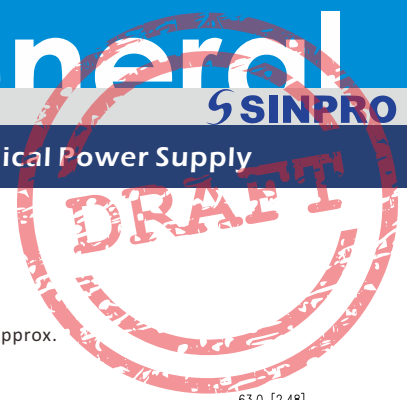
(FIG.3) PEAK LOAD DUTY CYCLE



EMC Specifications:

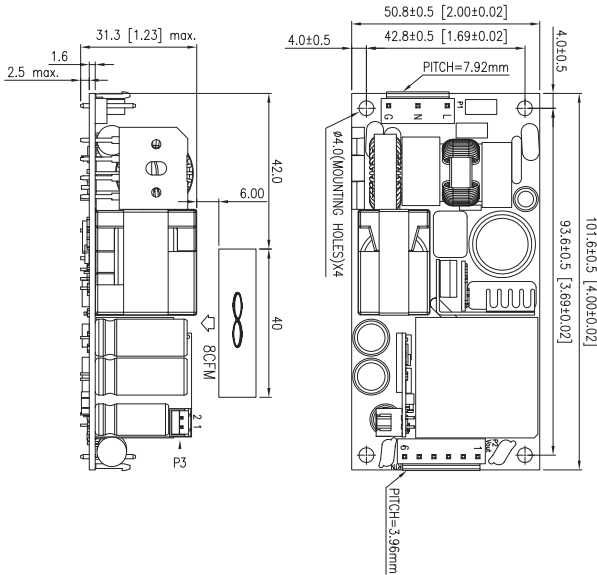
EMISSION			
ITEM	STANDARD	RESULT	
Conducted	EN55011,EN55032	CLASS B	
Radiated	EN55011,EN55032	CLASS B	
Harmonics	EN61000-3-2	CLASS A	
Flicker	EN61000-3-3	PASS	

	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	Power line 2KV,100KHz	A
	SURGE	EN61000-4-5	2KV line to line 4KV 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	B
	iii) 30% reduction for 25/30 cycles at 50/60Hz		B	
Voltage interruptions	EN61000-4-11	100% reduction for 250/300 cycles at 50/60Hz	C	

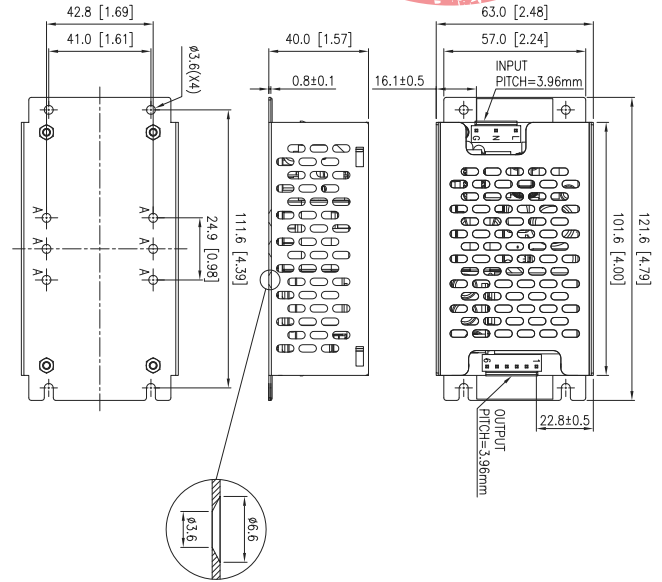


MECHANICAL DIMENSIONS: (UNIT: mm [inch])

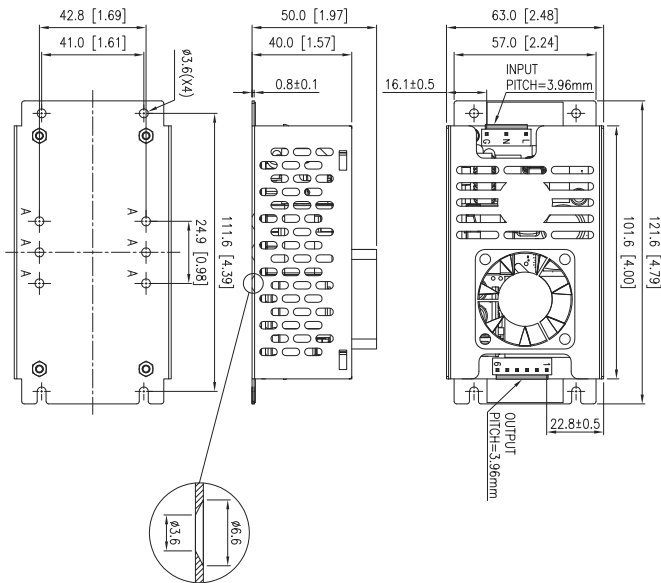
HBU250
NET WEIGHT: 200g approx.



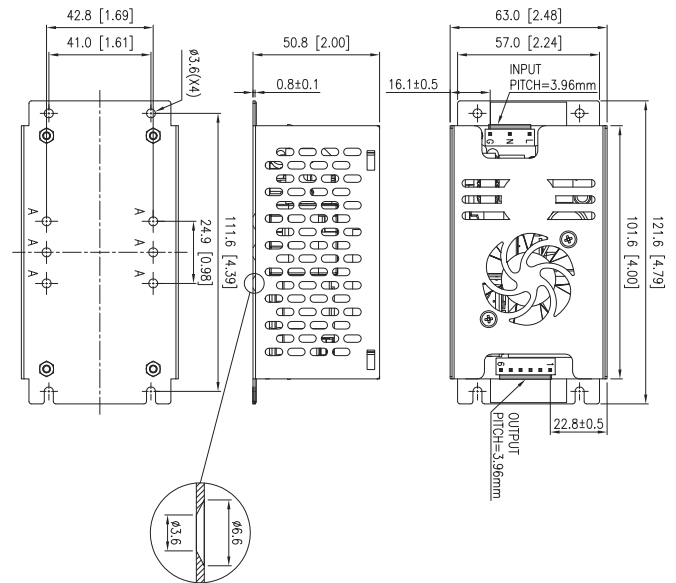
HEU250
NET WEIGHT: 330g approx.



HEU250-Type A
NET WEIGHT: 330g approx.



HEU250-Type B
NET WEIGHT: 330g approx.

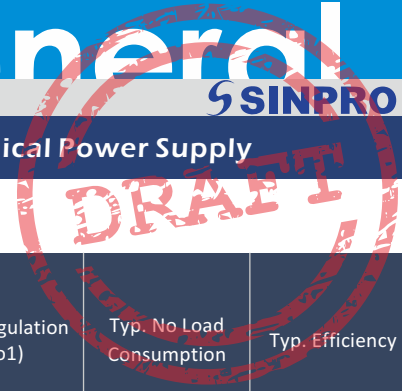


PIN CHART

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,B-1XXF	P2 Single Output	OUT	OUT	OUT	RTN	RTN	RTN

OUTPUT CABLE RECOMMEND :

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.



Rating Chart - HBU250 :

MODEL NO.	Voltage Range		Output Current			Ripple & Noise (Vo1) (mVp-p max.)	Load regulation (Vo1) (%)	Typ. No Load Consumption (W)	Typ. Efficiency (%)
	Vo1 (VDC)	Output for Fan (VDC)	Vo1		Output for Fan (A)				
			Max1 (A)	Max2 (A)					
HBU250-105	12.0	12.0	12.50	20.83	0.5	108	±3	0.21	91
HBU250-106	15.0	12.0	10.00	16.66	0.5	135	±3	0.21	91
HBU250-107	19.0	12.0	7.89	13.15	0.5	170	±3	0.21	91
HBU250-108	24.0	12.0	6.25	10.41	0.5	210	±3	0.21	92
HBU250-109	30.0	12.0	5.00	8.32	0.5	270	±3	0.21	92
HBU250-110	36.0	12.0	4.16	6.94	0.5	300	±3	0.21	93
HBU250-111	48.0	12.0	3.12	5.21	0.5	300	±3	0.21	93

- * With 8 CFM Forced Air to max load
- * Max.1: Convection cool Max.2: Forced Air
- * 0 ~ 10% Load ripple ≤ 1% Vo
- * Under convection cool, Output for fan cannot be used.

Rating Chart - HEU250 :

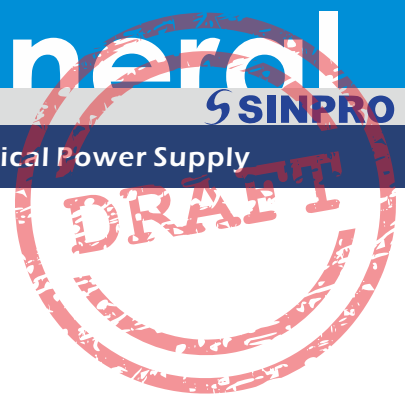
MODEL NO.	Voltage Range		Output Current		Ripple & Noise (Vo1) (mVp-p max.)	Load regulation (Vo1) (%)	Typ. No Load Consumption (W)	Typ. Efficiency (%)
	Vo1 (VDC)	Output for Fan (VDC)	Vo1	Output for Fan (A)				
			Max1 (A)					
HEU250-105	12.0	12.0	10.00	0.5	108	±3	0.21	91
HEU250-106	15.0	12.0	8.00	0.5	135	±3	0.21	91
HEU250-107	19.0	12.0	6.31	0.5	170	±3	0.21	91
HEU250-108	24.0	12.0	5.00	0.5	210	±3	0.21	92
HEU250-109	30.0	12.0	4.00	0.5	270	±3	0.21	92
HEU250-110	36.0	12.0	3.33	0.5	300	±3	0.21	93
HEU250-111	48.0	12.0	2.50	0.5	300	±3	0.21	93

- * 0 ~ 10% Load ripple ≤ 1% Vo
- * Max.1: Convection cool

Rating Chart-HEU250A,B(F) :

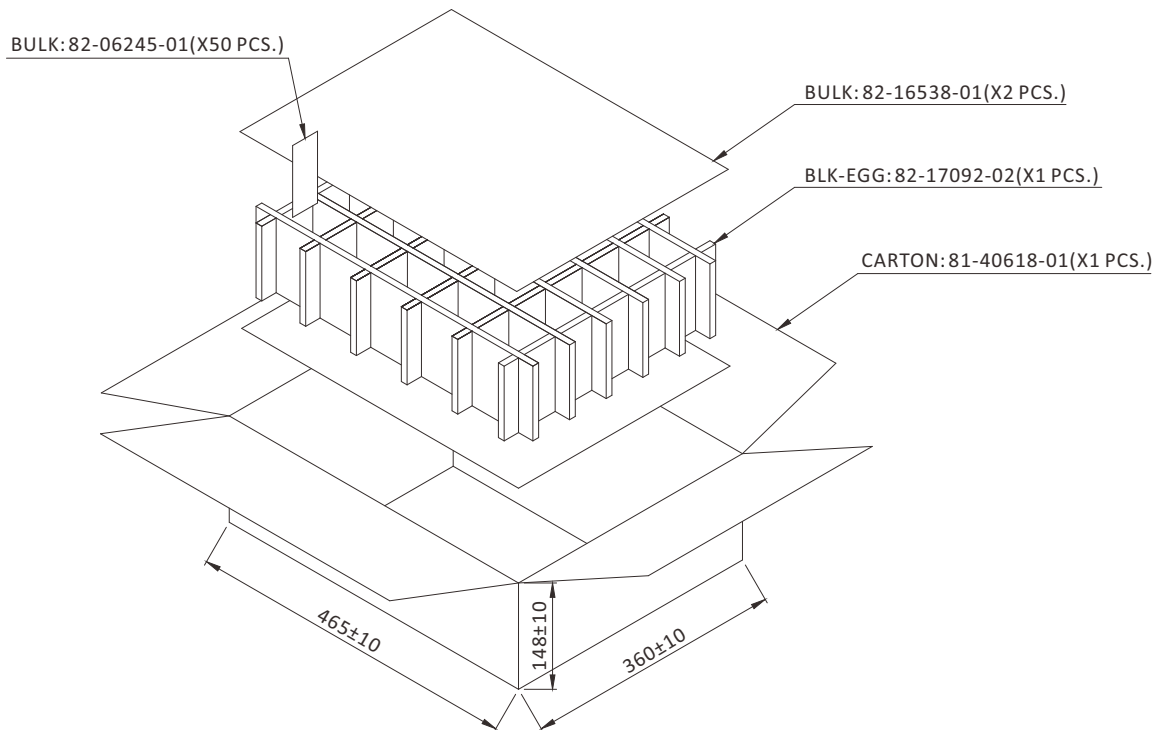
MODEL NO.	Voltage Range	Output Current	Ripple & Noise	Load regulation	Typ. No Load Consumption	Typ. Efficiency
	(VDC)	(A)	(mVp-p max.)	(%)	(W)	(%)
HEU250A,B-105F	12.0	20.83	108	±3	3	91
HEU250A,B-106F	15.0	16.66	135	±3	3	91
HEU250A,B-107F	19.0	13.15	170	±3	3	91
HEU250A,B-108F	24.0	10.41	210	±3	3	92
HEU250A,B-109F	30.0	8.32	270	±3	3	92
HEU250A,B-110F	36.0	6.94	300	±3	3	93
HEU250A,B-111F	48.0	5.21	300	±3	3	93

- * With 8 CFM Forced Air
- * 0 ~ 10% Load ripple ≤ 1% Vo



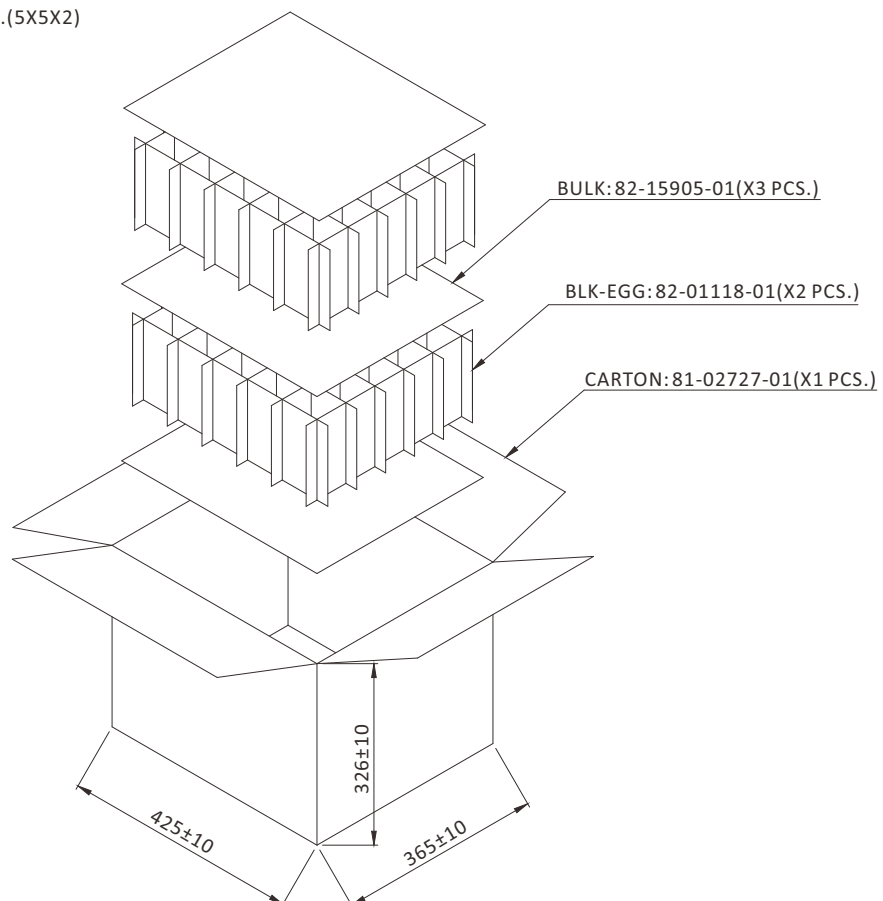
STANDARD PACKAGING - HBU250 : (UNIT: mm)

- * Power Supplies per Box (full box): 50 PCS.(2X5X5)
- * Box Dimensions: L46*W36*H15 cm
- * Gross Weight (full box): 14.94 KG
- * Packaging Part No: 84-40619-01



STANDARD PACKAGING - HEU250 : (UNIT: mm)

- * Power Supplies per Box (full box): 50 PCS.(5X5X2)
- * Box Dimensions: L43*W37*H33 cm
- * Gross Weight (full box):
 HEU250: 17.2 KG
 HEU250A: 17.8 KG
 HEU250B: 18.3 KG
- * Packaging Part No: 84-40676-01



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