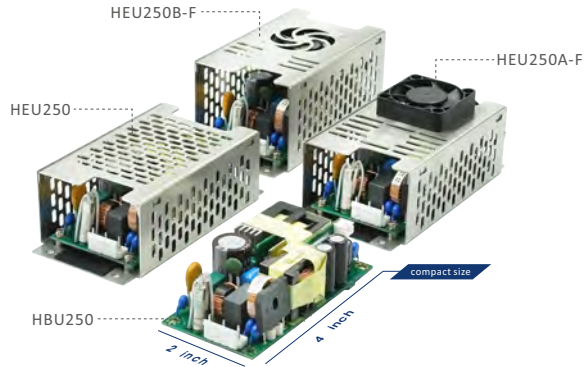


## HBU250 / HEU250 series

V1.16

## 250W Medical Power Supply

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"x1.28") and cover with fan. The series features a wide operating temperature of -40°C to +70°C. All units pass burn-in test at full load condition.



## 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           | See Fig.1 for Detail                                                            | 85               |      | 264   | VAC   |
| Input Frequency                       | Sine Wave                                                                       | 47               |      | 63    | Hz    |
| Power Factor Correction               | Io=Full Load, Vin=Vins                                                          | 0.9              |      | 1     |       |
| Output Power Range                    | See Rating Chart                                                                |                  |      | 250   | W     |
| Low Line Input Current                | Full Load, Vin=100VAC                                                           |                  | 3.1  |       | A     |
| High Line Input Current               | Full Load, Vin=240VAC                                                           |                  | 1.3  |       | A     |
| Low Line Input Inrush Current         | Full Load, 25°C, Cool Start, Vin=100VAC                                         |                  |      | 20    | A     |
| High Line Input Inrush Current        | Full Load, 25°C, Cool Start, Vin=240VAC                                         |                  |      | 40    | A     |
| Safety Ground Leakage Current         | Vin=240VAC, Fi=60Hz                                                             |                  | 0.25 |       | mA    |
| Efficiency                            | Full Load, Vin=230VAC, See Rating Chart for Detail                              | See Rating Chart |      |       |       |
| Line Regulation                       | Full Load, Vin=100~120VAC or 200~240VAC                                         |                  |      | 1     | %     |
| Over Temperature Protection           | Main Nominal Output, Recovers Automatically when the Fault Condition is Removed |                  |      |       |       |
| Over Voltage Protection               | Main Nominal Output, Latch Protection                                           | 112              |      | 132   | %     |
| Over Load Protection                  | Recovers Automatically when the Fault Condition is Removed @250W                | 120              |      | 150   | %     |
| Time of Transient Response            | Io=Full Load to Half Load, Vin=110VAC                                           |                  |      | 4     | ms    |
| Hold-Up Time                          | Full Load, Vin=110VAC@250W                                                      |                  |      | 10    | ms    |
| Start-Up Time                         | Full Load, Vin=100~240VAC                                                       |                  | 1    |       | s     |
| Insulation Resistance                 |                                                                                 | 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                          | Compliant with EN55011 (CISPR11), EN60601-1-2, EN55032(CISPR 32)                | B                |      |       | Class |

## Environmental:

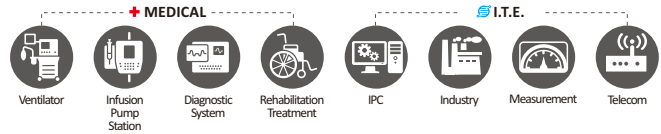
| Characteristic                 | Condition                                                                         | Min. | Typ. | Max. | Unit |
|--------------------------------|-----------------------------------------------------------------------------------|------|------|------|------|
| Operating Temperature          | See Fig.2 for Detail (Derate Linearly from 100% Load at 50°C to 50% Load at 70°C) | -40  |      | 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, Nominal Line, Calculated per MIL-HDBK-217F         | 300k |      |      | h    |
| Operating Altitude (Elevation) |                                                                                   |      |      | 5000 | 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   |

## 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"x1.28", 24.41W/in<sup>3</sup>
- Input to Output:2MOPP
- 3-Year Warranty for Power Supply
- Efficiency Up to 93%
- Peak 300W(90 to 264 VAC) (See FIG.3 On Page 2)
- High Surge Immunity



## APPLICATIONS:

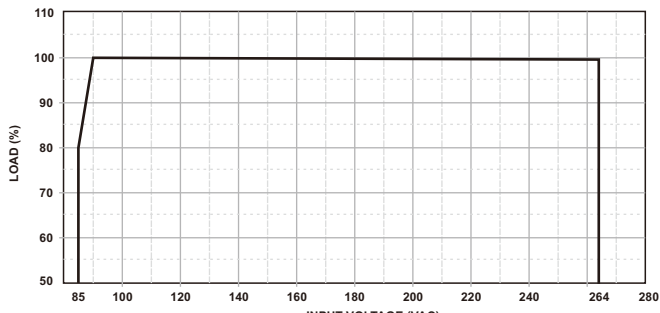


## GENERAL SPECIFICATION:

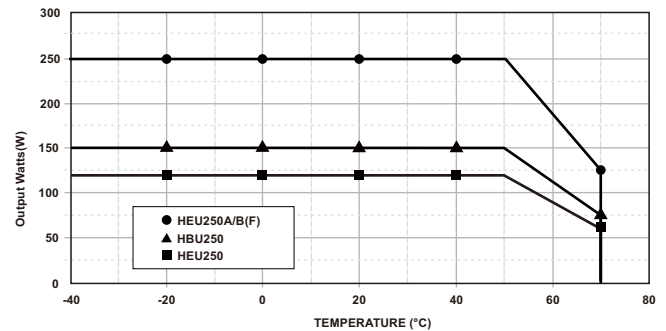
- 150W Full Load at Free Air Convection, 250W with 8CFM Forced Air.
- Protection Classes: Class I  
(Meet Class II, See Specification Note 9. at Page 2)
- Safety:  
IEC 62368-1 Edition 2.0, IEC 62368-1 Edition 3.0, IEC 60601-1 Edition 3.1, IEC62368-1 Edition 4.0, IEC 60601-1 Edition 3.2, EN 62368-1, UL62368-1, CAN/CSA-C22.2 NO. 62368-1, EN60601-1, ANSI/AAMI E560601-1,

**SPECIFICATION NOTE :**

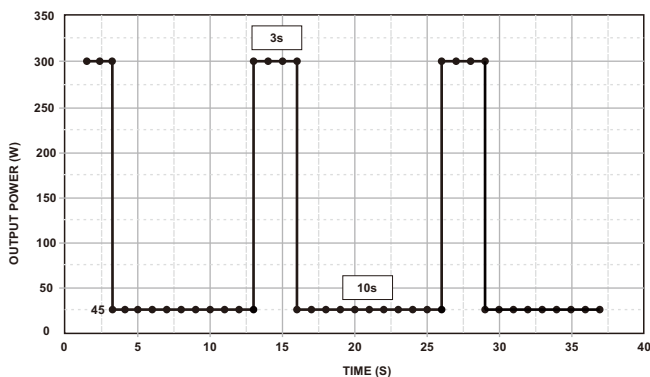
1. HEU250A-F and HEU250B-F series support a peak load 3 sec. max of 300 W for 3 seconds in every 13 seconds.(Refer FIG 3.)
2. HBU250 and HEU250 series support a peak load 3 sec. max of 300 W for 3 seconds in every 30 seconds.(Refer FIG 4.)
3. At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.
4. Line regulation is defined by changing  $\pm 10\%$  of input voltage from nominal line at rated load.
5. Load regulation is defined by changing  $\pm 40\%$  of measured output load from 60% rated load.
6. 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).
7. 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.
8. Efficiency is measured at rated load, and nominal line.
9. Compliance with the requirement of EMC (Class II equipment) shall be insert appropriate ferrite core, please contact us for more information.



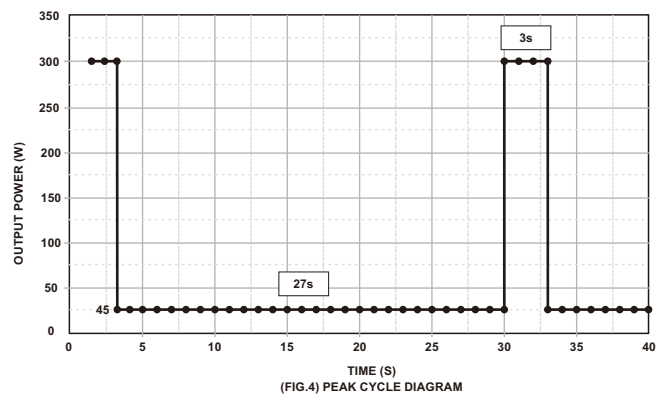
(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE



(FIG.3) PEAK CYCLE DIAGRAM



(FIG.4) PEAK CYCLE DIAGRAM

**EMC SPECIFICATIONS:**

| EMISSION  |                    |                  |
|-----------|--------------------|------------------|
| ITEM      | STANDARD           | RESULT           |
| Conducted | EN 55011, EN 55032 | CLASS B          |
| Radiated  | EN 55011, EN 55032 | CLASS B          |
| Harmonics | EN 61000-3-2       | CLASS A, CLASS D |
| Flicker   | EN 61000-3-3       | PASS             |

|          | ITEM                  | STANDARD       | RESULT                                         | CRITERION |
|----------|-----------------------|----------------|------------------------------------------------|-----------|
| IMMUNITY | ESD                   | IEC 61000-4-2  | 15KV air discharge, 8KV contact discharge      | A         |
|          | RS                    | IEC 61000-4-3  | PASS                                           | A         |
|          | EFT                   | IEC 61000-4-4  | Power line 2KV, 5 or 100KHz                    | A         |
|          | SURGE                 | IEC 61000-4-5  | 1KV line to line 2KV line to PE                | A         |
|          | CS                    | IEC 61000-4-6  | 3Vrms, 6Vrms                                   | A         |
|          | PFMF                  | IEC 61000-4-8  | 30A/m, 50Hz                                    | A         |
|          | Voltage dips          | IEC 61000-4-11 | 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 | IEC 61000-4-11 | 100% reduction for 250/300 cycles at 50/60Hz   | B         |

## HBU250 / HEU250 series

V1.16

## 250W Medical Power Supply

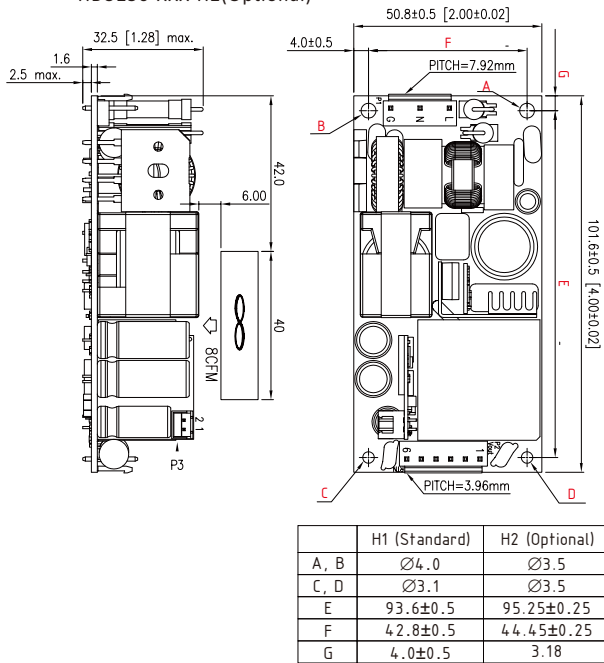
## MECHANICAL DIMENSIONS: ( UNIT: mm [inch] )

## HBU250

NET WEIGHT: 200g approx.

PN: HBU250-XXX-H1 (Standard)

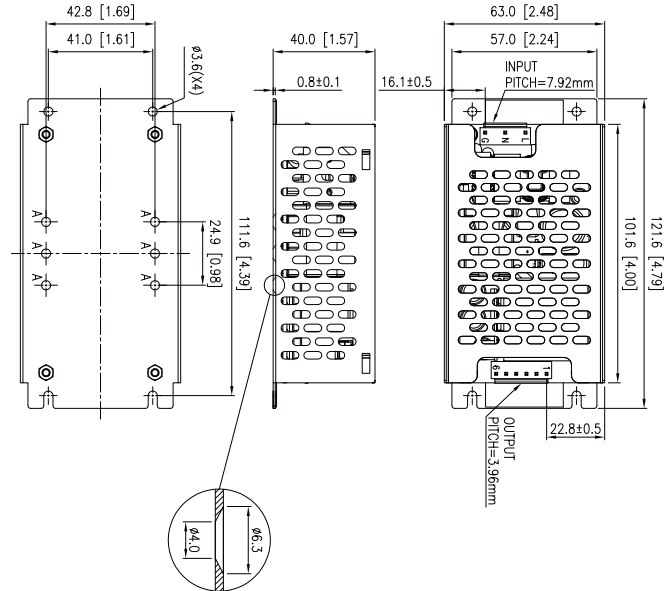
HBU250-XXX-H2 (Optional)



\*Screw size (Diameter): 2.9mm min.

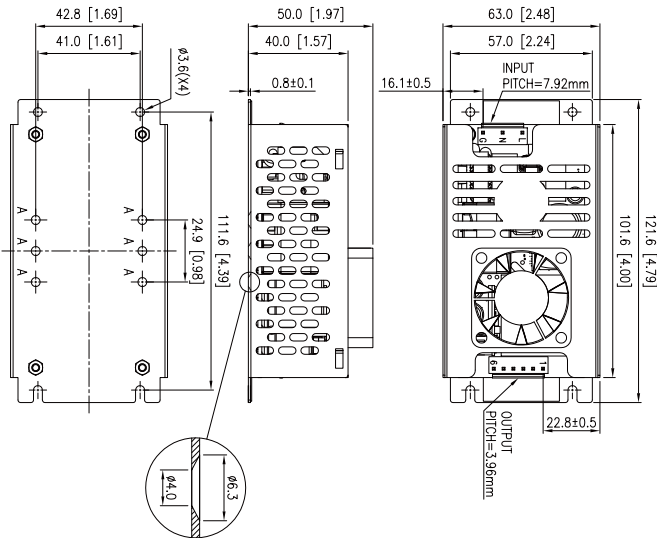
## HEU250

NET WEIGHT: 325g approx.



## HEU250A-F

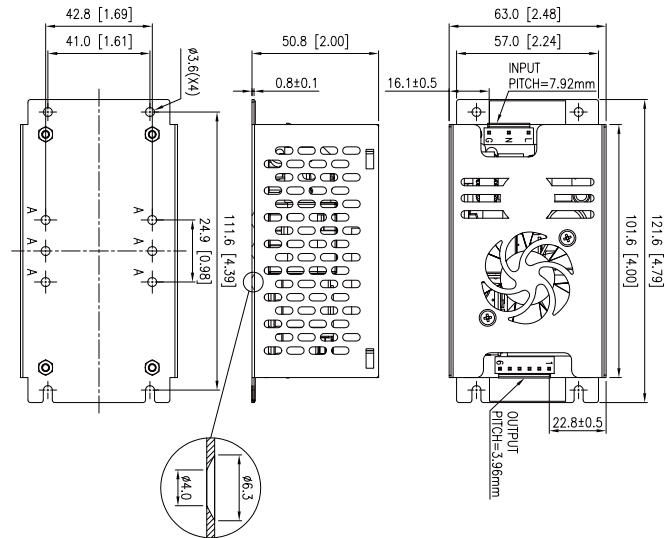
NET WEIGHT: 330g approx.



\* For the rail mount option, contact our sales.

## HEU250B-F

NET WEIGHT: 340g approx.



## PIN CHART

| MODEL                  | Connector Definition | PIN |     |     |     |     |     |
|------------------------|----------------------|-----|-----|-----|-----|-----|-----|
|                        |                      | 1   | 2   | 3   | 4   | 5   | 6   |
| HBU250<br>HEU250       | P2 Single Output     | OUT | OUT | OUT | RTN | RTN | RTN |
|                        | P3 Fan Output        | OUT | RTN |     |     |     |     |
| HEU250A-F<br>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 (Vo) | Load Regulation (Vo) | Typ. No Load Consumption | Typ. Efficiency |
|------------|---------------|------------|----------------|-------|------------|----------------------|---------------------|----------------------|--------------------------|-----------------|
|            |               |            |                |       |            |                      |                     |                      |                          |                 |
|            | Vo            | Fan Output | Vo             |       | 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

\* 0~2% Max.2 Load ripples2% Vo

\* Under convection cool, fan output cannot be used.

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

Rating Chart - HEU250 :

| MODEL NO.  | Voltage Range (Vo) | Output Current (Vo) | 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              |

\* HEU250 series output for fan cannot be used.

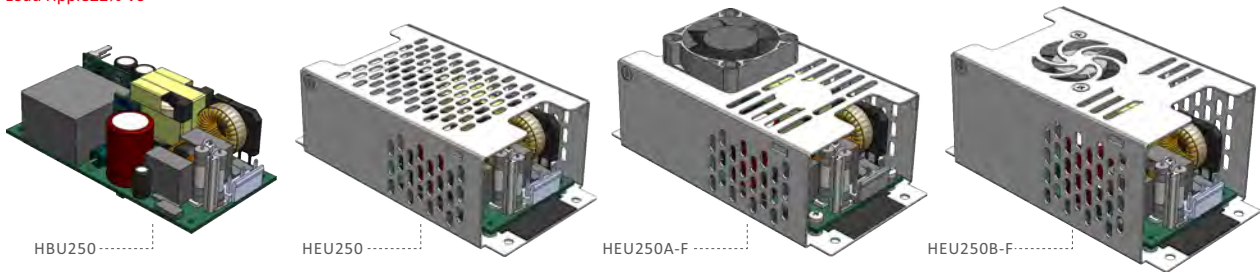
\* 0~4% Load ripples2% Vo

Rating Chart - HEU250A-F / HEU250B-F :

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

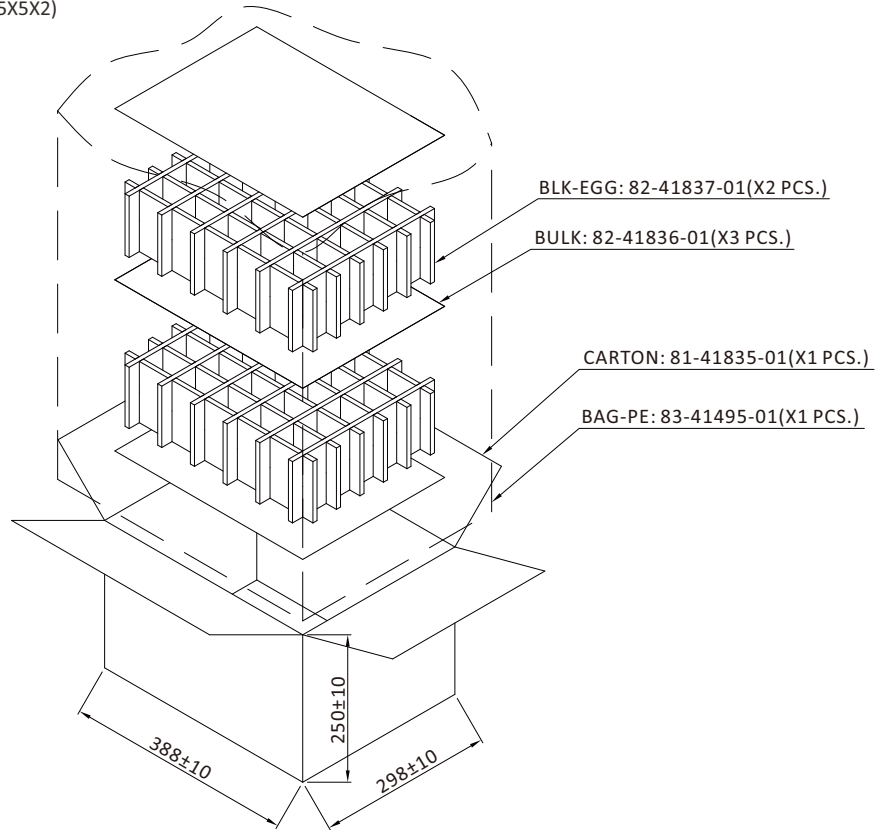
\* With 8 CFM Forced Air

\* 0~2% Load ripples2% Vo



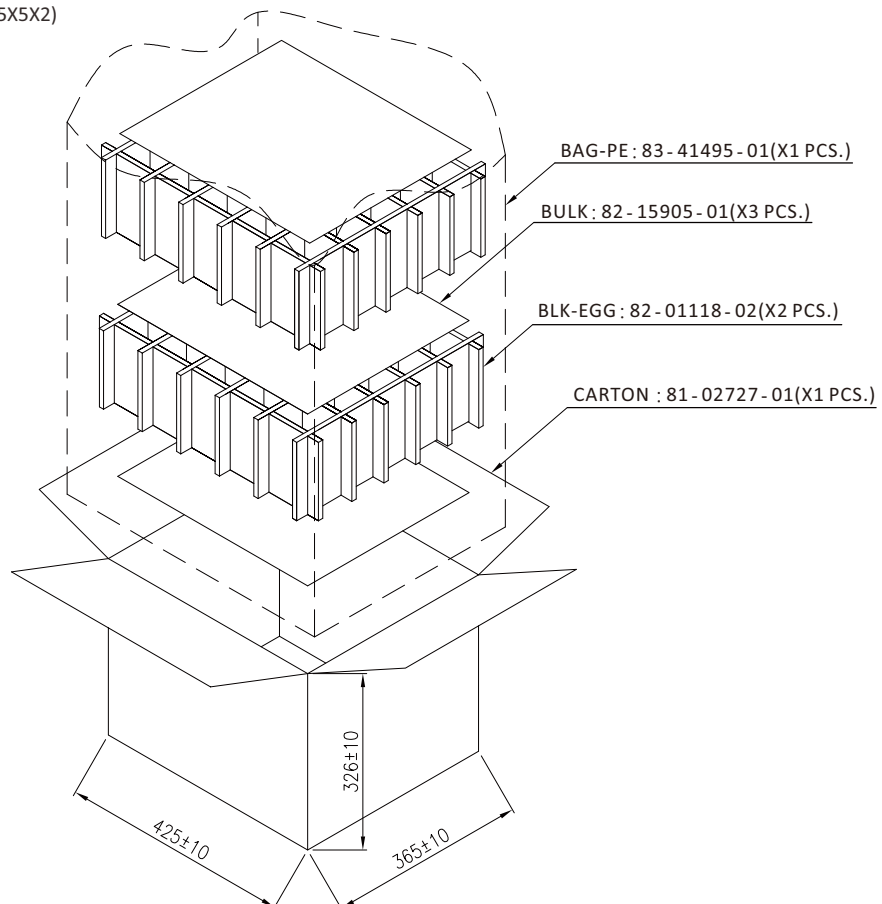
### STANDARD PACKAGING - HBU250 : ( UNIT: mm )

- Power Supplies per Box (full box): 50 PCS.(5X5X2)
- Box Dimensions: L38.8\*W29.8\*H25cm
- Gross Weight (full box): 11 KG
- Packaging Part No: 84-40619-01



### STANDARD PACKAGING - HEU250 / HEU250A-F / HEU250B-F : ( 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-F: 17.8 KG  
HEU250B-F: 18.3 KG
- Packaging Part No: 84-40676-01



Note: The above packing is for reference only.  
Please contact sales for confirmation.