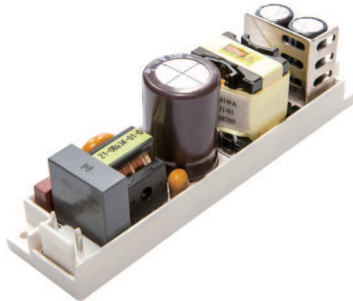


HBU50 series

V1.3

The HBU50 series of AC/DC switching mode power supplies provide 50 Watts of continuous output power. All supplies are UL94V-1 min compliant. All models meet FCC Part-18, CISPR-11 and EN55011 class B emission Limits, IEC 60601-1-2:2014 and are designed to comply with UL/cUL, TUV T-mark and conformity assessment in CE marking. All units are 100% burned in and tested.

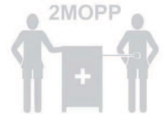
RoHS2
2011/65/EU



50W Open Frame Medical Grade Power Supply

FEATURES:

- * Wide Operating Voltage, 80 to 275 VAC, 47 to 63 Hz
- * Single Output
- * Over Load protection
- * Input to Output : 2MOPP
- * Size : 1"x4"x1.28"
- * High ESD immunity
- * Suitable 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
- * **Flammability Rating:** UL94V-1
- * **Class of equipment:** Double insulated, Class II
- * **Safety:** IEC60601-1 Edition3.1, ES60601-1:2005(R2012), CSAC22.2 NO.60601-1:14, EN60601-1:2006/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 (Derate linearly from 100% load at 90VAC to 80% load at 80VAC) | 80 | | 275 | VAC |
| Fi | Input Frequency | Sine wave | 47 | | 63 | Hz |
| Po | Output Power Range | See Rating Chart | | | 50 | W |
| Iil | Low Line Input Current | Full Load, Vin=100VAC | | 1.2 | | A |
| Iih | High Line Input Current | Full Load, Vin=240VAC | | 0.7 | | A |
| Irl | Low Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=100VAC | | | 40 | A |
| Irh | High Line Input Inrush Current | Full Load, 25°C, Cool start, Vin=240VAC | | | 80 | A |
| η | Efficiency | Full Load, Vin=230VAC, Detail to see Rating Chart | See Rating Chart | | | |
| ΔVoi | Line Regulation | Full Load, Vin=100~120VAC | | | 1 | % |
| OLP | Over Load Protection | Recovers automatically after fault condition is removed | 110 | | 150 | % |
| ttr | Time of Transient Response | Io=Full Load to Half Load, Vin=100VAC | | | 4 | ms |
| thu | Hold-Up Time | Full Load, Vin=110VAC | See Rating Chart | | | |
| ts | Start-up time | Full Load, Vin=100~240VAC | | | 2 | s |
| Tc | Temperature Coefficient | All Condition | | | ±0.04 | %/°C |
| HV | Dielectric Withstanding Voltage (P-S) | Primary to Secondary, limit current <10mA | | | 4000 | VAC |
| EMI | EMC Emission | Compliance to EN55011 (CISPR11), EN60601-1-2 | B | | | Class |

Environmental:

| Symbol | Characteristic | Condition | Min. | Typ. | Max. | Unit |
|--------|--------------------------------|--|------|------|------|------|
| To | Operating Temperature | Detail to see Fig.2 (Derate linearly from 100% load at 40°C to 50% load at 70°C) | -10 | | 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, Calculated per MIL-HDBK-217F | 200k | | | h |
| ELEV | Operating Altitude (Elevation) | All condition | | | 3000 | 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 |

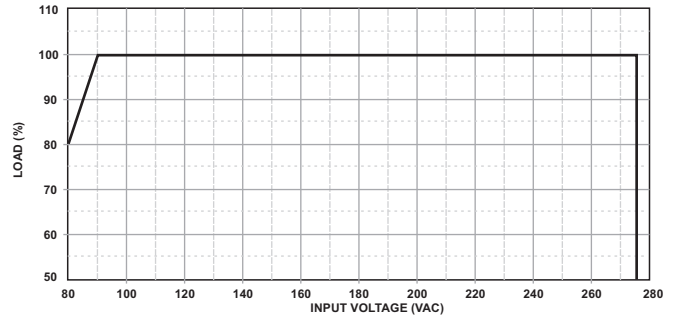
HBU50 series

V1.3

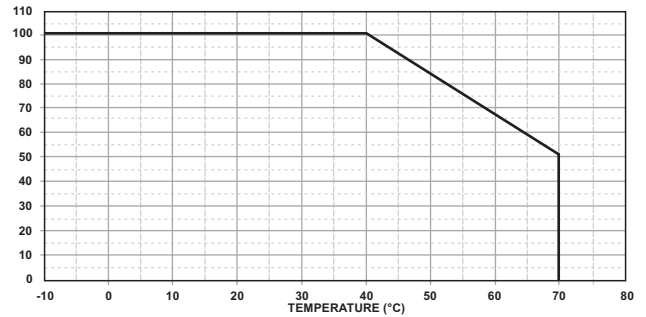
50W Open Frame Medical Grade Power Supply

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.
- Ripple & noise is measured by using 20MHz bandwidth limited oscilloscope and terminated each output with a 0.47uF capacitor at rated load and nominal line.
- 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.

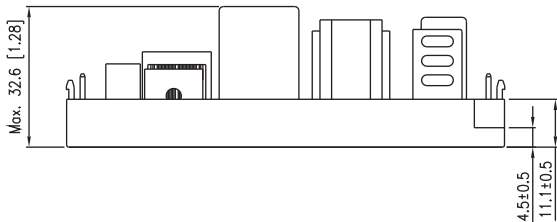
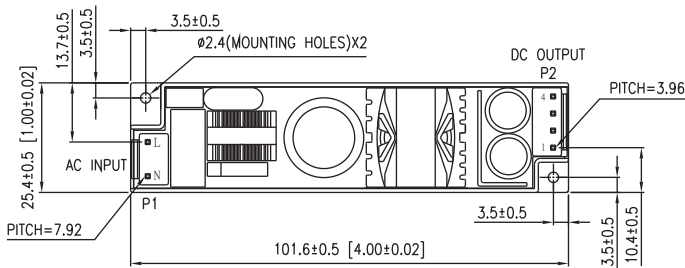


(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

MECHANICAL DIMENSIONS: (UNIT: mm)



PACKING :

- Net weight: 75g approx.
- Input connector mates with JST housing VHR-3N and JST SVH series crimp terminal.
- Output connector mates with JST housing VHR-4N and JST SVH series crimp terminal.

PIN CHART

| MODEL | PIN | 1 | 2 | 3 | 4 |
|-----------|-----|-----|-----|-----|-----|
| HBU50-1XX | | OUT | OUT | RTN | RTN |

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 |
|-----------|---|-------|---|------|--------------------------------|----------------|---------|-------------------------|------------------------|------------------------------------|----------------------|-----------------|
| | min | max | min | max | | min | max | | | | | |
| | (VDC) | (VDC) | (A) | (A) | | (mVp-p) | (mVp-p) | | | | | |
| HBU50-102 | 5.0 | 6.0 | 5.00 | 6.00 | 30 | 50 | 60 | ±5 | 79 | 0.10 | 12 | Hiccup |
| HBU50-103 | 6.0 | 8.0 | 5.00 | 6.66 | 40 | 60 | 80 | ±5 | 80 | 0.10 | 12 | Hiccup |
| HBU50-104 | 8.0 | 11.0 | 4.09 | 5.62 | 45 | 80 | 110 | ±5 | 85 | 0.10 | 12 | Hiccup |
| HBU50-105 | 11.0 | 13.0 | 3.84 | 4.55 | 50 | 110 | 130 | ±5 | 87 | 0.15 | 12 | Hiccup |
| HBU50-106 | 13.0 | 16.0 | 3.13 | 3.85 | 50 | 130 | 160 | ±5 | 87 | 0.15 | 12 | Hiccup |
| HBU50-107 | 16.0 | 21.0 | 2.38 | 3.13 | 50 | 160 | 210 | ±5 | 88 | 0.15 | 12 | Hiccup |
| HBU50-108 | 21.0 | 27.0 | 1.85 | 2.38 | 50 | 210 | 270 | ±3 | 88 | 0.15 | 12 | Hiccup |
| HBU50-109 | 27.0 | 33.0 | 1.51 | 1.85 | 50 | 270 | 330 | ±3 | 88 | 0.15 | 12 | Hiccup |
| HBU50-110 | 33.0 | 40.0 | 1.25 | 1.51 | 50 | 330 | 400 | ±3 | 88 | 0.15 | 12 | Hiccup |
| HBU50-111 | 40.0 | 50.0 | 1.00 | 1.25 | 50 | 400 | 500 | ±3 | 88 | 0.15 | 12 | Hiccup |
| HBU50-112 | 50.0 | 59.0 | 0.84 | 1.00 | 50 | 500 | 590 | ±3 | 88 | 0.15 | 12 | Hiccup |