

## HPU15 series

v1.7

## 15W Interchangeable Medical Grade Power Supply

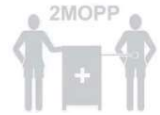
The HPU15 series of AC/DC switching mode power supplies provide 15 Watts of continuous output power. All supplies are UL94V-1 min compliant. All models meet FCC Part-18, CISPR-11 and EN55011 class B emission Limits, IEC 60601-1-2:2014 and are designed to comply with UL/cUL, TUV T-mark and conformity assessment in CE marking. All units pass burn-in test at full load condition.

**RoHS2**  
2011/65/EU



### FEATURES:

- \* Wide Operating Voltage, 80 to 275 VAC, 47 to 63 Hz
- \* Interchangeable Plug
- \* Single Output
- \* Input to Output : 2MOPP
- \* High ESD immunity
- \* Suitable home healthcare environment
- \* 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
- \* **Protection Classes:** 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   |                  |      | 15    | W     |
| Iil    | Low Line Input Current                | Full Load, Vin=100VAC  |                  | 0.4  |       | A     |
| Iih    | High Line Input Current               | Full Load, Vin=240VAC  |                  | 0.2  |       | A     |
| Irl    | Low Line Input Inrush Current         | Full Load, 25°C, Cool start, Vin=100VAC  |                  |      | 50    | A     |
| Irh    | High Line Input Inrush Current        | Full Load, 25°C, Cool start, Vin=240VAC  |                  |      | 115   | A     |
| η      | 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     | %     |
| 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=110VAC  |                  |      | 4     | ms    |
| thu    | Hold-Up Time                          | Full Load, Vin=110VAC  | See Rating Chart |      |       |       |
| ts     | Start-up time                         | Full Load, Vin=100~240VAC  |                  |      | 3     | 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   |

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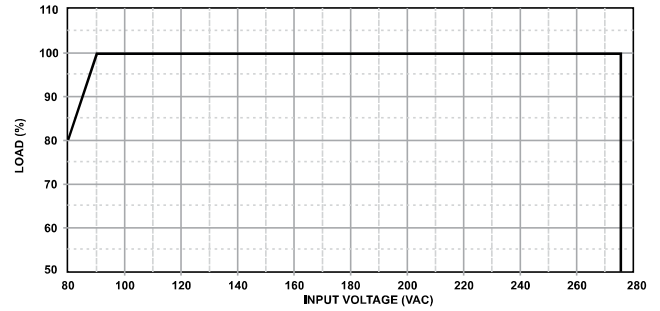
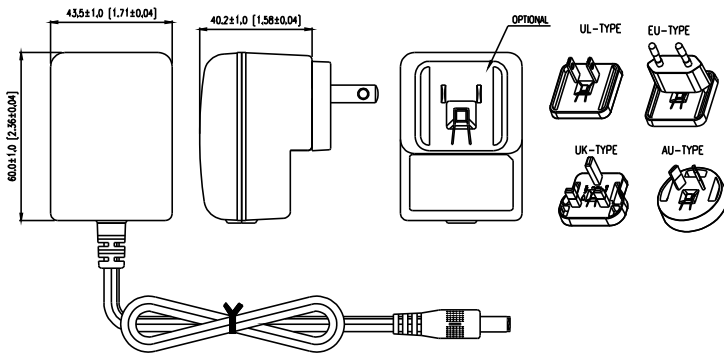
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## 15W Interchangeable Medical Grade Power Supply

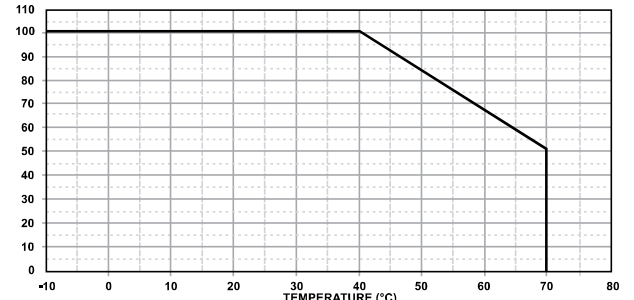
### SPECIFICATION NOTE :

1. Output can provide up to peak load when the power supply starts up. Continuous staying in more than rated load is not allowed.
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.

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



(FIG.1) INPUT VOLTAGE DERATING CURVE



(FIG.2) TEMPERATURE DERATING CURVE

### OUTPUT CABLE RECOMMEND :

1. HPU15-102~104 are required to use AWG#18/4FT output cable.
2. HPU15-105~109 are required to use AWG#20/4FT output cable.
3. HPU15-110~111 are required to use AWG#22/4FT output cable.
4. The regulation and efficiency will be changed by modified output cable.

NET WEIGHT : 165g approx.

### Rating Chart:

| MODEL NO.  | Setting Voltage Range<br>(Factory setting, can't be adjusted) |       | Output Current<br>(Based on the output volt.) |      | Maximum<br>Output Power<br>(W) | Ripple & Noise<br>(mVp-p) | Total Regulation<br>(%) | Typ. Efficiency<br>(%) | Typ. No Load<br>Consumption<br>(W) | Hold-Up Time<br>(ms) | Protection Mode |
|------------|---|-------|---|------|--------------------------------|---------------------------|-------------------------|------------------------|------------------------------------|----------------------|-----------------|
|            | min   | max   | min   | max  |                                |                           |                         |                        |                                    |                      |                 |
|            | (VDC)   | (VDC) | (A)   | (A)  |                                |                           |                         |                        |                                    |                      |                 |
| HPU15-101  | 3.0   | 4.99  | 1.44  | 2.40 | 7.2                            | 66                        | ±5                      | 70                     | 0.2                                | 10                   | Hiccup          |
| HPU15-102  | 5.0   | 5.99  | 2.00  | 2.40 | 12                             | 68                        | ±5                      | 74                     | 0.3                                | 10                   | Hiccup          |
| HPU15-103  | 6.5   | 8.0   | 1.50  | 1.84 | 12                             | 70                        | ±5                      | 78                     | 0.3                                | 10                   | Hiccup          |
| HPU15-104  | 8.0   | 11.0  | 1.22  | 1.68 | 13.5                           | 90                        | ±5                      | 79                     | 0.3                                | 10                   | Hiccup          |
| HPU15-105  | 11.0  | 13.0  | 1.15  | 1.36 | 15                             | 100                       | ±5                      | 81                     | 0.3                                | 10                   | Hiccup          |
| HPU15-106  | 13.0  | 16.0  | 0.94  | 1.15 | 15                             | 120                       | ±5                      | 82                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-107 | 16.0  | 21.0  | 0.72  | 0.94 | 15                             | 120                       | ±5                      | 82                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-108 | 21.0  | 27.0  | 0.55  | 0.72 | 15                             | 130                       | ±5                      | 83                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-109 | 27.0  | 33.0  | 0.45  | 0.55 | 15                             | 130                       | ±3                      | 83                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-110 | 33.0  | 40.0  | 0.37  | 0.45 | 15                             | 140                       | ±3                      | 84                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-111 | 40.0  | 48.0  | 0.32  | 0.37 | 15                             | 200                       | ±3                      | 84                     | 0.3                                | 10                   | Hiccup          |
| *HPU15-112 | 48.0  | 55.0  | 0.28  | 0.32 | 15                             | 200                       | ±3                      | 84                     | 0.3                                | 10                   | Hiccup          |

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

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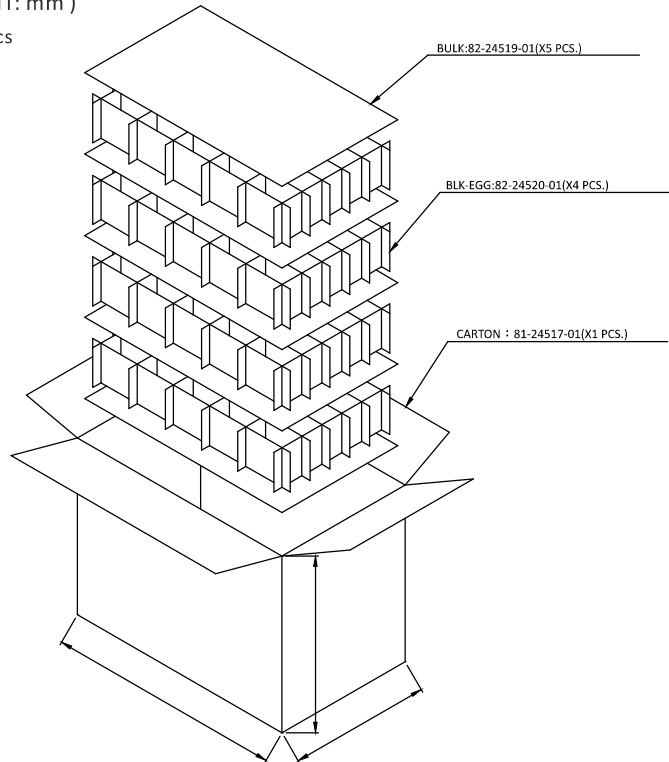
### EMC Specifications:

|           |  | 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,<br>8KV contact discharge  | A   |            |
|                       | RS           | EN61000-4-3  | PASS  | A   |            |
|                       | EFT          | EN61000-4-4  | 2KV   | A   |            |
|                       | SURGE        | EN61000-4-5  | line to line :<br>0.5 ; 1kV                   | A   |            |
|                       | CS           | EN61000-4-6  | 3Vrms, 6Vrms                                  | A   |            |
|                       | PFMF         | EN61000-4-8  | PASS  | A   |            |
|                       | Voltage dips |              | EN61000-4-11                                  | i) 0% reduction for<br>0.5 cycle at 50Hz          | B          |
|                       |              |              |   | ii) 0% reduction for<br>1 cycle at 50Hz           | B          |
|                       |              |              |   | iii) 70% reduction for<br>25/30 cycles at 50/60Hz | C (240VAC) |
| Voltage interruptions |              | EN61000-4-11 | 0% reduction for<br>250/300 cycles at 50/60Hz | C   |            |

### STANDARD PACKAGING : ( UNIT: mm )

- \* Power Supplies per Box (full box): 100 pcs
- \* Box Dimensions: L57\*W34\*H42 cm
- \* Gross Weight (full box): 20.41 KGS
- \* Packaging Part No: 84-31860-01



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

### 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(+)<br>Sleeve=RTN(-) | SPT-1<br>UL2468<br>UL1185<br>+<br>CORE | 102~104:18AWG/4FT<br>105~109:20AWG/4FT<br>110~111:22AWG/4FT |

### 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(+)<br>Sleeve=RTN(-) | SPT-1<br>UL2468<br>UL1185<br>+<br>CORE | 102~104:18AWG/4FT |
|                    | P01M    | 5.5 | 2.5 | 9.5 |                                |  | 105~109:20AWG/4FT |
|                    | P01N    | 5.5 | 2.5 | 11  |                                |  | 110~111:22AWG/4FT |

| 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(+)<br>Sleeve=RTN(-) | SPT-1<br>UL1185<br>+<br>CORE | 102~104:18AWG/4FT |
|                          | P02K    | 5.5 | 2.1 | 11  |                                |                              | 105~109:20AWG/4FT |
|                          | P02M    | 5.5 | 2.5 | 9.5 |                                |                              | 110~111:22AWG/4FT |
|                          | P02N    | 5.5 | 2.5 | 11  |                                |                              |                   |

| USB A TYPE | Plug PN | Standard Connection(Default)   | Wire Material       | Wire Type                              |
|------------|---------|--------------------------------|---------------------|--|
|            | P88B    | P1=OUT<br>P2,P3=N/C,<br>P4=RTN | UL1185<br>+<br>CORE | 102~109:20AWG/4FT<br>Rated Voltage:30V |

| MICRO USB B TYPE | Plug PN | Standard Connection(Default)      | Wire Material       | Wire Type                              |
|------------------|---------|-----------------------------------|---------------------|--|
|                  | P88D    | P1=OUT<br>P2,P3,P4=N/C,<br>P5=RTN | UL1185<br>+<br>CORE | 102~109:18AWG/4FT<br>Rated Voltage:30V |

| USB TYPE-C | Plug PN | Standard Connection(Default)   | Wire Material       | Wire Type                              |
|------------|---------|--|---------------------|--|
|            | P88H    | A4,A9,B4,B9=OUT<br>A1,A12,B1,B12,SHIELD=RTN<br>A6,A7=SHORT,<br>B6,B7=SHORT,<br>A2,A3,A5,A8,A10,A11,<br>B2,B3,B5,B8,B10,B11=N/C | UL1185<br>+<br>CORE | 102~109:18AWG/4FT<br>Rated Voltage:30V |

\* Optional output connectors available contact sales for details.

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