

## USE-HPA65A/C

V1.7

## 65W Medical / ITE Power Supply

## GENERAL DESCRIPTION:

The series provides a voltage range from 8V to 48V, delivering up to 65 watts of power, suitable for various applications and devices.

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USE-HPA65A  
C14 Type AC Inlet



USE-HPA65C  
C6 Type AC Inlet

Dimensions (L × W × H): 115 x 50 x 31mm



## FEATURES:

- Input Voltage Range 70-264VAC
- Operating Temperature: -40~70°C
- Suitable for BF Application
- Protection: OVP, OLP, OTP, SCP
- 2MOPP
- Meet DoE VII
- Designed to Meet ISN, 60335 & 61558
- Extremely Low Leakage Current <0.1mA
- Operating Altitude: 5000M
- Built-In EMI Filter
- High Surge Immunity
- IP22
- Pass LPS
- 3-Year Warranty



## OPTIONAL FEATURES: ( Please Contact Our Sales )

- OVC III
- IP54
- Withstand 297VAC Surge Input for 2 Minutes

## APPLICATIONS:

- Medical Devices
- Telecommunication Devices
- Household Devices
- Consumer Electronics
- Office Electronics
- Industrial Equipment

## GENERAL SPECIFICATION:

- Waterproof and Dustproof Degree: IP22
- Protection Classes: Class I
- Safety:  
IEC 62368-1 Edition 2.0, IEC 62368-1 Edition 3.0, EN 62368-1, UL62368-1, CAN/CSA-C22.2 NO.62368-1-14, IEC 60601-1 Edition 3.2, EN60601-1, ANSI/AAMI ES60601-1: 2005 (R2012), CSA C22.2 NO. 60601-1:14

## ELECTRICAL CHARACTERISTICS:

| Characteristic                 | Condition                                                                                                                                                                 | Min. | Typ. | Max. | Unit |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Nominal Input Voltage          | 100 / 240VAC, Single Phase                                                                                                                                                | 100  |      | 240  | VAC  |
| Input Voltage Range            | Derate Linearly from 100% load at 90VAC to 70% load at 70VAC                                                                                                              | 70   |      | 264  | VAC  |
| Input Frequency Range          | Sine Wave                                                                                                                                                                 | 47   |      | 63   | Hz   |
| Output Power                   | See Rating Chart                                                                                                                                                          |      |      | 65   | W    |
| Low Line Input Current         | Full Load, Vin=115VAC                                                                                                                                                     |      |      | 1.5  | A    |
| High Line Input Current        | Full Load, Vin=230VAC                                                                                                                                                     |      |      | 0.75 | A    |
| Low Line Input Inrush Current  | Full Load, 25°C, Cool Start, Vin=115VAC                                                                                                                                   |      |      | 50   | A    |
| High Line Input Inrush Current | Full Load, 25°C, Cool Start, Vin=230VAC                                                                                                                                   |      |      | 100  | A    |
| Earth Leakage Current          | 0.1mA @ 264VAC Normal Condition, 0.3mA @ 264VAC Single Fault Condition                                                                                                    |      |      | 0.1  | mA   |
| Average Efficiency             | CoC v5 (Tier2), See Rating Chart                                                                                                                                          |      | 89   |      | %    |
| Line Regulation                | Full Load, Vin=100~120VAC                                                                                                                                                 |      |      | 0.5  | %    |
| Load Regulation                | Vin=100~240VAC                                                                                                                                                            |      | 3    | 5    | %    |
| Hold-Up Time                   | 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. |      | 12   |      | ms   |
| Start-Up Time                  | Full Load, Vin=100~240VAC                                                                                                                                                 |      |      | 3    | s    |
| Rise Time                      | At 115VAC & 230VAC                                                                                                                                                        |      |      | 50   | ms   |
| Isolation                      | Input to Output                                                                                                                                                           |      | 4000 |      | VAC  |
|                                | Input to PE                                                                                                                                                               |      | 1500 |      | VAC  |
|                                | Output to PE [Standard version only (RTN≠GND)]                                                                                                                            |      | 1500 |      | VAC  |

## PROTECTION:

| Characteristic         | Condition                                  | Min. | Typ. | Max. | Unit |
|------------------------|--------------------------------------------|------|------|------|------|
| Short Circuit          | Hiccup Mode, (Non-Latching, Auto-Recovery) |      |      |      |      |
| Over Temperature       | Hiccup Mode, (Non-Latching, Auto-Recovery) |      |      |      |      |
| Overvoltage            | Latch Mode                                 | 105  |      | 150  | %    |
| Overload / Overcurrent | Hiccup Mode, (Non-Latching, Auto-Recovery) | 110  |      | 154  | %    |

ENVIRONMENTAL:

| Characteristic          | Condition                                                         | Min. | Typ. | Max.  | Unit |
|-------------------------|-------------------------------------------------------------------|------|------|-------|------|
| Operating Temperature   | Derate Linearly From 100% Load at 40°C to 50% Load at 70°C        | -40  |      | 70    | °C   |
| Storage Temperature     | Surrounding Air Temperature                                       | -40  |      | 85    | °C   |
| Temperature Coefficient | All Condition                                                     |      |      | ±0.04 | %/°C |
| Operating Humidity      | 10-95% RH (Non-Condensing)                                        | 10   |      | 95%   | RH   |
| Storage Humidity        |                                                                   | 0    |      | 95%   | RH   |
| Operating Altitude      | Up to 5,000 meters                                                | 5000 |      |       | m    |
| Vibration               | Non-Operating, 5-500 Hz, 2.09 Grms, 20 minute for Each Three Axis |      |      | 2.09  | G    |

RATING CHART:

| MODEL NO.      | Rated Output Voltage | Rated Output Current | Maximum Output Power | Ripple & Noise | Total Regulation | 10% Load Efficiency | AVG. Efficiency | Max.No Load Consumption | Hold-Up Time (typ.) | Limited Power Source |
|----------------|----------------------|----------------------|----------------------|----------------|------------------|---------------------|-----------------|-------------------------|---------------------|----------------------|
|                | (VDC)                | (A)                  | (W)                  | (mVp-p)        | (%)              | (%)                 | (%)             | (W)                     | (ms)                | (LPS)                |
| USE-HPA65□-080 | 8                    | 6.75                 | 54                   | 80             | ±5               | 84.0                | 89.0            | 0.15                    | 12                  | ×                    |
| USE-HPA65□-090 | 9                    | 6.00                 | 54                   | 100            | ±5               | 84.0                | 89.0            | 0.15                    | 12                  | ×                    |
| USE-HPA65□-120 | 12                   | 5.42                 | 65                   | 100            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-150 | 15                   | 4.33                 | 65                   | 100            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-160 | 16                   | 4.06                 | 65                   | 120            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-180 | 18                   | 3.61                 | 65                   | 120            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-190 | 19                   | 3.42                 | 65                   | 120            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-200 | 20                   | 3.25                 | 65                   | 130            | ±3               | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-240 | 24                   | 2.70                 | 65                   | 150            | ±2.5             | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-280 | 28                   | 2.32                 | 65                   | 180            | ±2.5             | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-300 | 30                   | 2.16                 | 65                   | 200            | ±2.5             | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |
| USE-HPA65□-480 | 48                   | 1.36                 | 65                   | 200            | ±2.5             | 84.0                | 89.0            | 0.15                    | 12                  | ✓                    |

PRODUCT CODING:

H

P

A

65

□

-

X

X

X

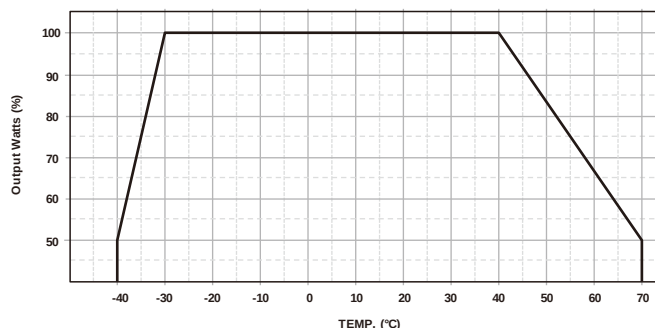
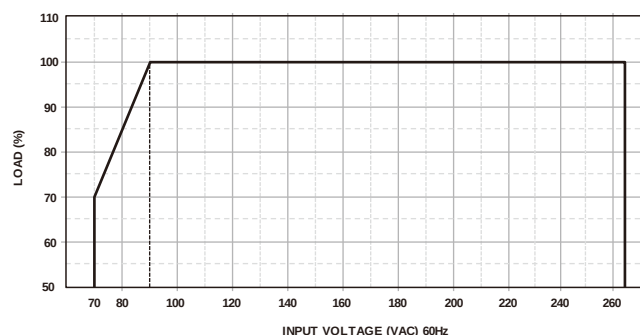
Series Name

Max. Wattage in the Product

AC Inlet  
A: C14 Type AC Inlet  
C: C6 Type AC Inlet

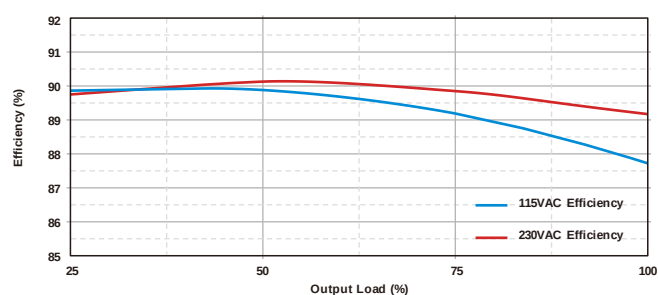
Output Voltage  
120: 12V 150: 15V  
240: 24V 480: 48V

### STATIC CHARACTERISTICS & POWER DE-RATING CURVE:

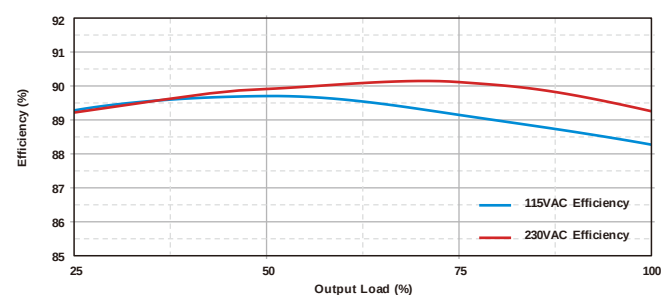


### EFFICIENCY VERSUS OUTPUT LOAD :

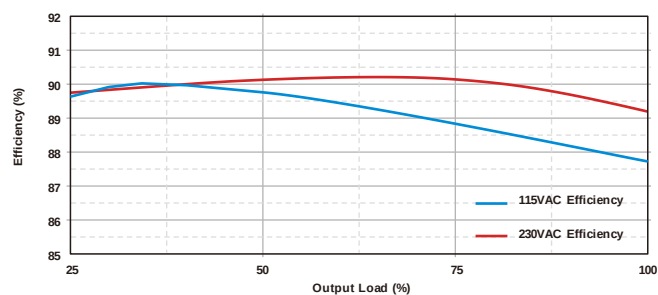
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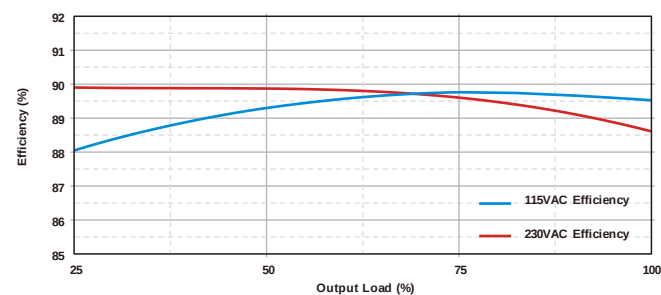
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#### ■ USE-HPA65A-120



#### ■ USE-HPA65A-240



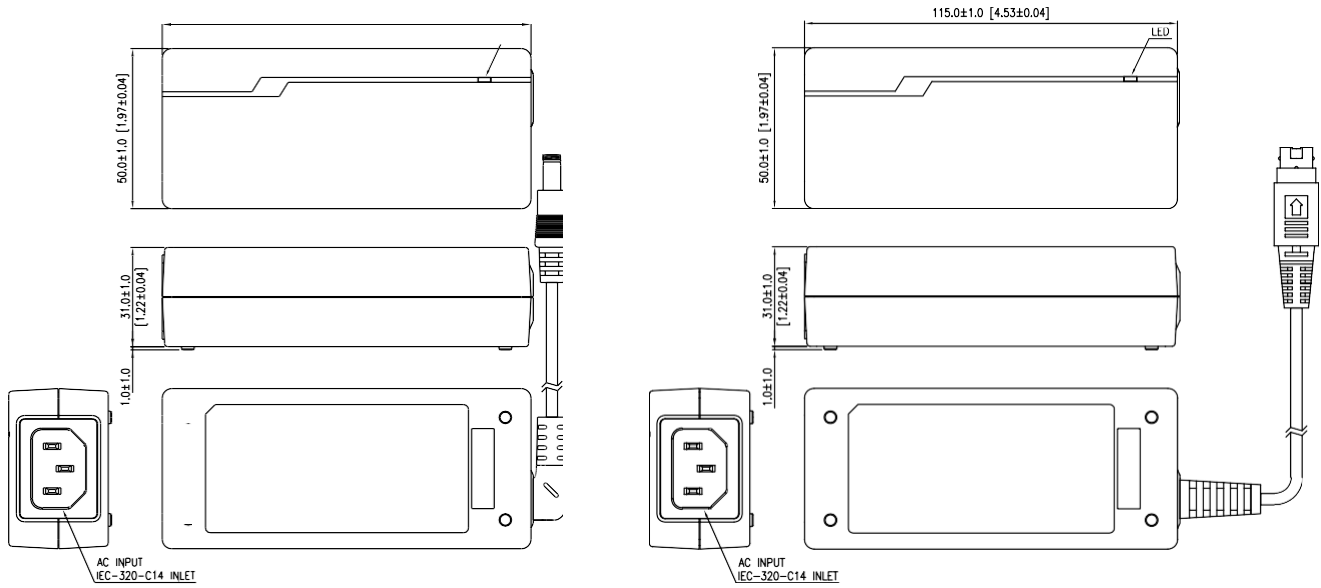
## USE-HPA65A/C

V1.7

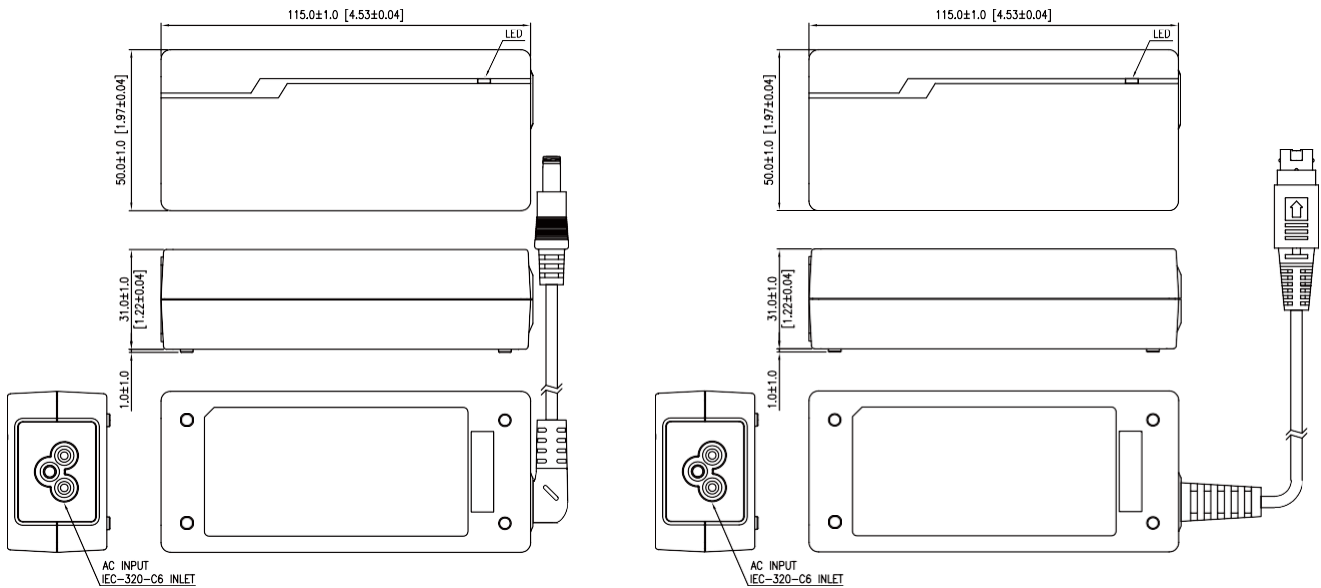
65W Medical / ITE Power Supply

### MECHANICAL DIMENSIONS: ( UNIT: mm )

#### USE-HPA65A



#### USE-HPA65C



**EMC EMISSION:**

| MEDICAL / ITE | Parameter | Standard    | Test Level |
|---------------|-----------|-------------|------------|
| MEDICAL       | Conducted | EN55011     | Class B    |
|               | Radiated  | EN55011     | Class B    |
|               | Harmonics | EN61000-3-2 | -          |
|               | Flicker   | EN61000-3-3 | -          |
| ITE           | Conducted | EN55032     | Class B    |
|               | Radiated  | EN55032     | Class B    |
|               | Harmonics | EN61000-3-2 | N/A        |
|               | Flicker   | EN61000-3-3 | -          |

\* The EMC test requires the integration of the switching power supply with the load of an end system.  
Consequently, variations in the application or assembly of the end system will influence the test results.

**EMC IMMUNITY:**

| MEDICAL / ITE | Parameter                              | Standard     | Test Level                                                                       | Criteria |
|---------------|----------------------------------------|--------------|----------------------------------------------------------------------------------|----------|
| MEDICAL       | ESD                                    | EN61000-4-2  | 15KV air discharge, 8KV discharge coupling plane                                 | A        |
|               | RS                                     | EN61000-4-3  | -                                                                                | A        |
|               | EFT                                    | EN61000-4-4  | 2KV                                                                              | A        |
|               | Surge                                  | EN61000-4-5  | line to line $\pm 2$ kV, line to ground $\pm 4$ kV                               | A        |
|               | CS                                     | EN61000-4-6  | 0.15 – 80(MHZ)                                                                   | A        |
|               | PFMF                                   | EN61000-4-8  | -                                                                                | A        |
|               | Voltage Dips<br>(230V & 100V)          | EN61000-4-11 | 0% Ut, 0.5 cycle (10 ms) @ full load<br>0°/45°/90°/135°/180°/225°/270°/315°/360° | A        |
|               |                                        |              | 0% Ut, 1 cycle (20 ms), 0° @ full load                                           | B        |
|               |                                        |              | 70% Ut, 25 cycle (500 ms), 0° @ full load                                        | A        |
|               | Voltage Interruptions<br>(230V & 100V) | EN61000-4-11 | 0% Ut, 250 cycle (5 s) @ full load<br>0°/45°/90°/135°/180°/225°/270°/315°/360°   | B        |
| ITE           | Radiated Fields<br>In Close Proximity  | EN61000-4-39 | -                                                                                | A        |
|               | ESD                                    | EN61000-4-2  | 8KV air discharge, 4KV contact discharge                                         | A        |
|               | RS                                     | EN61000-4-3  | 80 – 1000(MHZ)<br>1800, 2600, 3500, 5000<br>(MHZ) ( $\pm 1\%$ )                  | A        |
|               | EFT                                    | EN61000-4-4  | 2KV                                                                              | A        |
|               | Surge                                  | EN61000-4-5  | line to line $\pm 2$ kV, line to ground $\pm 4$ kV                               | A        |
|               | CS                                     | EN61000-4-6  | 0.15 – 80(MHZ)                                                                   | A        |
|               | PFMF                                   | EN61000-4-8  | -                                                                                | A        |
|               | Voltage Dips<br>(230V & 100V)          | EN61000-4-11 | 0% Ut, 0.5 cycle (10 ms) @ full load<br>0°/45°/90°/135°/180°/225°/270°/315°/360° | A        |
|               |                                        |              | 0% Ut, 1 cycle (20 ms), 0° @ full load                                           | B        |
|               |                                        |              | 70% Ut, 25 cycle (500 ms), 0° @ full load                                        | A        |
|               | Voltage Interruptions<br>(230V & 100V) | EN61000-4-11 | 0% Ut, 250 cycle (5 s) @ full load<br>0°/45°/90°/135°/180°/225°/270°/315°/360°   | B        |

\* The EMC test requires the integration of the switching power supply with the load of an end system.  
Consequently, variations in the application or assembly of the end system will influence the test results.

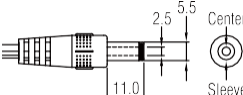
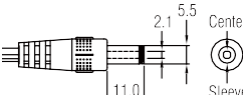
**OTHERS:**

| MEDICAL / ITE | Condition                                                                          | Min. | Typ.  | Max. | Unit |
|---------------|------------------------------------------------------------------------------------|------|-------|------|------|
| MTBF(typ.)    | 1 million hours based on Telcord ia SR-332(at 115 Vac, MAX. load and 25°C ambient) |      | 1000k |      | h    |
| Net Weight    | HPA65A-120 with a 16AWG, 4ft standard cable                                        |      | 225   |      | g    |

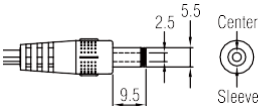
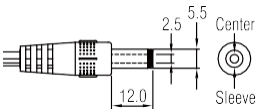
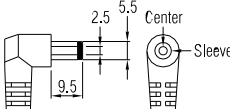
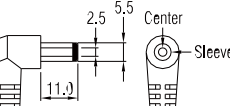
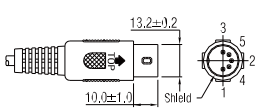
**OUTPUT CABLE RECOMMENDATION :**

1. Selected output connectors and wire, please refer to the Appendix.
2. 8V~9V are required to use AWG#14, 2FT, UL11353, 80°C output cable.
3. 12V are required to use AWG#16, 4FT, UL1571, 80°C output cable.
4. 15V~16V are required to use AWG#16, 4FT, UL1571, 80°C output cable.
5. 18V~24V are required to use AWG#18, 4FT, UL1571, 80°C output cable.
6. 28V~48V are required to use AWG#20, 4FT, UL1185, 80°C output cable.

**STANDARD CONNECTOR:**

| Barrel Female Plug                                                                | Plug PN | OD                     | ID  | L  | Standard Connection                                  | Wire Material | Wire Type                                     |
|-----------------------------------------------------------------------------------|---------|------------------------|-----|----|------------------------------------------------------|---------------|-----------------------------------------------|
|  | P01N    | 5.5                    | 2.5 | 11 | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT |
|                                                                                   |         |                        |     |    |                                                      | UL1185        | 28V~48V: 20AWG/4FT                            |
|  | P01K    | 5.5                    | 2.1 | 11 | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT |
|                                                                                   |         |                        |     |    |                                                      | UL1185        | 28V~48V: 20AWG/4FT                            |
| POWER DIN-4 + Lock                                                                | Plug PN | Standard Connection    |     |    |                                                      | Wire Material | Wire Type                                     |
|  | P09B    | P1,P2=OUT<br>P3,P4=RTN |     |    |                                                      | UL11353       | 8V~9V: 14AWG*2C/2FT                           |

**OPTINONAL CONNECTOR:**

| Barrel Female Plug                                                                  | Plug PN | OD                                      | ID  | L   | Standard Connection                                  | Wire Material | Wire Type                                                           |
|-------------------------------------------------------------------------------------|---------|-----------------------------------------|-----|-----|------------------------------------------------------|---------------|---------------------------------------------------------------------|
|  | P01M    | 5.5                                     | 2.5 | 9.5 | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT                       |
|                                                                                     |         |                                         |     |     |                                                      | UL1185        | 28V~48V: 20AWG/4FT                                                  |
|  | P01S    | 5.5                                     | 2.5 | 12  | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT                       |
|                                                                                     |         |                                         |     |     |                                                      | UL1185        | 28V~48V: 20AWG/4FT                                                  |
| Barrel Angle Female Plug                                                            | Plug PN | OD                                      | ID  | L   | Standard Connection                                  | Wire Material | Wire Type                                                           |
|  | P02M    | 5.5                                     | 2.5 | 9.5 | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT                       |
|                                                                                     |         |                                         |     |     |                                                      | UL1185        | 28V~48V: 20AWG/4FT                                                  |
|  | P02N    | 5.5                                     | 2.5 | 11  | Center=OUT(+)<br>Sleeve=RTN(-)<br>(Tuning Fork Type) | UL1571        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT                       |
|                                                                                     |         |                                         |     |     |                                                      | UL1185        | 28V~48V: 20AWG/4FT                                                  |
| DIN-5 Male Plug                                                                     | Plug PN | Standard Connection                     |     |     |                                                      | Wire Material | Wire Type                                                           |
|  | P05B    | P1,P2,P4=RTN<br>P3,P5=OUT<br>SHIELD=GND |     |     |                                                      | UL2464        | 12V, 15V~16V: 16AWG/4FT<br>18V~24V: 18AWG/4FT<br>28V~48V: 20AWG/4FT |

\* Please contact our sales team for detailed information regarding optional output connectors.