# UHD160 Series

UHD160

## Ultra High Density 160 W AC-DC Power Supply

### PRODUCT DESCRIPTION

This single-output, ultra high density AC-DC power supply series is designed for mission-critical operations in medical, IT and industrial applications. It features a power density of 18W/in$^3$ and a typical efficiency of 90%. At an output power of 160 W, in an industry standard 2”x4” footprint, the UHD160 series offers equipment designers a way to reduce system form factor and increase performance.

FOOTPRINT:
W 51 x L 102 mm (W 2 x L 4 in)

### FEATURES

- 3.3 V to 48 V outputs available
- Universal 90 to 264 Vac input
- Typical efficiency of 90%
- Industry standard 2" x 4” footprint
- OVP, OTP and short-circuit protection
- Fanless, convection-cooled operation up to 100 W
- Power density up to 18W/in$^3$
- Active power factor correction (PFC)
- Auxiliary fan +12V output
- Full ITE and medical approvals
- Compliant to worldwide safety and EMC standards

### MODEL SELECTION GUIDE

| ERP Part Number | Main Output V1 | | 12 V Auxiliary Output V2 (A) | Maximum Power (W) | |
|---|---|---|---|---|---|
| | V1 (V) | Max. Current (A) | | With Fan | No Fan |
| UHD160-1000 | 5 | 20 | 0.5 | 100 | 70 |
| UHD160-1001 | 12 | 13.3 | 0.5 | 160 | 100 |
| UHD160-1002 | 24 | 6.66 | 0.5 | 160 | 100 |
| UHD160-1003 | 48 | 3.33 | 0.5 | 160 | 100 |

*For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@erp-power.com*

### APPLICATIONS

- Medical & dental electronics
- Diagnostic & imaging equipment
- LED displays
- Networking, telecom and automation equipment
- Point of sale products

3 Year Warranty - 3 Year Warranty - 3

# Ultra High Density 160 W AC-DC Power Supply

## 1 - ORDERING INFORMATION - MODEL DESCRIPTION

| ERP Part Number | Main Output V1 | | | | Auxiliary Output V2 | | | Maximum Power (W) | |
|---|---|---|---|---|---|---|---|---|---|
| | V1 (V) | Current without Air Flow (A) | Current with Air Flow (A) | V1 Ripple Pk-Pk (mV) | V2 (V) | Current without Air Flow (A) | Current with Air Flow (A) | With Fan | No Fan |
| UHD160-1001 | 12 | 8.3 | 13.3 | 120 | 12 | 0.5 | 0.5 | 160 | 100 |
| UHD160-1002 | 24 | 4.16 | 6.66 | 240 | 12 | 0.5 | 0.5 | 160 | 100 |
| UHD160-1003 | 48 | 2.08 | 3.33 | 480 | 12 | 0.5 | 0.5 | 160 | 100 |

*Notes:*
1. *Total continuous output power shall not exceed 160 W with forced air, or 100W without a fan.*
2. *Air flow must be sufficient to keep heatsink temperatures below 110°C at 50°C ambient operation. Total power must not exceed 160 W.*
3. *For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@erp-power.com*

## 2 - INPUT SPECIFICATION

| | Units | Minimum | Typical | Maximum | Notes |
|---|---|---|---|---|---|
| **AC Input Voltage Range (Vin)** | Vac | 90 | 115/230 | 264 | |
| **Input Frequency Range** | Hz | 47 | 50/60 | 63 | |
| **Power Factor (PF)** | | | 0.98 | | At 90 Vac |
| **Input Current** | A | - | - | 2.3 | At 90 Vac |
| **Leakage Current** | µA | | | 110 µA @ 115 Vac<br>200 µA @ 230 Vac | |
| **Efficiency** | | - | 90% | - | At full load |

## 3 - OUTPUT SPECIFICATION

| | Units | Minimum | Typical | Maximum | Notes |
|---|---|---|---|---|---|
| **Output Voltage Set-Point Accuracy** | % | | ±1 | | |
| **Line Regulation** | % | | ±1 | | From 90 to 264 Vac |
| **Load Regulation**<br>**V1 (Main output)**<br>**V2 (12 V auxiliary)** | % | | <br>±1<br>±5 | | |
| **Cross Regulation**<br>**V1 (Main output)**<br>**V2 (12 V auxiliary)** | % | | <br>±1<br>±15 | | |
| **Transient Response** | % | | | 10 | 50% load change, recovery to regulation band within 1 msec |
| **Output Ripple Voltage** | % | | ±1 | | •±1.0% of nominal output voltage<br>•Peak-to-peak value, measured at 20 MHz Bandwidth |
| **Rise Time** | ms | 0.2 | | 20 | |
| **Startup Time** | s | | 1 | | |
| **Holdup Time** | ms | | 16 | | At 115 Vac and 230 Vac, at at full load |
| **Minimum Load** | A | 0 | | | |
| **Temperature Drift** | mV/°C | | ±0.25 | | |

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## 4 - PROTECTION FEATURES

| | Units | Minimum | Typical | Maximum | Notes |
|---|---|---|---|---|---|
| **Undervoltage Lockout** | Vac | 80 | | | |
| **Over-Voltage Protection** | % | 115 | | 130 | Latched shutdown |
| **Over-Current Protection** | % | 110 | | 150 | • No single output exceeds 150% of its rated output for more than 1 minute under any loading condition and nominal input voltage ranges.<br>• The power supply auto recovers when the over load condition is removed. |
| **Short-Circuit Protection** | | | | | Auto-recovery |
| **Over-Temperature** | | | | | Auto-recovery |
| **Input Fuse** | A | | 3 | | Line and Neutral |
| **Isolation Input/Output** | Vac | 4000 | | | For 1 minute |
| **Isolation Input/Ground** | Vac | 1500 | | | For 1 minute |
| **Isolation V1/V2** | Vdc | 100 | | | For 1 minute |
| **Isolation Output/Ground** | Vac | 500 | | | |

## 5 - EMC COMPLIANCE AND SAFETY APPROVALS

| EMC Compliance | | | | |
|---|---|---|---|---|
| | | **Standard** | **Condition** | **Equipment / Criteria / Class** |
| **Conducted EMI** | | EN55022 (CISPR 22) | 115 VRMS, 230 VRMS. Maximum load.<br>4 dB minimum margin | Class A |
| **Harmonic Current Emissions** | | IEC61000-3-2 | For Class D equipment | |
| **Voltage Fluctuations** | | IEC61000-3-3 | | |
| **Immunity Compliance** | **ESD (Electrostatic Discharge)** | IEC61000-4-2 | 8 kV air discharge, 6 kV contact discharge | A |
| | **RF Electromagnetic Field Susceptibility** | IEC61000-4-3 | 3 V/m, 80-2500 MHz, 1 kHz/2 Hz 80% AM modulation<br>Dwell time 3 sec for 2 Hz modulation<br>Dwell time 1 sec for 1kHz modulation | A |
| | **Electrical Fast Transient** | IEC61000-4-4 | ± 2kV on AC and DC 5 kHz repetition for 1 minute;<br>± 1kV on I/O | A |
| | **Surge** | IEC61000-4-5 | ± 1kV line to line, ±2kV line to earth on AC power port;<br>±0.5kV for outdoor cables | A |
| | **Conducted RF Disturbances** | IEC61000-4-6 | 3 Vrms, 0.15-80 MHz, 1 kHz/2 Hz 80% AM modulation | A |
| | **Magnetic Field Disturbances** | IEC61000-4-8 | 50 and 60 Hz, 3 A/m | A |
| | **Voltage Dips & Interruptions** | IEC61000-4-11 | Dip to 40% for 5 cycles (100 msec)<br>Dip to 70% for 25 cycles (500 msec)<br>Dropout to 5% for 10 msec<br>Interrupts > 95% for 5 s | B<br>B<br>B<br>C |

| Safety Agency Approvals | | |
|---|---|---|
| **Agencies** | VDE, UL, cUL | |
| **Standards** | EN60950, IEC60950, UL 60950, EN60601-1, IEC60601, UL 60601-1 | |

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## 6 - ENVIRONMENTAL CONDITIONS

| | Units | Minimum | Typical | Maximum | Notes |
|---|---|---|---|---|---|
| **Operating Temperature** | °C | -20 | | +70 | 50% of max power at 70°C, linearly derated over 50°C |
| **Storage Temperature** | °C | -40 | | +80 | |
| **Cooling** | LFM | 200 | | | Above 100 W of output power |
| **Relative Humidity** | % | 8 | | 90 | Operating, non-condensing |
| **Operating Altitude** | m | | | 3000 | |
| **Shock** | G | | | 10 | Half-sine 6 axis, operating |
| **Vibration** | G | | | 0.5 pk-pk | 10 to 300 Hz, 3 axis, operating |
| **MTBF** | Hours | | | | |
| **Convection cooling** | | 100,000 | | | |
| **With air flow** | | 300,000 | | | |

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## 7 - MECHANICAL SPECIFICATION

| Connector | Manufacturer and Part Number |
|---|---|
| Input Connector J1 | Molex 26-60-4030 or equivalent |
| J1 Mating Connector | Molex 09-91-0300 (crimp terminal housing)<br>Molex 08-50-0105 (crimp terminal, 18-24 AWG) |
| Ground Connector GND | Molex 19705-4301 or equivalent |
| Ground Mating Connector | Molex 0190030001 or equivalent |
| Output Connector J2 | Molex 26-60-4080 or equivalent |
| J2 Mating Connector | Molex 09-91-0800 (crimp terminal housing)<br>Molex 08-50-0105 (crimp terminal, 18-24 AWG) |
| Output Connector J3 | Molex 22-23-2041 or equivalent |
| J3 Mating Connector | Molex 22-01-2047 (crimp terminal housing)<br>Molex 08-50-0113 (crimp terminal, 22-30 AWG) |

## 8 - MECHANICAL DRAWING

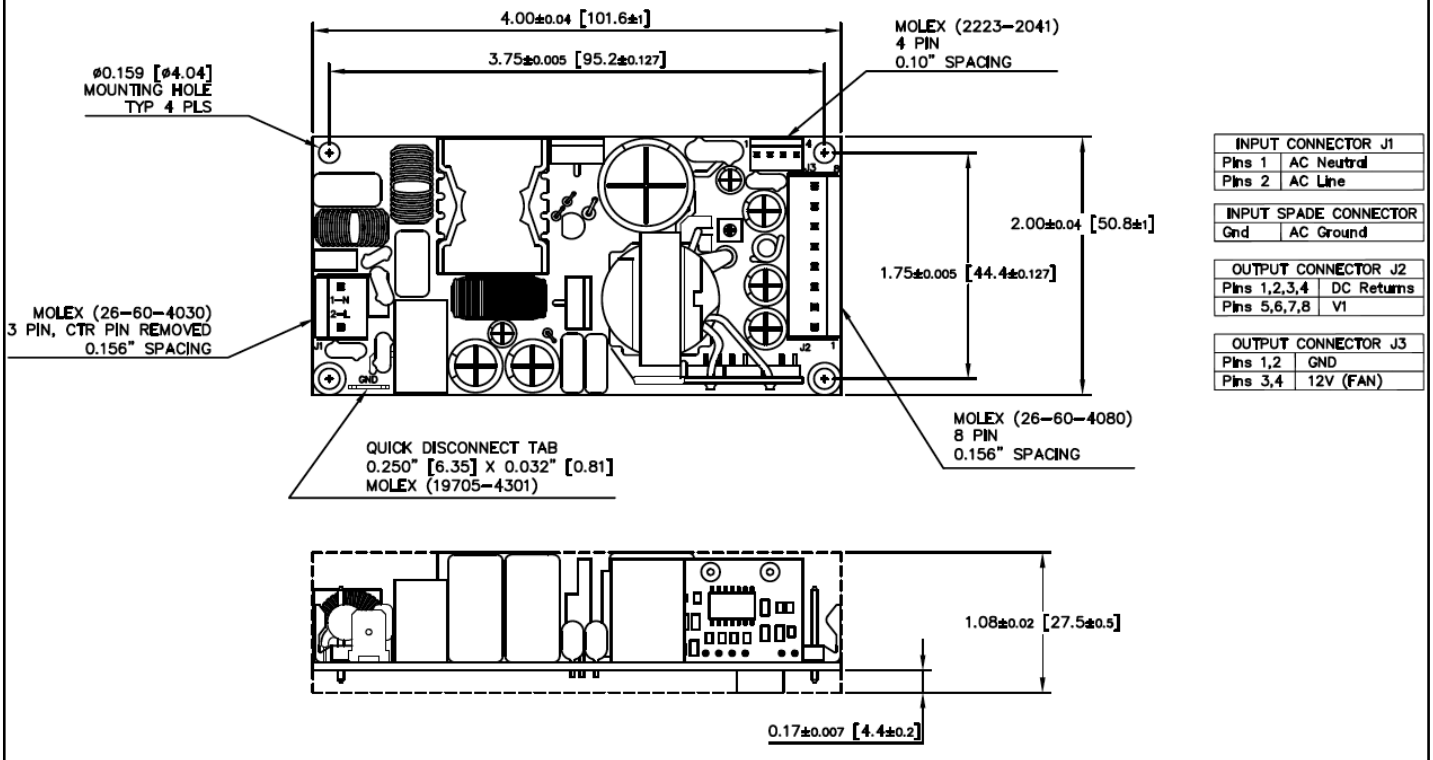


**Figure 1**

# Ultra High Density 160 W AC-DC Power Supply

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# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ERP Power:

UHD160-1003 UHD160-1007 UHD160-1010 UHD160-1005 UHD160-1000 UHD160-1009 UHD160-1001 UHD160-1004 UHD160-1002