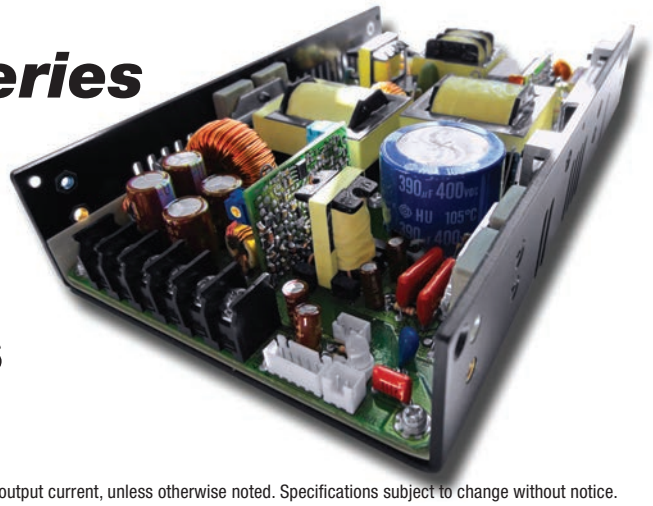
# MPU-400M Series

## Single Output, 400W Medical Approved AC/DC Power Supplies



### Key Features:

- Compact 400W Supply
- EN 60601-1 3RD Edition
- PFC to EN 61000-3-2 “D”
- Low Profile <1U Height
- 700W Peak Power
- Universal 90-264 VAC Input
- Current Share Option


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### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

**Input**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Input Voltage Range | Universal | 90 | | 264 | VAC |
| Input Frequency | | 47 | | 63 | Hz |
| Input Current, Full Load | 90 VAC | | 6.35 | | A |
| Inrush Current, Cold Start | 230 VAC | | | 35 | A |
| Leakage Current | | | | 200 | µA |
| Power Factor Correction | Meets EN 61000-3-2 Class D | | | | |
| Input Protection | Two T8A/250V Fuse | | | | |
| Input Undervoltage Protection | Under 80 VAC ±5 VAC Unit Shuts Down; Unit Recovers Over 86 VAC | | | | |

**Output**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Output Voltage Adjustment | By Trim Pot | | ±5.0 | | % |
| Output Regulation, See Note 1 | | | ±1.0 | | % |
| Hold Time | 120 VAC, 80% Load | 20 | | | mSec |
| Ripple & Noise (20 MHz), See Note 2 | See Model Selection Guide | | | | |
| Overload Protection | Foldback Circuit, Autorecovery | 110 | | 140 | % |
| Over Voltage Protection | >130% of Rated Output Voltage. Recycle AC Input. | | | | |
| Over Temperature Protection | Autorecovery | | +85 | | °C |
| Temperature Coefficient | | | ±0.04 | | %/°C |
| Transient Recovery Time, See Note 4 | 50% Load Change | | 2.5 | | mS |
| Transient Response Deviation | | | 5.0 | | % |
| Overshoot/Undershoot | At Turn On/Off | | | ±5.0 | % |
| Turn On Delay | 230 VAC | | | 1.0 | S |
| Output Short Circuit | Continuous With Autorecovery | | | | |

**General**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Isolation Voltage, See Note 5 | Input - Output | 4,000 | | | VAC |
| | Input - FG (Frame Ground) | 1,500 | | | |
| | Primary - Core | 1,500 | | | |
| Switching Frequency | Fixed | | 30 | | kHz |

**Interface Signals**

| | |
|---|---|
| LED Power Supply On | Bi-color LED Is Green For Power On; Orange When Protection Enabled |
| AC Fail (Option) | Signal goes low (0V) if input drops below 80 VAC (± 5VAC). Signal goes high (5V) if input rises above 86 VAC |
| Current Monitor | A 0.5 to 3.0V Output That Represents 0% to 100% Output Current |
| Current Share (Option) | For Sharing Up To Four Units. Contact The Factory For Details |
| Margin (Option) | For remote output voltage adjustment. Contact The Factory For Details |
| Remote Sense | Compensates For Up To A 0.5V Line Drop |
| Power Good Signal | Goes TTL high 100 to 500 mS after regulation. Goes low at least 1 mS before the loss of regulation. |
| Remote On/Off | A TTL low signal inhibits the output. |

**Environmental**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Operating Temperature Range | Ambient | 0 | +25 | +70 | °C |
| Output Derating | 2.5%/ °C from +50 °C to + 70 °C | | | | |
| Storage Temperature Range | | -20 | | +85 | °C |
| Cooling | See Model Selection Guide | | | | |
| Operating Humidity | RH, Non-condensing | | | 90 | % |

**Reliability Specifications**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| MTBF | MIL HDBK 217F, 30°C, Gnd Benign | 100 | | | kHours |
| Safety Standards | EN 60601 3RD Edition (UL) | | | | |
| EMI Compliance | Compliance to EN 55022 (CISPR22) Class B; EN 61000-3-2, 3 | | | | |
| EMS Immunity Compliance | EN 61000-4-2,3,4,5,6, 8,11; EN 55024, CE Marked (LVD) | | | | |
| Vibration | Sinusoidal 5~50 Hz, Acceleration ±7.35 m/s$^2$ on X, Y & Z Axis | | | | |

## Model Selection Guide



| Model Number | Output Voltage (VDC) | | Output Current (A) | | Ripple & Noise (% p-p) | Efficiency (%) |
|---|---|---|---|---|---|---|
| | PreSet | Range | Convection | With 23 CFM | | |
| MPU-400MS-12YZI | 12 VDC | 12.0 - 15.0 | 20.83 | 33.33 | ±1% | 80% |
| MPU-400MS-24YZI | 24 VDC | 22.0 - 30.0 | 10.41 | 16.66 | ±1% | 80% |
| MPU-400MS-48YZI | 48 VDC | 42.0 - 58.0 | 5.20 | 8.33 | ±1% | 80% |

**Notes:**
1. Output regulation includes line & load.
2. Ripple & noise is measured from 10 Hz to 20 MHz. Connection to the unit is made with a 0.1 µF ceramic capacitor & a 22 µF electrolytic capacitor connected in parallel.
3. A 1% minimum load is required to maintain regulation & ripple specifications.
4. Transient recovery is measured to within a 1% error band for a load step change of 50% to 100%.
5. Isolation specifications are production HI-Pot tested for 3 seconds.
6. The full output range (see table) is covered in the safety agency certification. Standard models are factory set to the Preset voltage, but may be set to other levels within the range without affecting the agency certification. For more information, contact the factory.
7. Output power is given for the factory preset voltage. The maximum continuous output power level is 400W with 23 CFM airflow. All models provide a peak power level of 700W for a maximum duration of 500 µS. For more information, contact the factory.
8. Each unit includes two (250V/8A) fuses. Since these fuses are not field replaceable, it is recommended that an external fuse of the same size be used on the input of the power supply for protection.

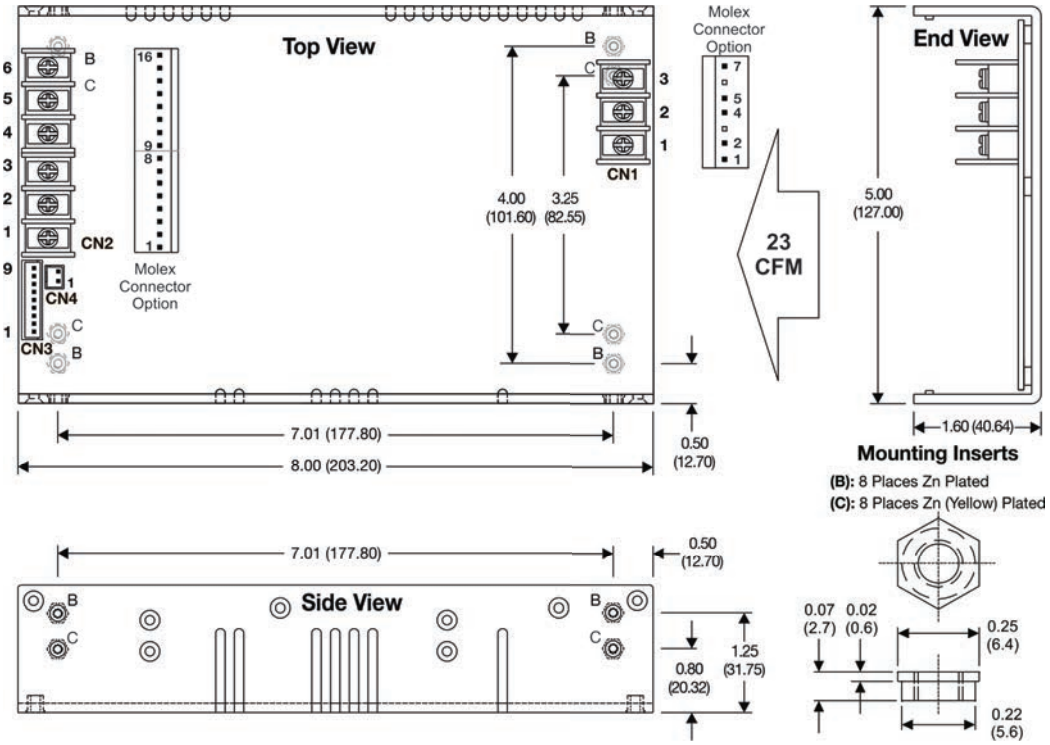
## Model Number

**MPU-400MS-XXYZI**

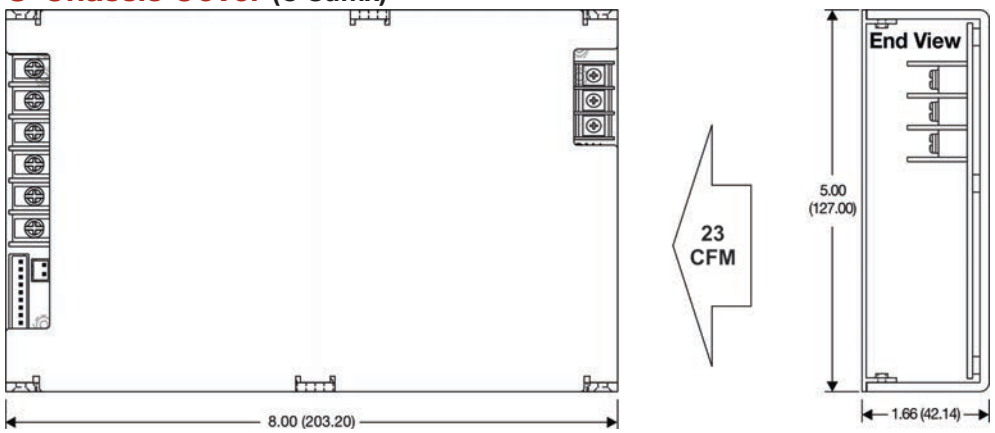
- **Mechanical Configuration**: U = U-Chassis
- **Approval Level**: M = EN 60601
- **Outputs**: S = Single
- **Output Voltage Selection**
- **Connector Type**: T = Terminal Block, A = Molex
- **Case Options (If Available)**: C = Cover
- **Current Share (Optional)**: I = Current Share (up to 4 Units)

Models with other output voltage levels are available (i.e. 5 VDC, 36 VDC, etc)
Contact the factory for details at:
**sales@micropowerdirect.com**

## Mechanical Dimensions




## U-Chassis Cover (C Suffix)




## Connections

### Input Connector (CN1):

- Terminal Block:
  Howder HD-121-3P: M3.5 Screws
  3 pins, 9.5 mm Centers
- Molex Mating Part No:
  Molex 09-91-0700 or equivalent
  (Seven pins, Five pins used)

| Howder | | Molex | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1 | AC-Line | 1,2 | AC-Line |
| 2 | AC-Neutral | 4,5 | AC-Neutral |
| 3 | Field Ground | 7 | Field Ground |

### Output Connector (CN2):

- Terminal Block:
  Howder HD-121-6P: M3.5 Screws
  6 pins, 9.5 mm Centers
- Molex Mating Part No:
  Molex 09-91-1600 or equivalent

| Howder | | Molex | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1-3 | -VOUT | 1-8 | -VOUT |
| 4-6 | +VOUT | 9-16 | +VOUT |

### Logic Signal Connector (CN3):

- Mating Part No:
  JST XHP-9 or equivalent
  (CHYAO SHIUNN JS-2001-09)

| Pin | Function |
|---|---|
| 1 | + Remote Sense |
| 2 | - Remote Sense |
| 3 | Remote On/Off |
| 4 | Power Good |
| 5 | AC Fail |
| 6 | Common |
| 7 | Current Share |
| 8 | Current Monitor |
| 9 | Margin |

### Fan Driver Connector (CN4):

- Mating Part No:
  JST XHP-2 or equivalent
  (CHYAO SHIUNN JS-2001-02)

| Pin | Function |
|---|---|
| 1 | Plus |
| 2 | Minus |

**Notes:**
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)

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