

# MPM-40 Series

## Board Mount, 40W Single, Dual & Triple Out AC/DC Power Supplies



### Key Features:

- 40W Output Power
- Universal 90-264 VAC Input
- EN 60950 Approved (UL)
- Meets IEC Safety Class II
- Industry Standard Pin-Out
- Single, Dual & Triple Outputs
- Meets EN 55022 B
- >200 kHour MTBF

Chassis Mount Models  
& DIN Rail Mount  
Option Available!



### MicroPower Direct

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### Electrical Specifications

Specifications typical @ +25°C, 230 VAC input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Input

| Parameter           | Conditions                      | Min. | Typ. | Max. | Units |
|---------------------|---------------------------------|------|------|------|-------|
| Input Voltage Range |                                 | 90   |      | 264  | VAC   |
|                     |                                 | 100  |      | 375  | VDC   |
| Input Frequency     |                                 | 47   |      | 440  | Hz    |
| Input Current       | See Model Selection Guide       |      |      |      |       |
| Inrush Current      | 115 VAC                         |      | 30.0 |      | A Pk  |
|                     | 230 VAC                         |      | 50.0 |      |       |
| EMI                 | Meets CISPR Pub. 22/FCC Class B |      |      |      |       |

#### Output

| Parameter                                 | Conditions                   | Min. | Typ.  | Max. | Units                               |
|---|------------------------------|------|-------|------|-------------------------------------|
| Output Voltage                            | See Model Selection Guide    |      |       |      |                                     |
| Output Current                            | See Model Selection Guide    |      |       |      |                                     |
| Output Voltage Accuracy                   | See Note 1                   |      | ±2.0  |      | %                                   |
| Line Regulation, See Note 2               | V <sub>IN</sub> = Min to Max |      | ±0.5  |      | %                                   |
| Load Regulation, Single Output            | I <sub>o</sub> = 1% to 100%  |      | ±1.0  |      | %                                   |
| Load Regulation, Dual Output, See Note 3  | I <sub>o</sub> = 10% to 100% |      | ±1.0  |      | %                                   |
| Load Regulation, Triple Output - Primary  | I <sub>o</sub> = 10% to 100% |      | ±3.0  |      | %                                   |
| Load Regulation, Triple Output - Aux.     | I <sub>o</sub> = 10% to 100% |      | ±7.0  |      | %                                   |
| Cross Regulation, Dual Output, See Note 4 | I <sub>o</sub> = 15% to 100% |      | ±5.0  |      | %                                   |
| Cross Regulation, Triple Output - Primary | I <sub>o</sub> = 15% to 100% |      | ±3.0  |      | %                                   |
| Cross Regulation, Triple Output - Aux.    | I <sub>o</sub> = 15% to 100% |      | ±7.0  |      | %                                   |
| Ripple & Noise (20 MHz)                   | 3.3 VDC Output               |      | 50.0  |      | mVp-p                               |
|   | All Other Outputs            |      | 1.0   |      | %V <sub>p-p</sub> of V <sub>o</sub> |
| Hold-Up Time                              | 115 VAC                      |      | 15    |      | mSec                                |
| Temperature Coefficient                   |                              |      | ±0.02 |      | %/°C                                |
| Over Temperature Protection               | Note 4                       |      | 100   |      | °C                                  |
| Over Voltage Protection                   | Zener Diode Clamp            |      | 120   |      | % of V <sub>o</sub>                 |
| Short Circuit Protection, See Note 6      | Continuous (Autorecovery)    |      |       |      |                                     |
| Overload Protection                       |                              | 105  | 120   |      | % of I <sub>o</sub>                 |

#### General

| Parameter            | Conditions                                 | Min.  | Typ. | Max. | Units                         |
|----------------------|--|-------|------|------|-------------------------------|
| Isolation Voltage    | Input to Output                            | 3,000 |      |      | VAC                           |
| Isolation Resistance | 500 VDC                                    | 100   |      |      | MΩ                            |
| EMI/RFI              | Conducted                                  |       |      |      | EN 55022 Level B              |
|                      | Electrostatic Discharge (ESD)              |       |      |      | EN 61000-4-2 Level B          |
| EMC Compliance       | RF Field Susceptibility                    |       |      |      | EN 61000-4-3                  |
|                      | Electrical Fast Transients/Bursts On Mains |       |      |      | EN 61000-4-4 Level 3 2 kV     |
|                      | Surge                                      |       |      |      | EN 61000-4-5 Level 3 1kV/2 kV |
| Switching Frequency  |  |       | 132  |      | kHz                           |

#### Environmental

| Parameter                   | Conditions                               | Min. | Typ. | Max. | Units |
|-----------------------------|--|------|------|------|-------|
| Operating Temperature Range | Ambient                                  | -40  | +25  | +70  | °C    |
| Operating Temperature Range | Case                                     |      |      | +95  | °C    |
| Storage Temperature Range   |  | -40  |      | +100 | °C    |
| Cooling                     | Free Air Convection (See Derating Curve) |      |      |      |       |
| Humidity                    | RH, Non-condensing                       |      |      | 95   | %     |

#### Physical

|               |   |  |  |  |  |
|---------------|---|--|--|--|--|
| Case Size     | 3.50 x 2.50 x 0.98 Inches (89.0 x 63.5 x 25.0 mm) |  |  |  |  |
| Case Material | Non-Conductive Plastic & Fiberglass (UL94-V0)     |  |  |  |  |
| Weight        | 9.85 Oz (280g)                                    |  |  |  |  |

#### Reliability Specifications

| Parameter        | Conditions                      | Min. | Typ. | Max. | Units  |
|------------------|---------------------------------|------|------|------|--------|
| MTBF             | MIL HDBK 217F, 25°C, Gnd Benign | 200  |      | 400  | kHours |
| Safety Standards | EN 60950                        |      |      |      |        |
| Safety Class     | IEC 61140 Class II              |      |      |      |        |

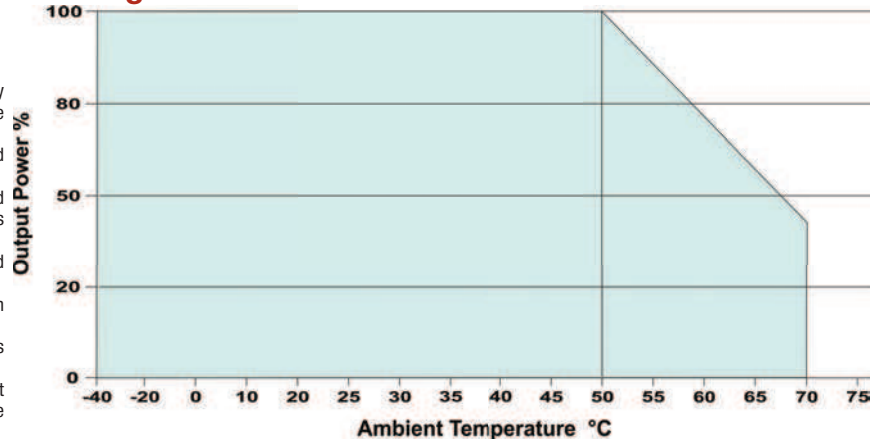
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| Model Number | Input       |         | Output 1 (Vout 1) |          |          | Output 2 (Vout 2) |          |          | Output 3 (Vout 3) |             |          | Efficiency (% Typ) |
|--------------|-------------|---------|-------------------|----------|----------|-------------------|----------|----------|-------------------|-------------|----------|--------------------|
|              | Current (A) |         | Voltage (VDC)     | Current  |          | Voltage (VDC)     | Current  |          | Voltage (VDC)     | Current (A) |          |                    |
|              | 115 VAC     | 230 VAC |                   | Max. (A) | Min. (%) |                   | Max. (A) | Min. (%) |                   | Max. (A)    | Min. (%) |                    |
| MPM-40S-03   | 0.860       | 0.460   | 3.3               | 8.000    | 1.0      |                   |          |          |                   |             |          | 76                 |
| MPM-40S-05   | 0.860       | 0.460   | 5.0               | 8.000    | 1.0      |                   |          |          |                   |             |          | 81                 |
| MPM-40S-09   | 0.860       | 0.460   | 9.0               | 4.444    | 1.0      |                   |          |          |                   |             |          | 83                 |
| MPM-40S-12   | 0.860       | 0.460   | 12.0              | 3.333    | 1.0      |                   |          |          |                   |             |          | 84                 |
| MPM-40S-15   | 0.860       | 0.460   | 15.0              | 2.666    | 1.0      |                   |          |          |                   |             |          | 83                 |
| MPM-40S-24   | 0.860       | 0.460   | 24.0              | 1.667    | 1.0      |                   |          |          |                   |             |          | 83                 |
| MPM-40D-05   | 0.860       | 0.460   | +5.0              | +4.000   | 10.0     | -5.0              | -4.000   | 10.0     |                   |             |          | 81                 |
| MPM-40D-12   | 0.860       | 0.460   | +12.0             | +1.666   | 10.0     | -12.0             | -1.666   | 10.0     |                   |             |          | 83                 |
| MPM-40D-15   | 0.860       | 0.460   | +15.0             | +1.333   | 10.0     | -15.0             | -1.333   | 10.0     |                   |             |          | 83                 |
| MPM-40D-0512 | 0.860       | 0.460   | 5.0               | 5.000    | 25.0     | 12.0              | 1.250    | 25.0     |                   |             |          | 82                 |
| MPM-40D-0524 | 0.860       | 0.460   | 5.0               | 5.000    | 25.0     | 24.0              | 0.625    | 25.0     |                   |             |          | 82                 |
| MPM-40T-0512 | 0.860       | 0.460   | +5.0              | +5.000   | 25.0     | +12.0             | +0.600   | 25.0     | -12.0             | -0.600      | 25.0     | 82                 |
| MPM-40T-0515 | 0.860       | 0.460   | +5.0              | +5.000   | 25.0     | +15.0             | +0.500   | 25.0     | -15.0             | -0.500      | 25.0     | 81                 |

Other output combinations are available  
Contact the factory for details at:  
sales@micropowerdirect.com

- Notes:
- For dual output models **MPM-40D-0512** and **MPM-40D-0524**, output voltage accuracy is  $\pm 3\%$  for output 1 and  $\pm 5\%$  for output 2. For triple output models, the output voltage accuracy is  $\pm 3\%$  for output 1 and  $\pm 5\%$  for output 2 & 3.
  - For the **MPM-40D-0512** and **MPM-40D-0524**, the line regulation of output 2 is specified at  $\pm 5\%$ .
  - For models **MPM-40D-05**, **MPM-40D-12** and **MPM-40D-15**, load regulation is measured with balanced loads. For the **MPM-40D-0512** and **MPM-40D-0524**, load regulation is  $\pm 2\%$  for output 1 and  $\pm 6\%$  for output 2.
  - For the **MPM-40D-0512** and **MPM-40D-0524**, cross regulation is measured for a load change of 25% to 100%. It is  $\pm 1\%$  for output 1 and  $\pm 7\%$  for output 2.
  - The overtemperature protection circuit will shut the unit down. The unit will restart when the operating temperature drops to approximately  $+80^\circ\text{C}$ .
  - Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed.
  - Operation at under no load conditions will not damage these units, however the output voltage may be unstable. It is recommended that the minimum load values in the table above be used.
  - The maximum capacitive load for these units ranges from 23,000  $\mu\text{F}$  (**MPM-40S-03**) to 470  $\mu\text{F}$  (**MPM-40S-24**). Contact technical sales for information on specific models.
  - It is recommended that a fuse be used on the input of a power supply for protection. For the **MPM-40** series, a 2A/250 VAC slow blow should be used.

Derating Curve



Model Number

**MPM-40X-YY**

Outputs  
S = Single  
D = Dual  
T = Triple

Output Voltage Selection  
(i.e. 05 = 5 VDC,  
24 = 24 VDC, etc)

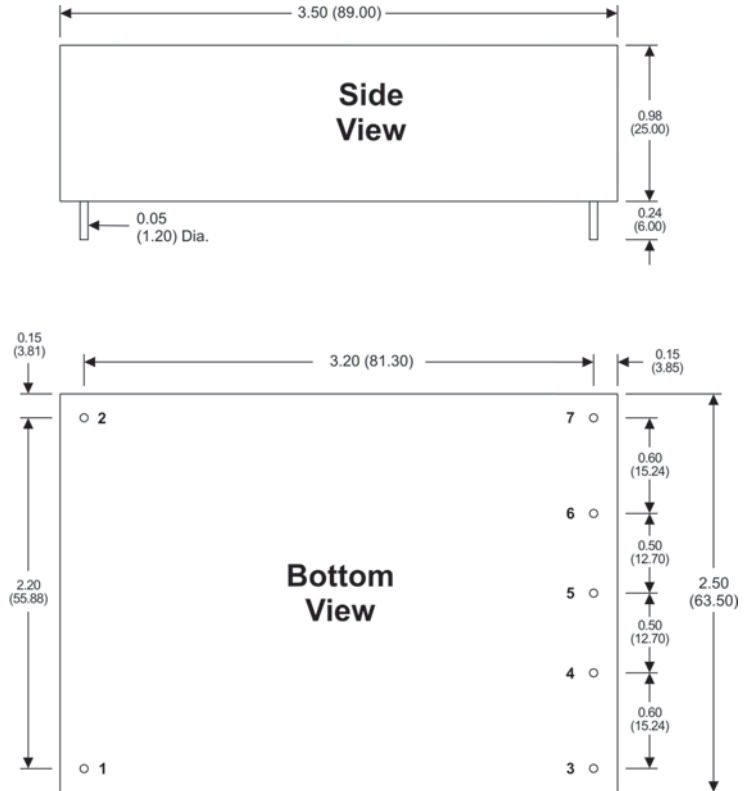
Pin Connections

| Pin | Single | Dual   | Dual Seperate | Triple     |
|-----|--------|--------|---------------|------------|
| 1   |        |        | AC-Line       |            |
| 2   |        |        | AC-Neutral    |            |
| 3   | +Vo    | +Vo    | +Vo 2         | +Vo 2      |
| 4   | No Pin | No Pin | +Vo 1         | +Vo 1      |
| 5   | -Vo    | Common | -Vo 2         | Common 2/3 |
| 6   | No Pin | No Pin | -Vo 1         | -Vo 1      |
| 7   | NC     | -Vo    | No Pin        | -Vo 3      |

NC = No Connection

Dual Seperate Models = **MPM-40D-0512** & **MPM-40D-0524**

Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )



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