MPM-20S Series

Universal Input, 20W Miniature, PC Mount AC/DC Power Supplies

Key Features:

- 20W Output Power
- Universal 85-264 VAC Input
- EN 60950 Approved (UL)
- Adjustable Output
- Meets EN 55022 B
- >300 kHour MTBF
- Compact PC Mount Case

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		85		264	VAC
		120		370	VDC
Input Frequency		47		63	Hz
Input Current	See Model Selection Guide				
Inrush Current	115 VAC		16.0		A Pk
	230 VAC		30.0		

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage	See Model Selection Guide				
Output Current	See Model Selection Guide				
Output Voltage Accuracy			±2.0		%
Line Regulation	VIN = Min to Max		±0.5		%
Load Regulation	See Note 2		±1.0		%
Ripple & Noise (20 MHz)			50	100	mV P-P
Hold-Up Time	115 VAC		30		mSec
	230 VAC		80		
Temperature Coefficient			±0.02		%/°C
Short Circuit Protection	Continuous (Autorecovery)				
Over Voltage Protection	Zener Diode Clamp				
Overload Protection	Autorecovery	110			%W

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Input to Output	3,000			VAC
Isolation Resistance	500 VDC	100			MΩ
Switching Frequency			65		kHz

EMI Characteristics

Parameter	Standard	Min.	Typ.	Max.	Units
Radiated Emissions	EN 55022	Class B			
Conducted Emissions	EN 55022	Class B			
ESD	EN 61000-4-2	Criteria B; ±8 kV Air/±6 kV Contact			
RS	EN 61000-4-3	Criteria A; 10V/m			
EFT	See Note 4 EN 61000-4-4	Criteria B; ±2 kV			
Surge	See Note 5 EN 61000-4-5	Criteria B; ±1 kV/±2 kV			

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		+105	°C
Cooling	Free Air Convection (See Derating Curve)				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	2.75 x 1.88 x 0.92 Inches (70.0 x 48.0 x 23.50 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	4.23 Oz (120g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	300			kHours
Safety Standards	EN 60950				

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Model Selection Guide

Model Number	Input Current (A)		Output Voltage (VDC)	Output Current (A)		Over Volt. Protection (VDC)	Efficiency (%, Typ)
	115 VAC	230 VAC		Max	Min		
MPM-20S-03	0.33	0.18	3.3	4.10	0.0	7.5	73
MPM-20S-05	0.33	0.18	5.0	3.50	0.0	7.5	75
MPM-20S-09	0.33	0.18	9.0	2.10	0.0	12.0	77
MPM-20S-12	0.33	0.18	12.0	1.60	0.0	20.0	81
MPM-20S-15	0.33	0.18	15.0	1.30	0.0	20.0	83
MPM-20S-24	0.33	0.18	24.0	0.85	0.0	30.0	85

Notes:

1. Operation at no load will not damage the units, however, they may not meet all specifications.
2. Load regulation is measured for an output change of 10% to 100% at nominal input line.
3. All units are rated for EN 55022 (CE/RE) class B without external components.
4. All units are rated for EN 61000-4-4 (±2 kV) without external components. They will meet EN 61000-4-4 (±4 kV) with additional input filtering as shown below.
5. All units are rated for EN 61000-4-5 (±1 kV/±2 kV) without external components. They will meet EN 61000-4-5 (±2 kV/±4 kV) with additional input filtering as shown below.
6. It is recommended that a fuse be used on the input of a power supply for protection. For the **MPM-20S** series, a 3.15A/250 VAC slow blow should be used.

Typical Connection

The diagram below illustrates a typical application connection of the **MPM-20S-xx** series. Notes on this circuit (starting with the input circuit) are:

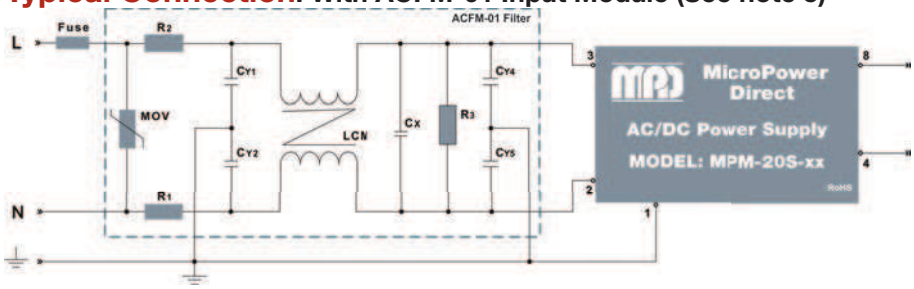
1. It is recommended that an external fuse and NTC be used. The recommended fuse is a 3.15A/250V slow blow and for the NTC, a 5D-9.
2. An external MOV is required on the input to protect the unit in the event of a surge. A 561KD14 or equivalent is recommended.
3. A simple external circuit may be used to adjust the output ±10%. To adjust the output DOWN, connect a 5%, 3W resistor between the plus output pin and the V_{OUT} trim pin. To adjust the output UP, connect a 5%, 3W resistor between the minus output pin and the V_{OUT} trim. Contact the factory for resistor values needed to achieve a specific output.
4. Recommended output filtering capacitors are:

	C_1	C_2	TVS
MPM-20S-03	330 µF/16V	0.01 µF/25V	SMBJ7.0A
MPM-20S-05	330 µF/16V	0.01 µF/25V	SMBJ7.0A
MPM-20S-09	220 µF/25V	0.01 µF/25V	SMBJ12A
MPM-20S-12	220 µF/25V	0.01 µF/25V	SMBJ20A
MPM-20S-15	220 µF/25V	0.01 µF/25V	SMBJ20A
MPM-20S-24	220 µF/25V	0.01 µF/25V	SMBJ30A

Output capacitor (C_2) is a high frequency, low resistance electrolytic capacitor. Capacitor (C_1) is ceramic. Voltage derating of capacitors should be 80% or above.

5. Input noise and surge suppression modules are available for a number of **MPD** AC/DC power supplies. An **MPM-20S-xx** connection with the **ACFM-01** is illustrated in the diagram at left. For pricing or full technical information on these modules (**ACFM-01** and **ACFM-02**) please contact the factory.

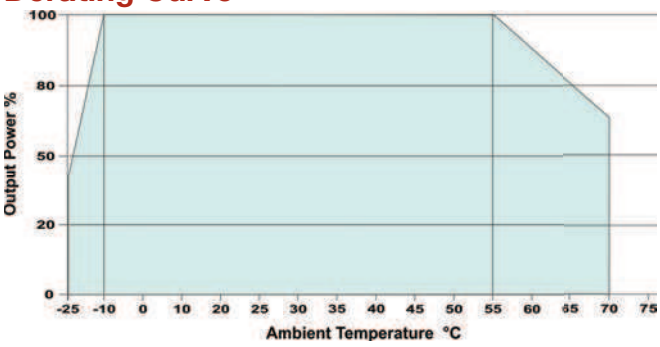
Typical Connection: With ACFM-01 Input Module (See note 5)



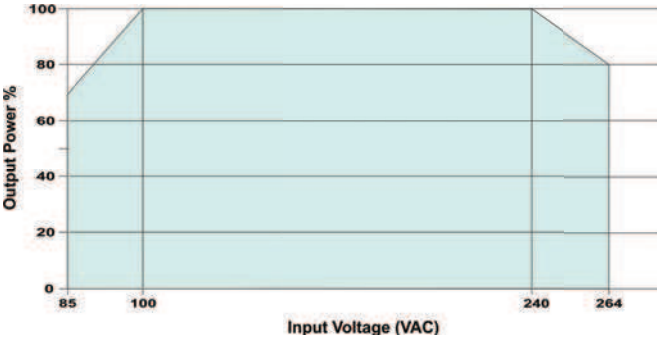
Pin Connections

Pin	Function	Pin	Function
1	AC-Ground	4	-Vout
2	AC-Neutral	8	+Vout
3	AC-Line	Trim	Trim

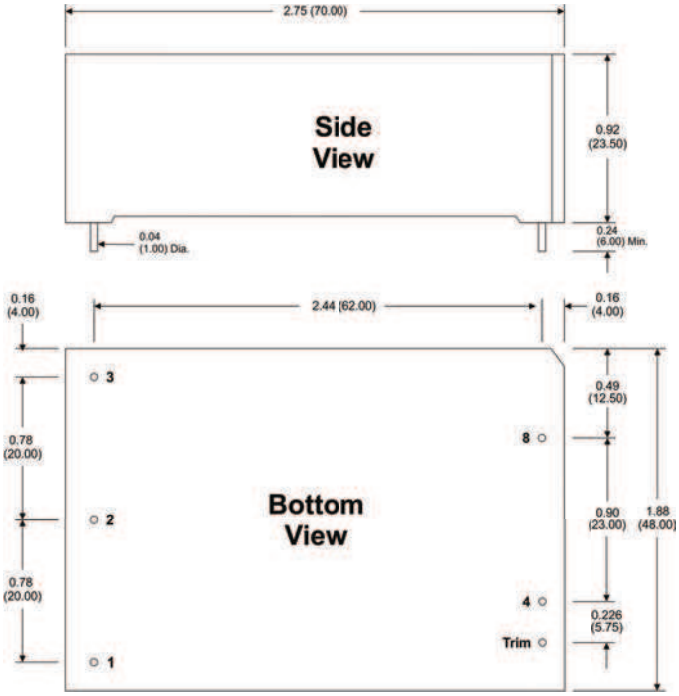
Derating Curve



Input Voltage Vs Load



Mechanical Dimensions



Notes:

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

The **MPM-20-xx** series is also available with a chassis mount or DIN mount adapter. Contact the factory for more information

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