

## MCM Series



- Compact Size - High Power Density
- Rugged Design for Defense Applications
- Universal Input
- Wide Operating Temperature
- MIL-STD-461E
- Convection-cooled
- Manufactured in the USA

## Specification

## Input

Input Voltage	• 90-264 VAC (120-370 VDC)
Input Frequency	• 47-63 Hz
Input Current	• 0.4 A max at 230 VAC
Inrush Current	• 40 A max at 230 VAC, cold start 25 °C
Input Protection	• Internal T3.15 A/250 V fuse in line and neutral

## Output

Output Voltage	• See table
Initial Set Accuracy	• $\pm 1.0\%$ , set at 60% load
Minimum Load	• No minimum load required
Start Up Delay	• 2 s max
Start Up Rise Time	• 50 ms
Hold Up Time	• 16/75 ms minimum at 115/230 VAC
Line Regulation	• $\pm 0.5\%$
Load Regulation	• 3%
Over/Undershoot	• None at turn on/off
Transient Response	• 4% max. deviation, recovery to within 1% in 500 $\mu$ s for a 25% load change
Ripple & Noise	• 1% pk-pk, 20MHz bandwidth with 1 $\mu$ F capacitor connected across measurement points
Overvoltage Protection	• 115-135% Vnom, recycle input to reset
Overload Protection	• 110-150%, on primary power limit, auto recovery
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• 0.05%/°C
Peak Load	• 120% for 100 ms, see note 3

## General

Efficiency	• Up to 83% at nominal line, 100% load
Isolation	• 4000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 70 kHz typical
Power Density	• 2.6 W/In <sup>3</sup>
MTBF	• 250 kHrs to MIL-HDBK-217F at 25 °C, GB

## Environmental

Operating Temperature	• -40 °C to +70 °C, derate linearly from 100% load at +50 °C to 50% load at +70 °C. Start up at -30 °C.
Cooling	• Convection-cooled
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 °C to + 85 °C
Operating Altitude	• 3000 m
Shock	• 30 g pk, half sine, 6 axes
Vibration	• 2 g rms, 5 Hz to 500 Hz, 3 axes

## EMC &amp; Safety

Emissions	• MIL-STD-461E, CE102, RE102 EN60601-1-2, EN61204-3, FCC 20780, EN55022, level B conducted EN55022 Level A radiated
Military Immunity	• MIL-STD 461E, CS101, 114, 115, 116 & RS103
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 V Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
Safety	• Compliant to EN60950, UL60950, CSA 22.2 601.1, EN60601-1, UL60601-1

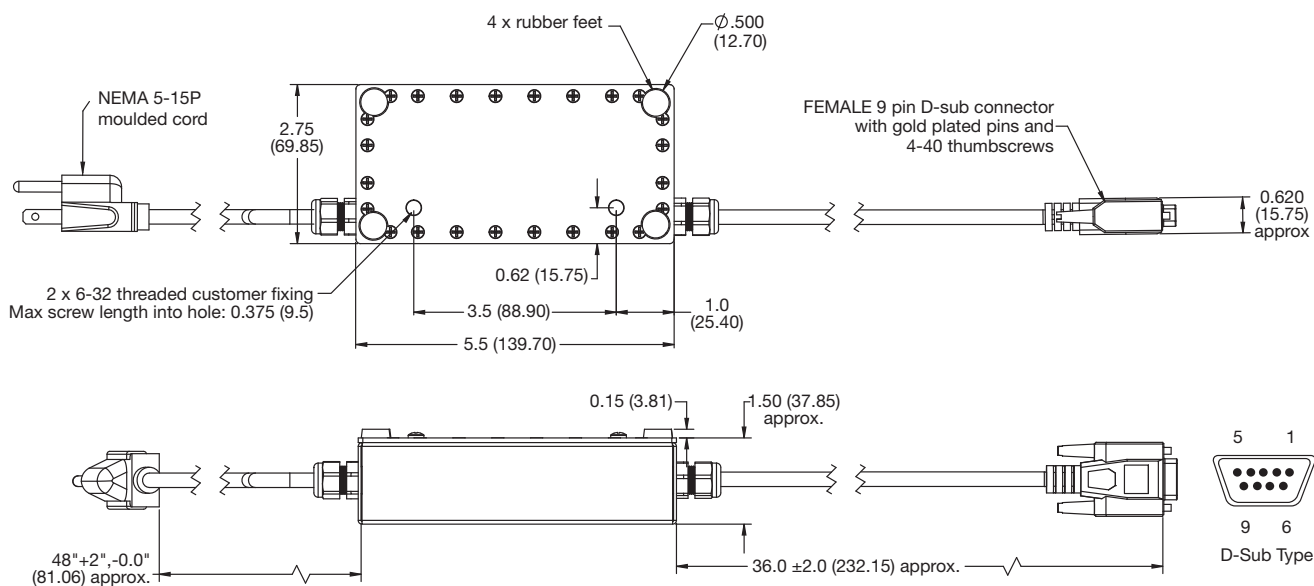
## Models and Ratings

Input Voltage	Output Voltage	Output Current	Efficiency (typ)	Model Number <sup>(3,4,5)</sup>
90-264 V	12 VDC	5.0 A	80%	MCM60US12-D9
	15 VDC	4.0 A	80%	MCM60US15-D9
	18 VDC	3.3 A	81%	MCM60US18-D9
	24 VDC	2.5 A	83%	MCM60US24-D9
	28 VDC	2.1 A	83%	MCM60US28-D9

### Notes

- For extended burn-in, contact sales.
- For other output voltages 3.3 V to 48 V, consult sales.
- A 120% peak load can be taken for up to 100 ms with a 25% duty cycle. Average load not to exceed 60 W.
- Mechanical drawing shows the '-D9' 9 Pin Output D-Sub connector. For other connectors, contact sales.
- For no connectors, add suffix '-NI' the part number e.g. MCM60US28-NI.
- US AC mains lead is standard, For European mains lead, add -EU suffix to part number, For UK mains lead, add -UK suffix to part number; e.g. MCM60US12-D9-UK

## Mechanical Details



Output Pin Connections			
Pin	D-Sub Type	Pin	D-Sub Type
1	N/C	6	N/C
2	N/C	7	N/C
3	N/C	8	Return
4	+Output	9	Return
5	+Output		

### Notes

- All dimensions are in inches (mm).
- Tolerance is ±0.005 (±0.12) except input/output cables.
- Weight: 2.5 lbs (1.13 kg)
- Finish: Black epoxy paint.

## Derating Curve

