MDR-60SY

Step Shape, DIN-Rail, 60W, Single Output AC/DC Power Supplies

Key Features:

- 60W Output Power
- 4,000 VAC I/O Isolation
- DIN-Rail TS-35/7.5 or 15
- Universal AC Input
- Isolation Class II
- Ultra Slim Step Design
- UL Approved
- -20 to +70°C Operation
- DC Output Adjustable
- LPS Rated
- Meets EN 55032 B
- >900 kHour MTBF

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		90		264	VAC
		127		370	VDC
Input Frequency		47		63	Hz
Input Current	See Model Selection Guide				
Leakage Current	240 VAC			1.0	mA
Rise Time	Full Load			50	mS
Start Up Time, Full Load	115/230 VAC			500	mS
Inrush Current, Cold Start	115 VAC		25		A Pk
	230 VAC		45		

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0		%
Line Regulation	At Rated Load		±1.0		%
Load Regulation, 0 - 100% Load			±1.0		%
Ripple & Noise (20 MHz), See Note 1	5V Output			80	mV
	12V, 15V Output			120	
	24V Output			150	
	48V Output			240	
Hold-Up Time	115 VAC		12		mSec
	230 VAC		30		
Temperature Coefficient	0° to 50° RH Non-Condensing		±0.03		%/°C
Over Current Protection		105		160	%IOUT
Short Circuit Protection, See Note 2	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, See Note 3	Input to Output	4,000			VAC
Isolation Resistance	Input to Output		>100		MΩ
Isolation Class	Class II				
Switching Frequency			50/60		kHz

EMI See Page 2

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-20	+25	+70	°C
Storage Temperature Range		-40		+85	°C
Cooling	Free Air Convection (See Derating Curves)				
Humidity, RH, Non-condensing	Working	20		90	%
	Storage	10		95	
Operating Altitude		5,000			m

Physical

Size and Weight	See Mechanical Drawing (Page 3)
Case Material	Plastic, UL 94V-0, Heat Resistant
DIN Rail	TS35X7.5 & TS35x15 "TOP HAT" Rail

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	900			kHours
Safety Standards	UL/cUL 62368-1 recognition (UL certificate)				
Over Voltage Category	II, Per EN 62368-1				
Vibration	IEC 60068-2-6, 10-500 Hz, 2G 10 min/1 cycle, 60 min each along X, Y, Z axis				

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Model Selection Guide

Model Number	Input		Output				Rated Power (W)	Over Voltage Protection (VDC) See Note 3	Efficiency % (Typ @ 230 VAC)
	Current (A)		Voltage (VDC)	Adjust Range (VDC)	Current (A)				
	115 VAC	230 VAC			Rated	% Min.			
MDR-60SY-05	1.20	0.80	5.0	5.0 - 5.5	4.50	0.00	22.5	5.75 - 6.75	95.0
MDR-60SY-12	1.20	0.80	12.0	10.8 - 13.8	4.50	0.00	54.0	14.20 - 16.20	88.0
MDR-60SY-15	1.20	0.80	15.0	13.5 - 18.0	4.00	0.00	60.0	18.80 - 22.50	89.0
MDR-60SY-24	1.20	0.80	24.0	21.6 - 29.0	2.50	0.00	60.0	30.00 - 36.00	90.0
MDR-60SY-48	1.20	0.80	48.0	43.2 - 55.2	1.25	0.00	60.0	56.50 - 64.80	91.0

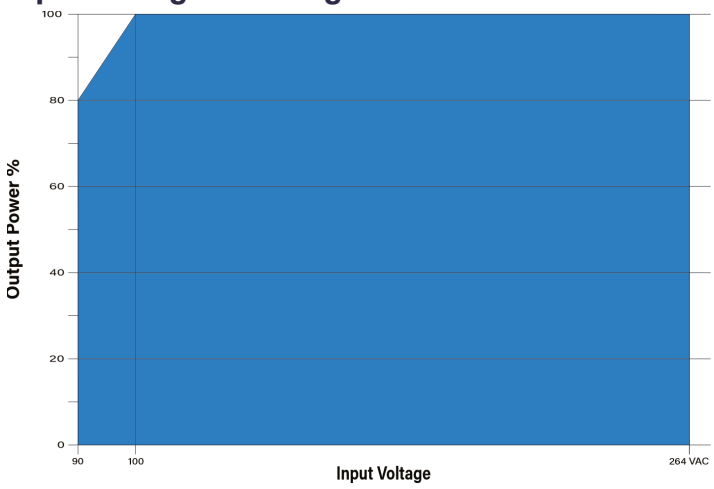
EMI/RFI

Parameter	Standard	Criteria	Level
Radiated Emissions	CISPR 32/EN 55032		Class B
Conducted Emissions	CISPR 32/EN 55032		Class B
ESD	EN 61000-4-2	A	±4 kV Contact
			±8 kV Air
RS	EN 61000-4-3	A	Level 3
EFT/Burst	EN 61000-4-4	A	Level 3
Surge	EN 61000-4-5	A	±2 kV L-L
CS	EN 61000-4-6	A	10 Vrms
Magnetic Field	EN 61000-4-8	A	Level 4
Voltage Dips	EN 61000-4-11	A	See Note 4

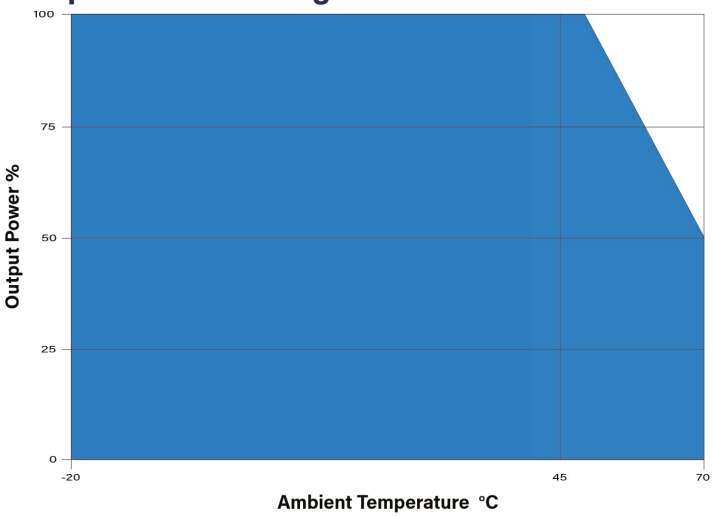
Notes:

1. Output ripple is measured at 20 MHz bandwidth using 0.1 μF and 10 μF capacitors connected in parallel as close to the power supply terminals as possible.
2. Output short circuit protection is provided by constant current limiting (VOUT equals >50% to 100% of rated output voltage) or a hiccup mode circuit (VOUT <50%) . The unit recovers automatically when the fault condition is removed.
3. After an overvoltage fault, the unit must be shutdown and repowered when the fault condition is removed.
4. A 100% Dip for 1 period, a 30% dip for 25 periods and 100% interruptions for 250 periods.

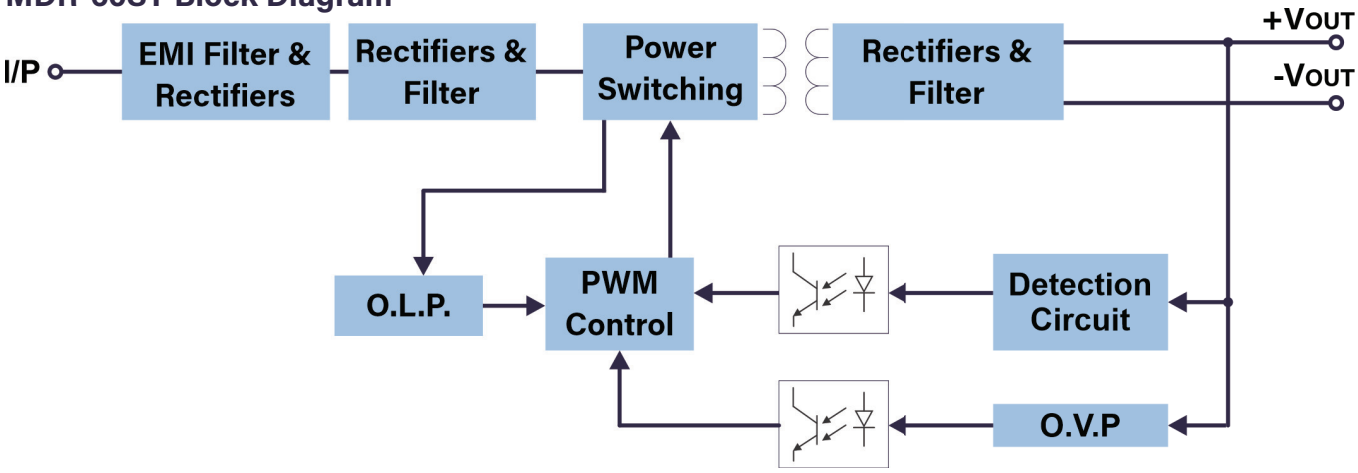
Input Voltage Derating



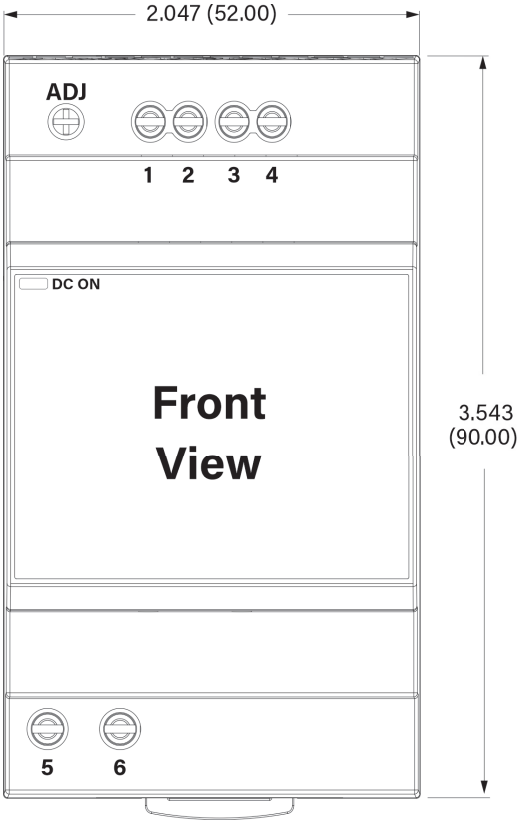
Temperature Derating

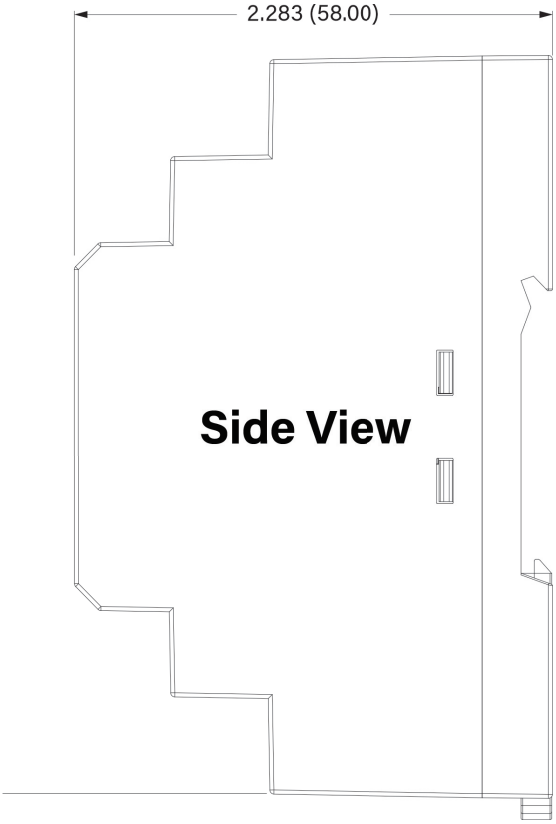


MDR-60SY Block Diagram



Mechanical Dimensions





Connections

- Wire range - 24 -12 AWG
- Max Tightening Tourqe: 0.4 N•m

Pin	Function
1	-VOUT
2	-VOUT
3	+VOUT
4	+VOUT
5	AC/L
6	AC/N

Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.019 (±0.50)
- Mounting Rail: TS35
- Weight = 6.70 Oz (190g)

MPD has a very wide range of high performance AC/DC power supplies ranging from 600W UChannel units to 1W units in miniature Single-In-Line (SIP) packages. All are designed and certified to international safety and EMC/EMI standards.
Whatever your application, we probably have an "Off The Shelf" solution that fits your requirements. Call or visit us online today.

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