MDR-20LY

Single Output, DIN-Rail, Very Compact 20W AC/DC Power Supplies



Key Features:

- Up to 24W Output Power
- 3,000 VAC I/O Isolation
- DIN-Rail TS-35/7.5 or 15
- Universal AC Input
- Takes AC or DC Input
- Ultra Slim Case
- UL Approved
- -20°C to 70°C Operation
- DC OK Relay Contact
- Adjustable DC Output
- Meets EN 55032 B
- >500 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			30	mS
Start Up Time, Full Load	115 VAC			1,000	mS
	230 VAC			500	
Inrush Current, Cold Start	115 VAC		35		A Pk
	230 VAC		70		

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0		%
Line Regulation	At Rated Load		±1.0		%
Load Regulation, 0 - 100% Load			±5.0		%
Ripple & Noise (20 MHz), See Note 1	5V Output			80	mV
	12V Output			120	
	15V Output			120	
	24V Output			150	
Hold-Up Time	115 VAC		20		mSec
	230 VAC		50		
Temperature Coefficient			±0.03		%/°C
Over Current Protection		105			%IOUT
Short Circuit Protection, See Note 2	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, See Note 3	Input to Output	3,000			VAC
	Input to Field Ground	2,000			
	Output to Field Ground	500			
Isolation Resistance	Input to Output	>100			MΩ
	Input to Field Ground				
	Output to Field Ground				
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	

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	500			kHours
Safety Standards	UL 508, Meets UL 62368-1 , Meets EN 61558-1, OVC II				
Vibration	IEC 60068-2-6, 10-500 Hz, 2G 10 min/1 cycle, 60 min each along X, Y, Z axis				
Safety Class	Class I				

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Model Selection Guide

Model Number	Input		Output				Over Voltage Protection (VDC) See Note 4	Efficiency % (Typ @ 230 VAC)
	Current (A)		Voltage (VDC)	Adjust Range (VDC)	Current (A)			
	115 VAC	230 VAC			Rated	% Min.		
MDR-20LY-05	0.33	0.21	5.0	4.75 - 5.50	3.00	0.00	5.75 - 6.75	76
MDR-20LY-12	0.33	0.21	12.0	10.8 - 13.2	1.67	0.00	13.8 - 16.2	80
MDR-20LY-15	0.33	0.21	15.0	13.5 - 16.5	1.34	0.00	17.25 - 20.25	81
MDR-20LY-24	0.33	0.21	24.0	21.6 - 26.4	1.00	0.00	27.6 - 32.4	84

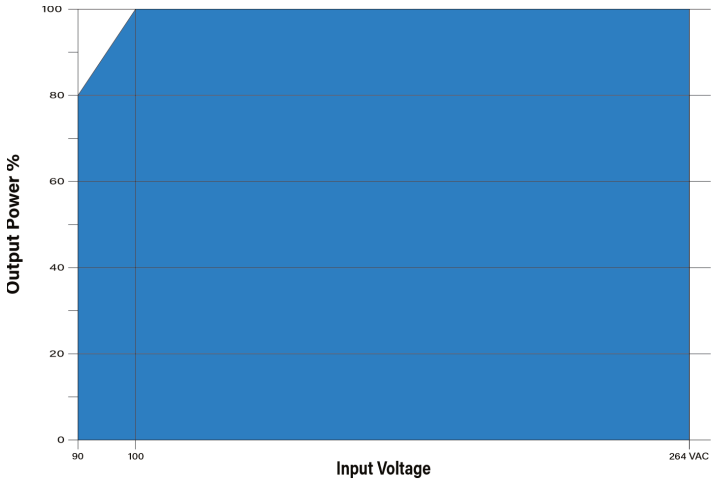
EMI/RFI

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
Surge	EN 61000-4-5	A	±2 kV L-L
CS	EN 61000-4-6	A	10 Vrms
Voltage Dips	EN 61000-4-11	A	See Note 5

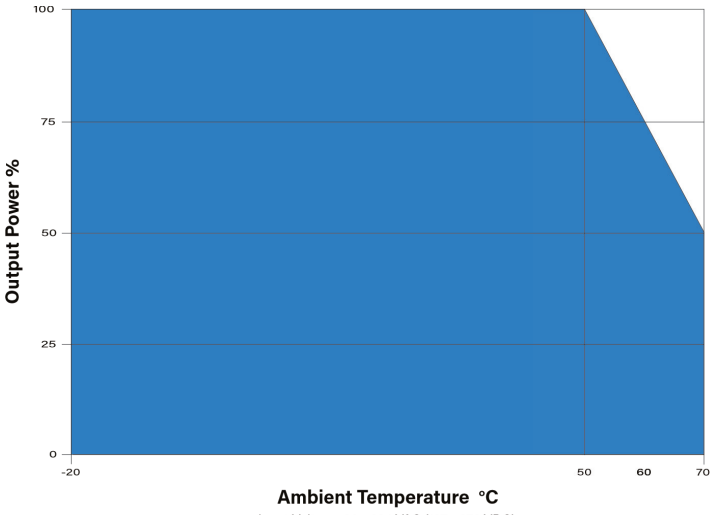
Notes:

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. The unit recovers automatically when the fault condition is removed.
3. Isolation is tested for 60 seconds with a leakage current of <5 mA.
4. After an overvoltage fault, the unit must be shutdown and repowered when the fault condition is removed.

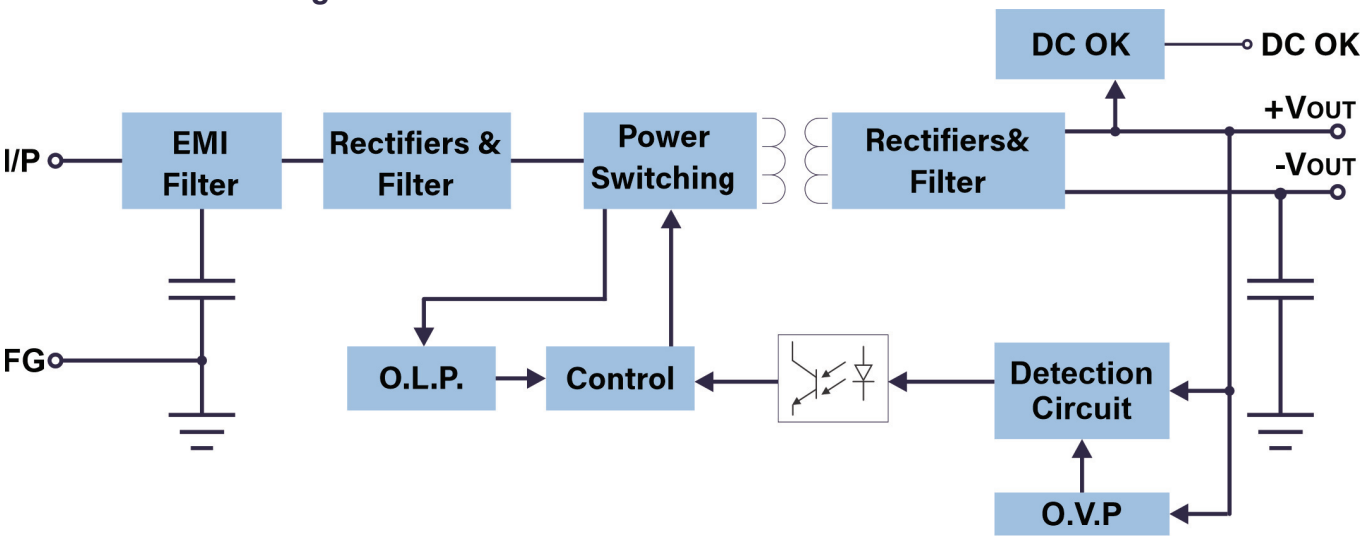
Input Voltage Derating



Temperature Derating

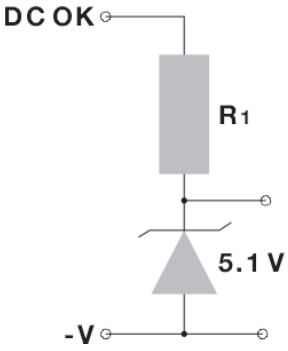


MDR-20LY Block Diagram



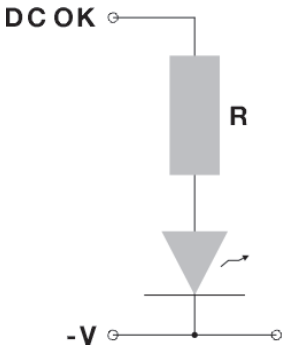
Using The DC OK Signal

1: 5V Signal



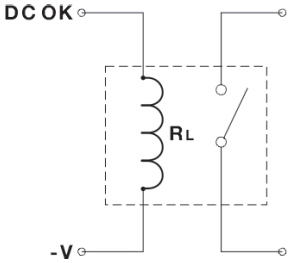
V Out	R Value
5 V	≥ 200Ω
12 V	≥ 1.5 kΩ
15 V	≥ 2.0 kΩ
24 V	≥ 3.9 kΩ

2: LED Signal



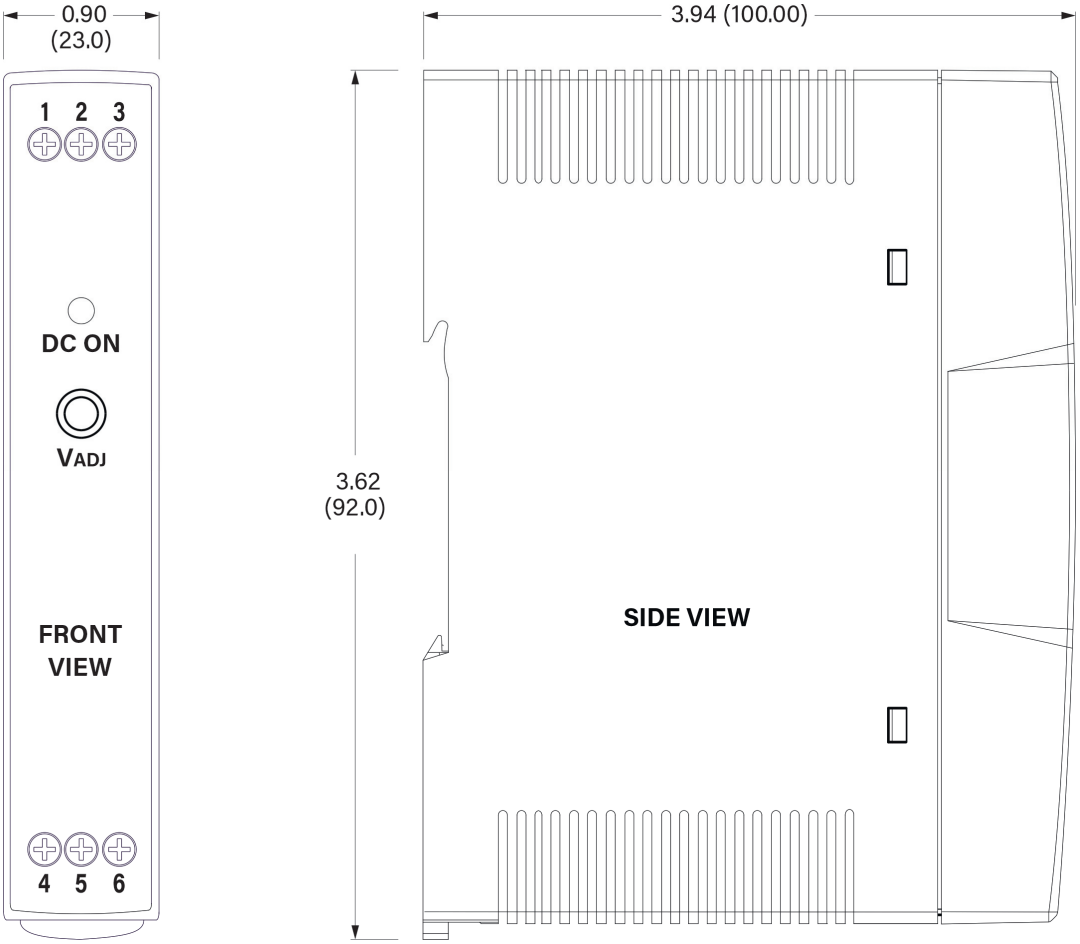
V Out	R Value
5 V	≥ 1.0kΩ
12 V	≥ 2.4 kΩ
15 V	≥ 3.0 kΩ
24 V	≥ 4.7 kΩ

3: Relay Signal



V Out	R Value
5 V	≥ 120Ω
12 V	≥ 700Ω
15 V	≥ 700Ω
24 V	≥ 1.2 kΩ

Mechanical Dimensions



Connections

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

Pin	Function
1	+VOUT
2	-VOUT
3	DC OK

Pin	Function
4	GND
5	AC-Neutral
6	AC-Line

Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.039 (±1.00)
- Mounting Rail: TS35
- Weight = 5.29 Oz (150g)

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