

DINergy™ MD240-1CS SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT



FEATURES

- HIGH EFFICIENCY 93%
- BUILT-IN ACTIVE P.F.C
- 150% PEAK LOAD CAPABILITY
- SELV COMPONENTS DESIGN
- PARALLEL FUNCTION (SWITCH SELECTABLE)
- 3 YEARS WARRANTY



MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
MD240-12A-1CS	88 ~ 264 VAC	192 WATTS	+ 12 VDC	16A	89%	91%
MD240-24A-1CS	88 ~ 264 VAC	240 WATTS	+ 24 VDC	10A	91%	93%

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

GENERAL						
Characteristics	Conditions		min.	typ.	max.	unit
Switching frequency	Vi nom, Io nom			90		KHz
Isolation voltage	Input-Output		3,000 / 4,242			VAC / VDC
	Input-FG		1,500 / 2,121			VAC / VDC
	Output-FG		500 / 710			VAC / VDC
Isolation resistance	Input-Output, @ 500VDC		100			MΩ
Ambient temperature	Operating at Vi nom		-40		+ 71	°C
Derating (see derating curve)	Vi nom, from +6 I to +71°C				2.5	% / °C
Storage temperature	Non operational		-40		+ 85	°C
Relative humidity	Vi nom, Io nom		20		95	% RH
Temperature coefficient	Vi nom, Io min				± 0.03	% / °C
MTBF	Bellcore Issue 6 @40°C, GB	12V	440,000			Hours
		24V	410,000			Hours
Altitude during operation	EN 60950-1				5,000	m
Dimension	Screw terminal type		L124.5 x W64 x D123.6			mm
Cooling	Free air convection					
Installation position	Vertical (other direction may derating using)					
Pollution degree			2			
INPUT SPECIFICATIONS						
Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom		100		240	VAC
Input voltage range	Ta min ... Ta max, Io nom	AC in	88		264	VAC
		DC in	120		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom				2.3 / 1.15	A
Rated input current	Vi : 88 VAC, Io nom				3.2	A
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom				24 / 48	A
Power dissipation	Vi : 230 VAC, Io nom	12V	19			W
		24V	18			W
Leakage current	Input-Output				0.25	mA
	Input-FG				3.5	mA
P.F.C (Active)	Vi : 230VAC, Io nom		0.97			

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OUTPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Output voltage accuracy (Adjusted before shipment)	Vi nom, Io max	0		+ 1	%
Minimum load	Vi nom	0			%
Line regulation	Io nom, Vi min ...Vi max			± 1	%
Load regulation	Vi nom, Io min ...Io nom	single mode		± 1	%
		parallel mode		± 5	%
Peak power (I)	Vi nom			360	W
Voltage trim range	Vi nom, 0.8 Io nom	12V	11.4	14.5	VDC
		24V	22.5	28.5	VDC
Rated continuous loading	Vi nom	12V	16 A @ 12Vdc / 13 A @ 14.5 Vdc		
		24V	10 A @ 24Vdc / 8.4 A @ 28.5 Vdc		
Hold up time	Vi : 115 / 230 VAC , Io nom	25 / 30			ms
Turn on time	Vi nom, Io nom			1,000	ms
	Vi nom, Io nom → with 7000 µF CAP			1,500	ms
Rise time	Vi nom, Io nom			150	ms
	Vi nom, Io nom → with 7000 µF CAP			500	ms
Fall time	Vi nom, Io nom			150	ms
Transient recovery time	Vi nom, I ~0.5 Io nom			2	ms
Ripple & noise	Vi nom, Io nom, BW = 20MHz			100	mV
Power back immunity	Vi nom, Io nom	12V	18		VDC
		24V	35		VDC
Capacitor load	Vi nom, Io nom			7,000	µF
DC ON indicator threshold at start up (Green LED)	Vi nom, Io nom	12V	10	11.2	VDC
		24V	17.6	19.4	VDC
DC LOW indicator threshold after start up (Red LED)	Vi nom, Io nom	12V	10	11.2	VDC
		24V	17.6	19.4	VDC
Parallel operation	0.1 Io min ~0.9 Io max			3	unit
Efficiency	Vi nom, Io nom, Po / Pi	Up to 93%, See model list and typ efficiency curve			

NOTE 1 : 3 sec or 20% duty cycle max, and the average output power should not exceed the rated power.

CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Input fuse		T5A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5	Varistor			
Rated over load protection	Vi nom (see typ current limited curve)	120		150	%
Power Rdy (for 24V model only)	Threshold voltage of contact closed(at start up)	17.6		19.4	VDC
	Electrical isolation	500			VDC
	Contact rating at 60VDC			0.3	A
Over voltage protection	Vi nom, 0.8 Io nom	12V	15	16.5	V
	(Shut-down protect)	24V	30	33	V
Output short circuit		shut-down protection, after 7s auto-restart			
Over temperature	Detect on heat sink, shut down O/P voltage, recovers automatically after temperature goes down.	100		110	°C
Degree of protection		IP20			

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APPROVALS AND STANDARDS

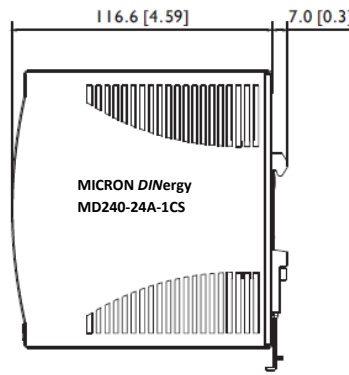
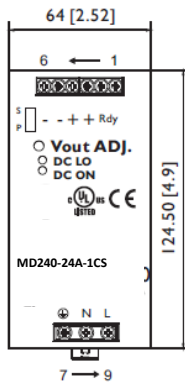
UL / cUL	UL 508 Listed UL 60950-1 Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D)
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2 Class D, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3
Vibration resistance	meet IEC 60068-2-6 (Mounting by rail : Random wave, 10-500 Hz, 2G, each along X, Y, Z axes 10 min / cycle, 60 min)
Shock resistance	meet IEC 60068-2-27 (Half sine wave, 4G, 22ms, 3 axes, 6 Faces, 3 times for each face)

PHYSICAL CHARACTERISTICS

Case size	Screw terminal type	124.5 x 64 x 123.6 mm (4.9 x 2.52 x 4.87 inches)
Case material	Metal	
Weight	860g	
Packing	0.96kg ; 20pcs / 20.5kg / 2.01CUFT	

MECHANISM & PIN CONFIGURATION

mm [inch]



CONSTRUCTION

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safely and firmly on the rail.

INSTALLATION

Ventilation / Cooling
Normal convection
All sides 25mm free space
For cooling recommended
Connector size range
Screw terminal:
AWG24-10 (0.2~4mm²) flexible / solid cable,
-Input connector can withstand torque at maximum 9 pound-inches.
-Output connector can withstand torque at maximum 5.5 pound-inches.
8 m/m stripping at cable end recommends Detachable connector:
AWG24-12 (0.2~2.5mm²) flexible / solid cable,
-Input connector can withstand torque at maximum 4.5 pound-inches.
-Output connector can withstand torque at maximum 7 pound-inches.
4~5 m/m stripping at cable end recommends Use copper conductors only, 60 / 75°C

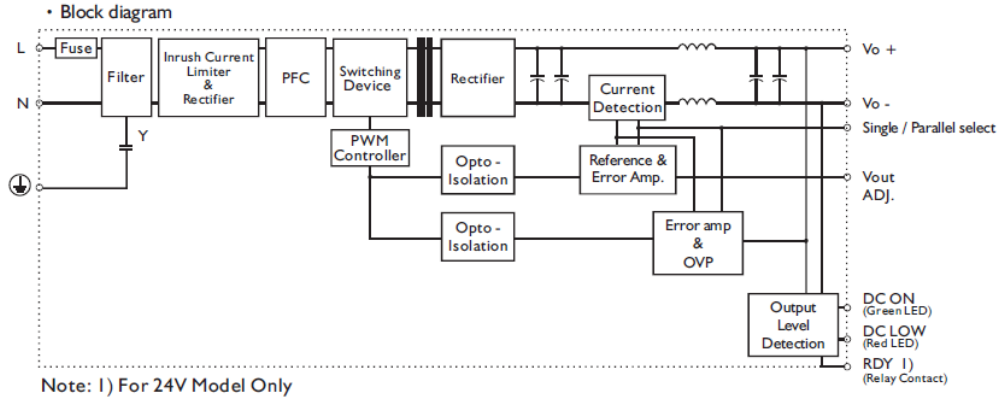
GENERAL TOLERANCE		
0.00[0.00] - 30.00[1.18]	±0.30[0.01]	
30.00[1.18] - 120.00[4.72]	±0.50[0.02]	

PIN ASSIGNMENT

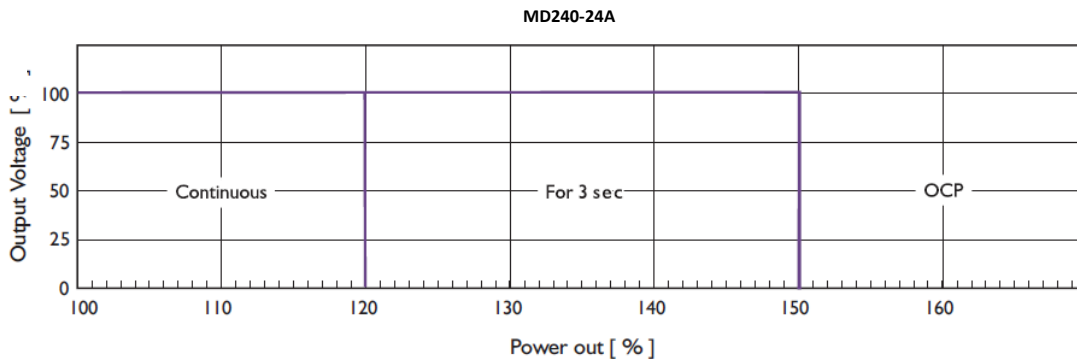
PIN NO.	Designation	Description
1	OUT	RDY
2		A normal open relay contact for DC ON level control (Never connect except 24V model)
3, 4		V +
5, 6		V -
7	IN	⊕
8		N
9		L
	OTHER	DC ON
		DC LO
		Vout ADJ.
		S / P

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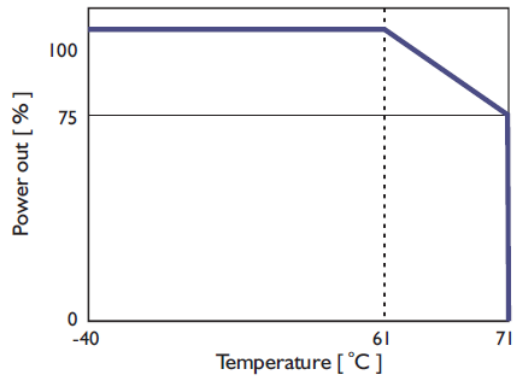
CIRCUIT SCHEMATIC



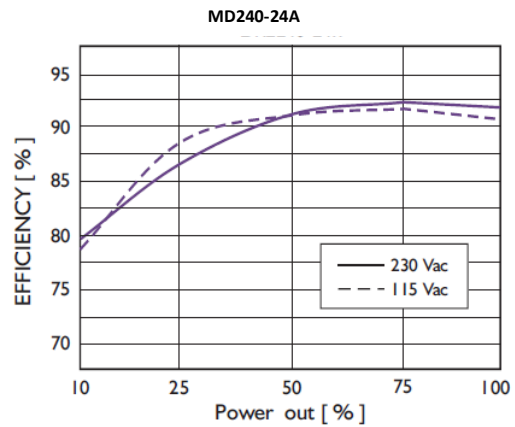
TY⁻ CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE



PEAK LOADING

