MDR-480TY

Single Output, Very Compact 480W AC/DC Power Supplies

Key Features:

- 480W Output Power
- 3,000 VAC I/O Isolation
- Universal AC Input
- Takes AC or DC Input
- Ultra Slim Case
- UL Approved
- -30°C to 70°C Operation
- DC OK Relay Contact
- Meets EN 55032 B
- >105 kHour MTBF
- High Efficiency
- Power Factor Correction

MicroPower Direct

MICROPOWER DIRECT

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	Three Phase (Dual Phase operation possible)	380		480	VAC
		480		780	VDC
		340		550	VAC
		450		850	VDC
Input Frequency		47		63	Hz
Power Factory	400VAC at full load	0.9			PF
	500VAC at full load	0.88			
Leakage Current	530 VAC			3.5	mA
Start Up, Full Load	400 VAC			1200	mSec
	500 VAC			800	
Inrush Current, Cold Start			50		A Pk

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0		%
Line Regulation			±0.5		%
Load Regulation			±1.0		%
Ripple & Noise (20 MHz), See Note 1				150	mVp-p
Hold-Up Time	400 VAC		20		mSec
	500 VAC		20		
Temperature Coefficient			±0.03		%/°C
Over Current Protection		105		130	%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			
	Output to DC OK Relay	500			
Isolation Resistance	Input to Output	100			MΩ
	Input to Field Ground				
	Output to Field Ground				
Switching Frequency			60		kHz

EMI See Page 2

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-30		+70	°C
Storage Temperature Range		-40		+85	°C
Cooling	Free Air Convection (See Derating Curves on Page 2)				
Humidity, RH, Non-condensing	Working	20		95	%
	Storage	10		95	
Overtemperature Protection	Autorecovery				

Physical

Size and Weight	See Mechanical Drawing (Page 3)
Case Material	Aluminum and Steel

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C	105			kHours
Safety Standards	UL61010-1, UL61010-2-201				
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 Number	Input		Output				Over Voltage Protection (VDC) See Note 4	Efficiency % (Typ @ 230 VAC)
	Current (A)		Voltage (VDC)	Adjust Range (VDC)	Current (A)			
	400 VAC	500 VAC			Rated	% Min.		
MDR-480TY-24	0.85	0.7	24	24 - 28	20	1	29 - 33	92.5
MDR-480TY-48	0.85	0.7	48	48 - 55	10	1	56 - 65	93

EMI/RFI

Parameter	Standard	Criteria	Level
Radiated Emissions	CISPR 32/EN 55032		B
Conducted Emissions	CISPR 32/EN 55032		B
Harmonic Current	EN61000-3-2	A	
Flicker	EN61000-3-3		
ESD	EN 61000-4-2	B	15KV Air; 8KV contact
RS	EN 61000-4-3	A	
EFT	EN 61000-4-4	A	
Surge	EN 61000-4-5	B	2KV line to line; 4KV line to ground
CS	EN 61000-4-6	A	
EMC	EN 61000-4-8	B	
Voltage Dip, Short, Interruption	EN61000-4-11		>95% dip 0.5 periods, 30% dip 25 periods >95% interruptions 250 periods

Notes:

1. Output ripple is measured at 20 MHz bandwidth using 0.1 μF and 47 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 until hiccup after 3 seconds. Recycle input voltage to remove.
3. Isolation is tested for 60 seconds with a leakage current of <5 mA.
4. Protection type: hiccup mode. Recycle input voltage to recover.
5. There is an ambient temperature derating of 3.5°C /1000m for operating higher than 2000m (6500ft).

Input Voltage Derating

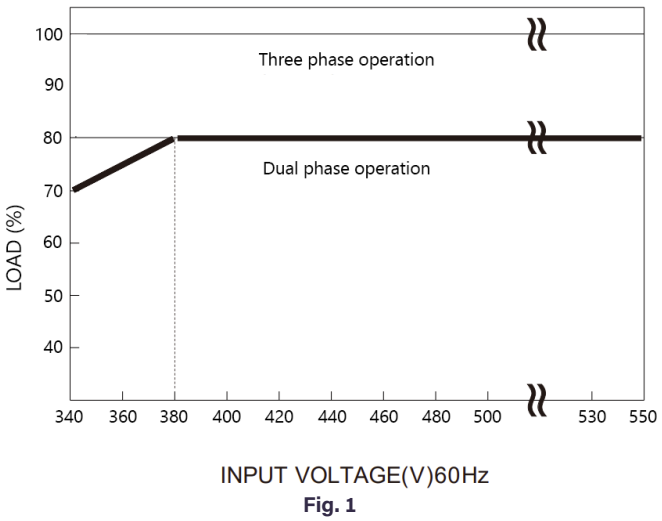

Fig. 1

Temperature Derating

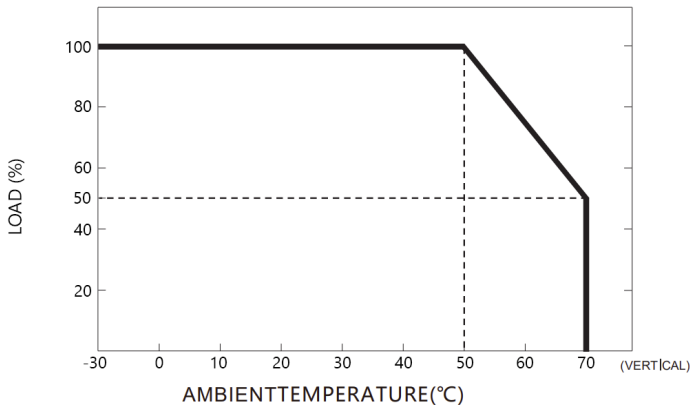

Fig. 2

Block Diagram

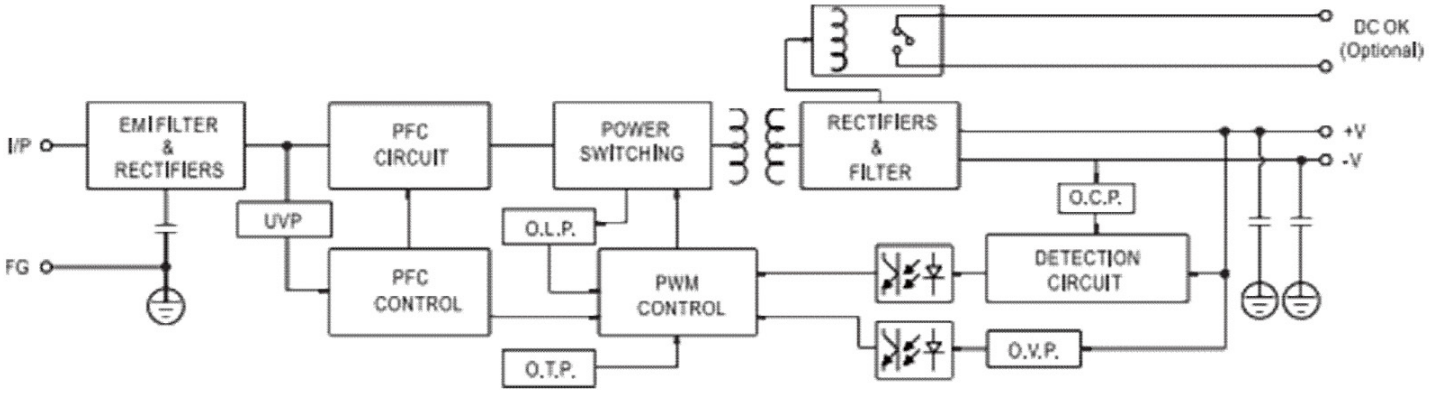

Fig. 3

Using The DC OK Signal

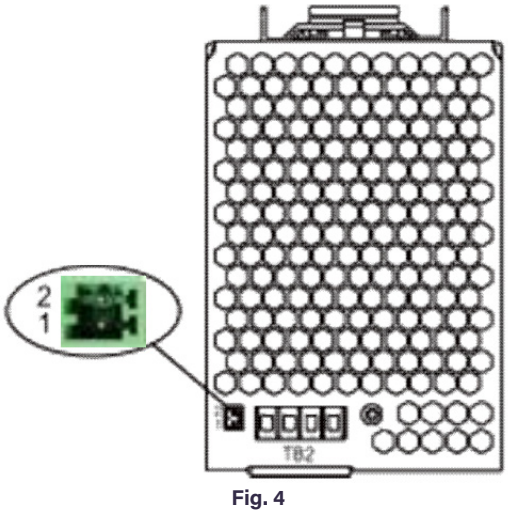

Fig. 4

Contact Closed	PSU turns on · DC OK
Conact Open	PSU turns off · DC Fail
Conact Ratings (Max.)	30VDC/1A, 60VDC/0.3A, 30VAC/0.5A resistive load

Pin	Function	Mating Housing	Wire Diameter
1, 2	DC OK Relay Conact	Dinkle ESC250V-02P or equivalent (including in the package)	0.081 - 0.517mm² (20-28AWG)

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.
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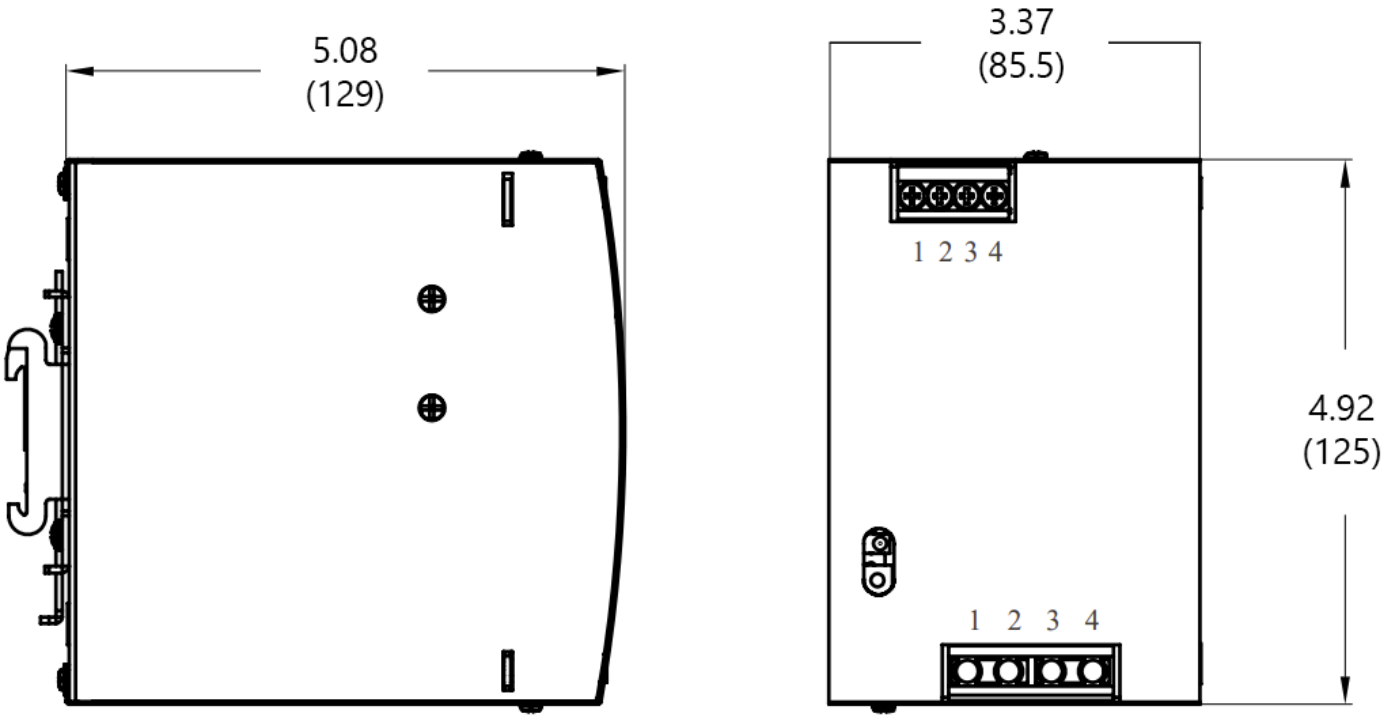

Fig. 5

Connections

Input	
Pin	Function
1	PE
2	AC/L3
3	AC/L2
4	AC/L1

Output	
Pin	Function
1, 2	VOUT +
3, 4	VOUT -

Notes:
- All dimensions are typical in inches (mm)
- Weight: 53.26 oz (1,510g)

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