

# DRA480 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY  
INDUSTRIAL CONTROL EQUIPMENT



## FEATURES

- ACTIVE PFC FUNCTION
- PARALLEL FUNCTION (SWITCH SELECTABLE)
- UNIVERSAL INPUT VOLTAGE
- SELV COMPONENTS DESIGN
- 3 YEARS WARRANTY



## SELECTION CHART

**DRA 480 - 24 x**

Wattage

24 : 24V OUT  
48 : 48V OUT

A : SCREW TERMINAL TYPE

B : DETACHABLE CONNECTOR TYPE

## MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
<b>Single Output Models</b>						
DRA480-24x	90 ~ 264 VAC	480 WATTS	+ 24 VDC	20 A	86%	89%
DRA480-48x	90 ~ 264 VAC	480 WATTS	+ 48 VDC	10 A	87%	90%

## 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		60		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 +56 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	24V	469,000		Hours	
		48V	521,000		Hours	
Altitude during operation	EN 62368-1			5,000	m	
Dimension	Screw terminal type	L124.5 x W175.5 x D125			mm	
	Detachable connector type	L143.5 x W175.5 x D125			mm	
Cooling	Free air convection					
Installation position	Vertical ( other direction may derating using )					
Pollution degree		2				

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### INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom			115 / 230		VAC
Absolute input max. range	Ta min ... Ta max, Io nom	AC in	90		264	VAC
		DC in	120		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom			4.9 / 2.5		A
Rated input current	Vi : 90 / 180 VAC, Io nom				7 / 3.5	A
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom				25 / 50	A
Power dissipation	Vi : 230 VAC, Io nom	24V		63		W
		48V		60		W
Leakage current	Input-Output				0.25	mA
	Input-FG				3.5	mA
Power factor (Active)	Vi : 115 / 230VAC, Io nom			0.99 / 0.97		

### 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				± 0.5	%
Load regulation	Vi nom, Io min ...Io nom	single mode			± 1	%
		parallel mode			± 5	%
Voltage trim range	Vi nom, 0.8 Io nom	24V	22.5		28.5	VDC
		48V	47		56	VDC
Rated continuous loading	Vi nom	24V	20 A @ 24Vdc / 16.8 A @ 28.5Vdc			
		48V	10 A @ 48Vdc / 8.5 A @ 56Vdc			
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	24V	35			VDC
		48V	63			VDC
Capacitor load	Vi nom, Io nom				7,000	μF
DC ON indicator threshold at start up (Green LED)	Vi nom, Io nom	24V	17.6		19.4	VDC
		48V	37		43	VDC
DC LOW indicator threshold after start up (Red LED)	Vi nom, Io nom	24V	17.6		19.4	VDC
		48V	37		43	VDC
Parallel operation	0.1 Io min ~ 0.9 Io max				3	unit
Efficiency	Vi nom, Io nom, Po / Pi		Up to 90%, See model list and typ efficiency curve			

### CONTROL AND PROTECTION

Characteristics	Conditions		min.	typ.	max.	unit
Input fuse			T10A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5		Varistor			
Rated over load protection	Vi nom (see typ current limited curve)		110		140	%
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 (Auto Recovery)	24V	30		33	V
		48V	60		66	V
Output short circuit			Fold forward			
Degree of protection			IP20			

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## APPROVALS AND STANDARDS

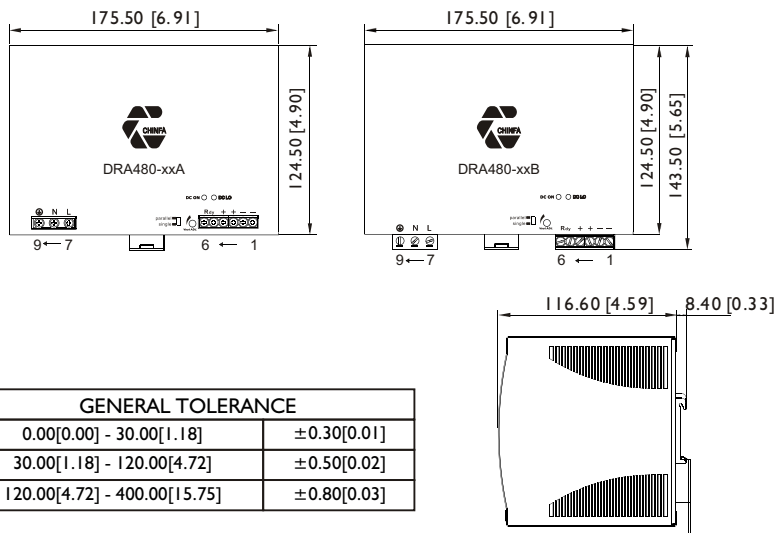
UL / cUL	UL 508 Listed UL 60950-1 Recognized ISA 12.12.01(Class I, Division 2, Groups A, B, C and D)
TUV	EN 62368-1 EN 61558-1, EN 61558-2-16 (meet EN 60204-1)
cTUVus	UL 62368-1
CE	EN 61000-6-3, EN 55032 Class B, EN 61000-3-2 Class D, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 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
CCC	GB4943.1, GB9254, GB17625.1
Vibration resistance	meet IEC 60068-2-6 (Mounting on rail : 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)

## PHYSICAL CHARACTERISTICS

Case size	Screw terminal type	124.5 x 175.5 x 125 mm (4.9 x 6.91 x 4.92 inches)
	Detachable connector type	143.5 x 175.5 x 125 mm (5.65 x 6.91 x 4.92 inches)
Case material	Metal	
Weight	1920g	
Packing	2.3kg ; 8pcs / 20kg / 2.35CUFT	

## MECHANISM & PIN CONFIGURATION

mm [inch]



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]
120.00[4.72] - 400.00[15.75]	±0.80[0.03]

### CONSTRUCTION

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

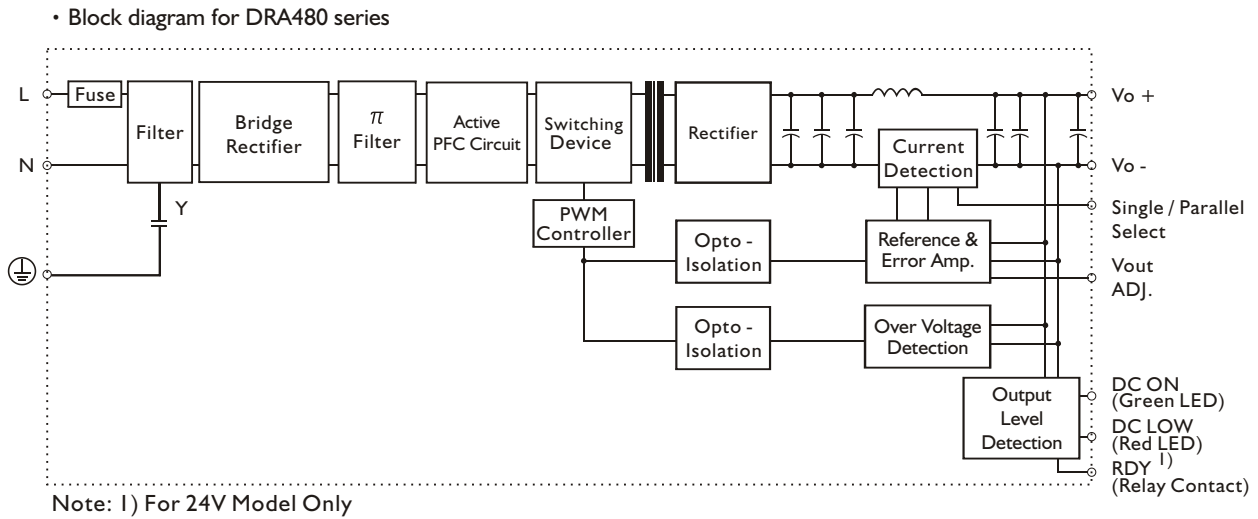
### INSTALLATION

Ventilation / Cooling  
Normal convection  
All sides 25mm free space  
For cooling recommended  
Connector size range  
Screw terminal:  
AWG24-10 (0.2~4mm<sup>2</sup>) 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 (0.2~2.5mm<sup>2</sup>) 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

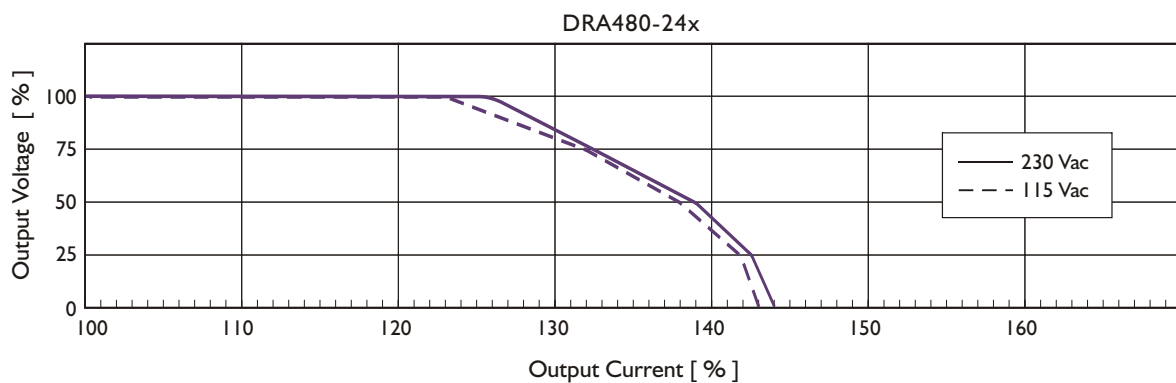
## PIN ASSIGNMENT

PIN NO.	Designation	Description
1, 2	V -	Negative output terminal
3, 4	V +	Positive output terminal
5	RDY	A normal open circuit of PhotoMOS Relay (24V model only)
6		
7	L	Input terminals (phase conductor, no polarity at DC input)
8	N	Input terminals (neutral conductor, no polarity at DC input)
9	⊕	Ground this terminal to minimize high-frequency emissions
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADJ.	Trimmer-potentiometer for Vout adjustment
	S / P	Single / Parallel select switch

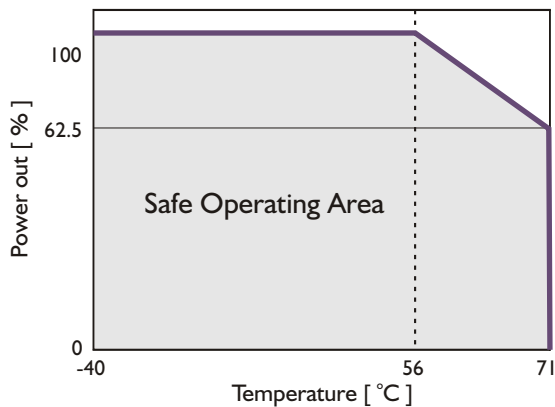
## CIRCUIT SCHEMATIC



## TYP. CURRENT LIMITED CURVE



## DERATING CURVE



## TYP. EFFICIENCY CURVE

