

# DRE I20 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY  
INDUSTRIAL CONTROL EQUIPMENT



## FEATURES

- HIGH EFFICIENCY 91%
- BUILT-IN ACTIVE PFC
- 150% PEAK LOAD CAPABILITY
- SELV COMPONENTS DESIGN
- PARALLEL FUNCTION (SWITCH SELECTABLE)
- 3 YEARS WARRANTY



## SELECTION CHART

**DRE I20 - 24 x**

Wattage

12 : 12V OUT  
24 : 24V 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>						
DRE I20-12x	88 ~ 264 VAC	120 WATTS	+ 12 VDC	10 A	88%	90%
DRE I20-24x	88 ~ 264 VAC	120 WATTS	+ 24 VDC	5 A	89%	91%

## 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		100		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 +61 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		465,000	Hours	
		24V		480,000	Hours	
Altitude during operation	EN 60950-1			5,000	m	
Dimension	Screw terminal type				L124.5 x W40 x D123.6	
	Detachable connector type				L143.5 x W40 x D123.6	
Cooling	Free air convection					
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,	AC in	88	264	VAC	
		DC in	120	375	VDC	
Input current	Vi : 115 / 230 VAC, Io nom		1.2 / 0.6		A	
Rated input current	Vi : 88 VAC, Io nom			1.8	A	

## SPECIFICATION

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### INPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Line frequency	Vi nom, lo nom	47		63	Hz
Inrush current	Vi : 115 / 230 VAC , lo nom			24 / 48	A
Power dissipation	Vi : 230 VAC, lo nom	12V	13.5		W
		24V	12		W
Leakage current	Input-Output			0.25	mA
	Input-FG			3.5	mA
Power factor (Active)	Vi : 230VAC, lo nom		0.96		

### OUTPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Output voltage accuracy (Adjusted before shipment)	Vi nom, lo max	0		+ 1	%
Minimum load	Vi nom	0			%
Line regulation	lo nom, Vi min ...Vi max			± 1	%
Load regulation	Vi nom, lo min ...lo nom	single mode		± 1	%
		parallel mode		± 5	%
Peak power	Vi nom			180	W
Voltage trim range	Vi nom, 0.8 lo nom	12V	11.4	14.5	VDC
		24V	22.5	28.5	VDC
Rated continuous loading	Vi nom	12V	10 A @ 12Vdc / 8.2 A @ 14.5 Vdc		
		24V	5 A @ 24Vdc / 4.2 A @ 28.5 Vdc		
Hold up time	Vi nom, lo nom	30			ms
Turn on time	Vi nom, lo nom			1,000	ms
	Vi nom, lo nom → with 7000 μF CAP			1,500	ms
Rise time	Vi nom, lo nom			150	ms
	Vi nom, lo nom → with 7000 μF CAP			500	ms
Fall time	Vi nom, lo nom			150	ms
Transient recovery time	Vi nom, I ~ 0.5 lo nom			3	ms
Ripple & noise	Vi nom, lo nom, BW = 20MHz			100	mV
Power back immunity	Vi nom, lo nom	12V	18		VDC
		24V	35		VDC
Capacitor load	Vi nom, lo nom			7,000	μF
DC ON indicator threshold at start up (Green LED)	Vi nom, lo nom	12V	10	11.2	VDC
		24V	17.6	19.4	VDC
DC LOW indicator threshold after start up (Red LED)	Vi nom, lo nom	12V	10	11.2	VDC
		24V	17.6	19.4	VDC
Parallel operation	0.1 lo min ~ 0.9 lo max			3	unit
Efficiency	Vi nom, lo nom, Po / Pi	Up to 91%, See model list and typ efficiency curve			

### CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Input fuse		T3.15A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5	Varistor			
Rated over load protection	Vi nom (see typ current limited curve)	160			%
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 60 VDC			0.3	A
Over voltage protection	Vi nom, 0.8 lo nom (Shut-down protect)	12V	15	16.5	V
		24V	30	33	V
Output short circuit		Hiccup mode			
Over temperature	Detect on heat sink, shut down O/P voltage, recovers automatically after temperature goes down.	90		100	°C
Degree of protection		IP20			

## SPECIFICATION

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## APPROVALS AND STANDARDS

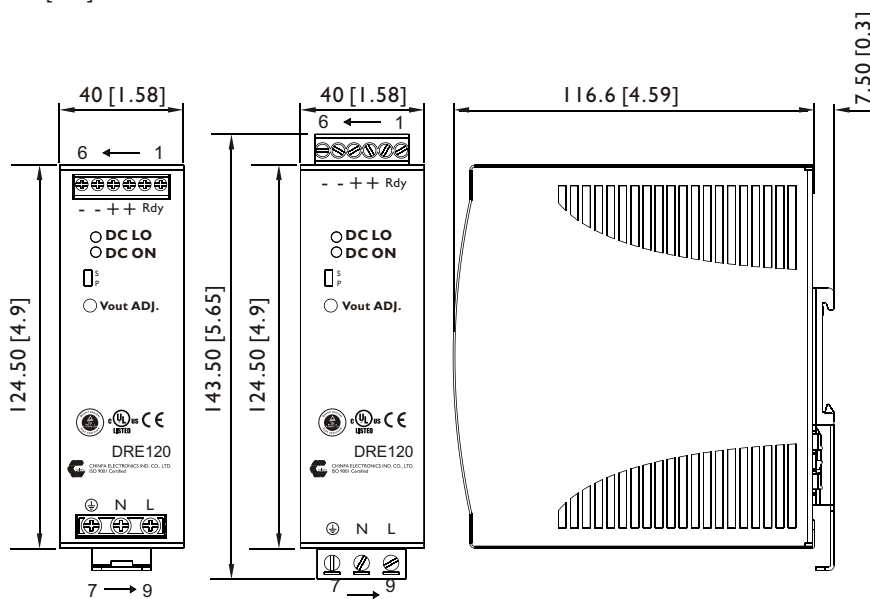
UL / cUL	UL 508 Listed UL 60950-1 Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, EN 61558-1, EN 61558-2-16 (meet EN 60204-1)
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2 Class D, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 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 on 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 40 x 123.6 mm (4.9 x 1.58 x 4.87 inches)
	Detachable connector type	143.5 x 40 x 123.6 mm (5.65 x 1.58 x 4.87 inches)
Case material	Metal	
Weight	610g	
Packing	0.65kg ; 24pcs / 16.5kg / 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

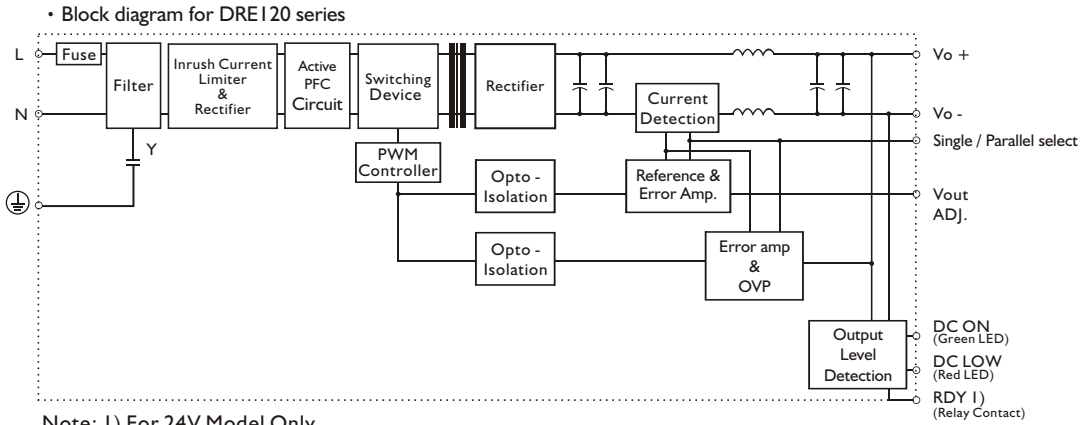
Ventilation / Cooling  
Normal convection  
All sides 25mm free space  
For cooling recommended  
Connector size range  
Screw terminal:  
AWG24-10 (0.2~4mm<sup>2</sup>) flexible / solid cable,  
-Input connector can withstand torque at maximum 9 pound-inches.  
-Output connector can withstand torque at maximum 6 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

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]

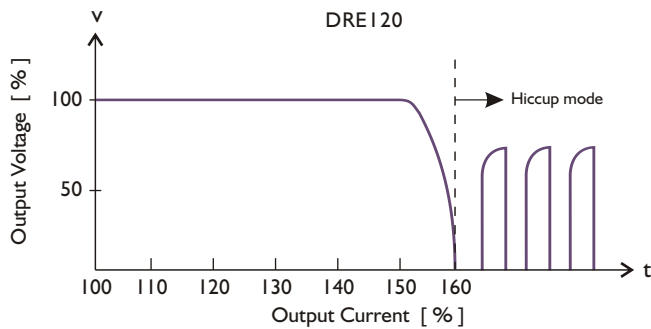
## PIN ASSIGNMENT

PIN NO.	Designation	Description
1	OUT	RDY A normal open relay contact for DC ON level control (Never connect except 24V model)
2		V + Positive output terminal
3, 4		V - Negative output terminal
5, 6	IN	⊕ Ground this terminal to minimize high-frequency emissions
7		N Input terminals (neutral conductor, no polarity at DC input)
8		L Input terminals (phase conductor, no polarity at DC input)
9	OTHER	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

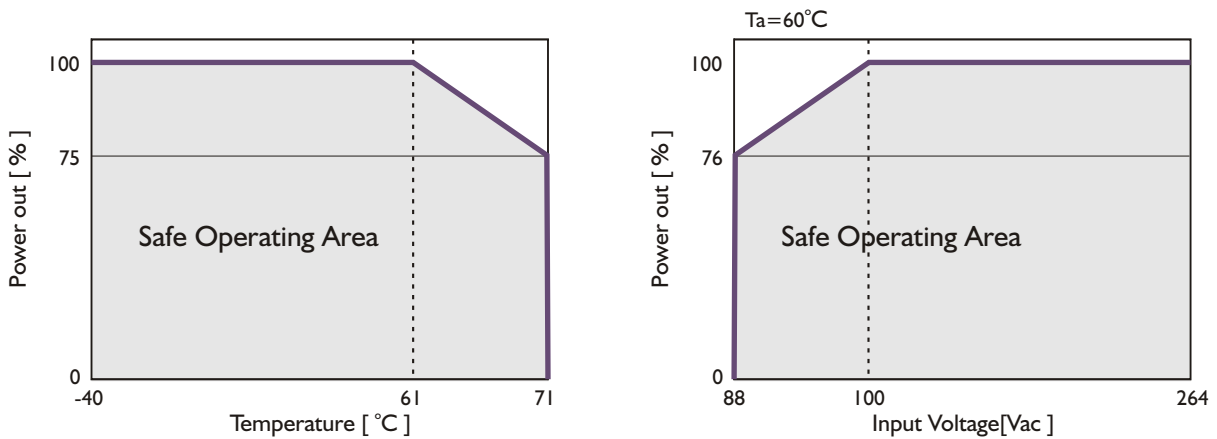
## CIRCUIT SCHEMATIC



## TYP. CURRENT LIMITED CURVE



## DERATING CURVE



## TYP. EFFICIENCY CURVE

