DRA100 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT

FEATURES

- UNIVERSAL INPUT 90~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 3 YEARS WARRANTY

c UL us LISTED IND. CONT. EQ. UL 508 | c UL us Class I, Div 2 | c UL us UL 1310 | c UL us UL 60950-1 | EN 60950-1 | TÜV Rheinland Product Safety EN 61558-1 EN 61558-2-16 | CE

SELECTION CHART

DRA 100 - 24 x

- 100 — Wattage
- 24 — 12 : 12V OUT / 24 : 24V OUT / 48 : 48V OUT
- x — A : SCREW TERMINAL TYPE; AL : CLASS 2 POWER (24V ONLY)

MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
DRA100-12A	90 ~264 VAC	100 WATTS	+ 12 VDC	8.4 A	82%	84%
DRA100-24A	90 ~264 VAC	100 WATTS	+ 24 VDC	4.2 A	84%	86%
DRA100-24AL	90 ~264 VAC	91 WATTS	+ 24 VDC	3.8 A	83%	85%
DRA100-48A	90 ~264 VAC	100 WATTS	+ 48 VDC	2.1 A	86%	88%

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		45		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		-35		+ 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		517,000		Hours
		24V		531,000		Hours
		24AL		570,000		Hours
		48V		545,000		Hours
Altitude during operation	EN 60950-1				5,000	m
Dimension	Screw terminal type			L90 x W54 x D114		mm
Cooling	Free air convection					
Installation position	Vertical (other direction may derating using)					
Pollution degree				2		

SPECIFICATION

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

INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom		100		240	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			1.65 / 0.83		A
Rated input current	Vi : 90 VAC, Io nom				2.4	A
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom				30 / 60	A
Power dissipation	Vi : 230 VAC, Io nom	12V		18.5		W
		24V		15		W
		24AL		14		W
		48V		14		W
Leakage current	Input-Output				0.25	mA
	Input-FG				3.5	mA

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	%
Voltage trim range	Vi nom, 0.8 Io nom	12V	11.4		14.5	VDC
		24V	22.5		28.5	VDC
		24AL	22.5		24.5	VDC
		48V	47		56	VDC
Rated continuous loading	Vi nom	12V	8.4 A @ 12Vdc / 6.9 A @ 14.5 Vdc			
		24V	4.2 A @ 24Vdc / 3.5 A @ 28.5 Vdc			
		24AL	3.8 A @ 24Vdc / 3.7 A @ 24.5 Vdc			
		48V	2.1 A @ 48Vdc / 1.8 A @ 56 Vdc			
Hold up time	Vi : 115 / 230 VAC , Io nom		15 / 30			ms
Turn on time	Vi nom, Io nom				1,000	ms
	Vi nom, Io nom → 12V, 24V models : with 7000μF CAP; 48V model : with 3500μF CAP				1,500	ms
Rise time	Vi nom, Io nom				150	ms
	Vi nom, Io nom → 12V, 24V models : with 7000μF CAP; 48V model : with 3500μF CAP				500	ms
Fall time	Vi nom, Io nom				150	ms
Transient recovery time	Vi nom, 1~0.5 Io nom				2	ms
Ripple & noise	Vi nom, Io nom, BW = 20MHz				50	mV
Power back immunity	Vi nom, Io nom	12V	18			VDC
		24V	35			VDC
		24AL	35			VDC
		48V	63			VDC
Capacitor load	Vi nom, Io nom	12V, 24V			7,000	μF
		48V			3,500	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
		48V	37		43	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
		48V	37		43	VDC
Parallel operation	0.1 Io min ~ 0.9 Io max (Except 24AL)				3	unit
Efficiency	Vi nom, Io nom, Po / Pi		Up to 88%, See model list and typ efficiency curve			

SPECIFICATION

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

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)		110		140	%
		24AL	102		108	%
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)	12V	15		16.5	VDC
		24V	30		33	VDC
		24AL	24.5		25.5	VDC
		48V	60		66	VDC
Output short circuit				Fold forward		
Degree of protection				IP20		

APPROVALS AND STANDARDS

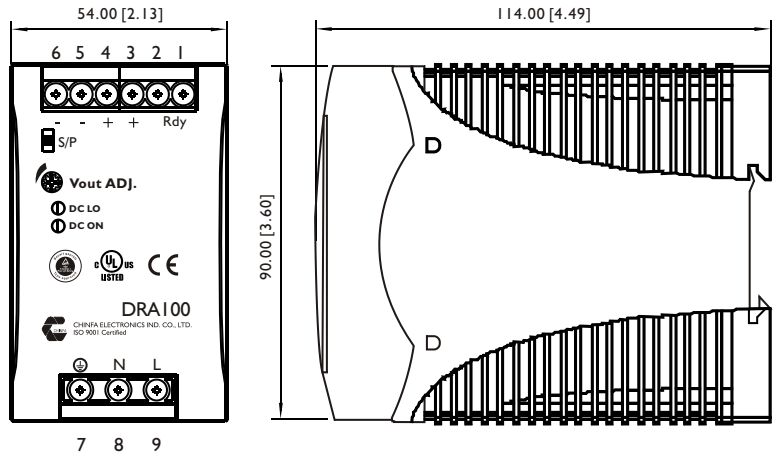
UL / cUL	UL 508 Listed UL 60950-1, UL 1310 Class 2 Power (24AL model only) Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D)
TUV	EN 60950-1 EN 61558-1, EN 61558-2-16 (meet EN 60204-1)
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 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 : 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	90 x 54 x 114 mm (3.6 x 2.13 x 4.49 inches)
Case material	Plastic
Weight	430g
Packing	0.51kg ; 32pcs / 17.5kg / 1.85CUFT

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
AWG24-10 (0.2~4mm^2) 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
Use copper conductors only, 60 / 75°C

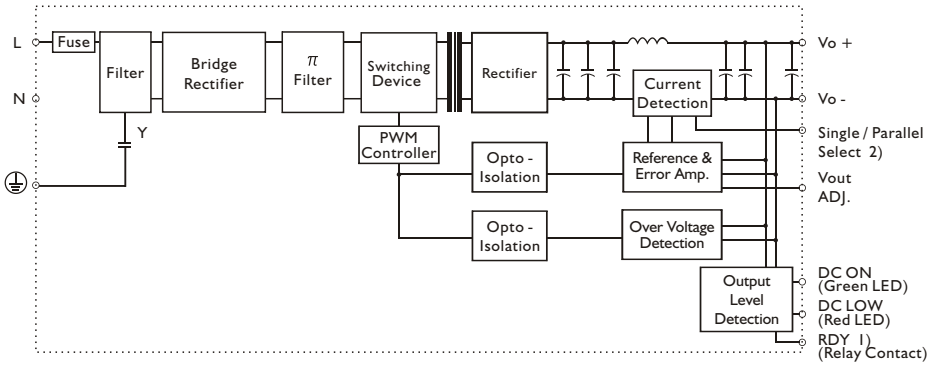
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

PIN ASSIGNMENT

PIN NO.	Designation		Description
1 2	OUT	RDY	A normal open relay contact for DC ON level control (Never connect except 24AL model)
3, 4	OUT	V +	Positive output terminal
5, 6	OUT	V -	Negative output terminal
7	IN	⏚	Ground this terminal to minimize high-frequency emissions
8	IN	N	Input terminals (neutral conductor, no polarity at DC input)
9	IN	L	Input terminals (phase conductor, no polarity at DC input)
	OTHER	DC ON	Operation indicator LED
	OTHER	DC LO	DC LOW voltage indicator LED
	OTHER	Vout ADJ.	Trimmer-potentiometer for Vout adjustment
	OTHER	S / P	Single / Parallel select switch (Except 24AL model)

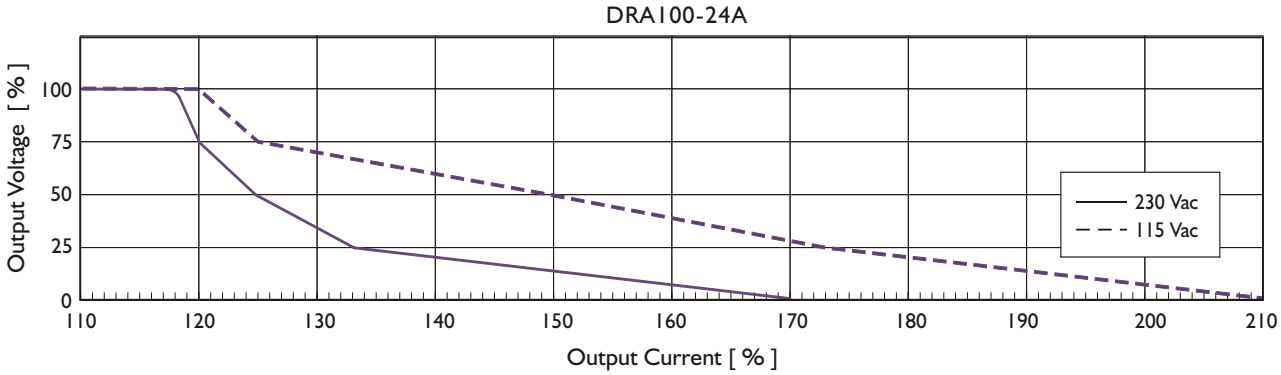
CIRCUIT SCHEMATIC

• Block diagram for DRA100 series

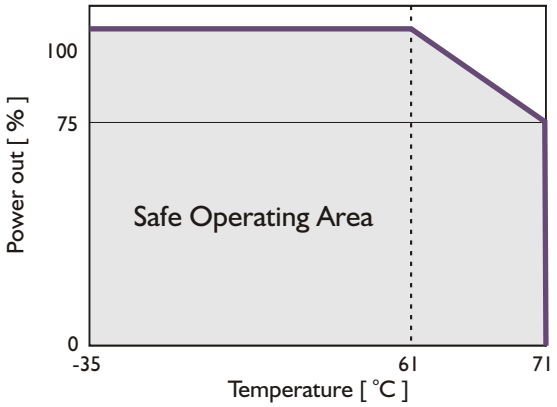


Note: 1) For 24V Model Only
2) 24AL Model without this function

TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE