DRAN30*/60* SERIES

FOR DC BACKUP SYSTEM

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT

FEATURES

- UNIVERSAL INPUT 85~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 3 YEARS WARRANTY

c UL us LISTED IND. CONT. EQ. UL 508 | c us Class I, Div 2 | c us UL 60950-1 | c TÜV SÜD us UL 62368-1 | TÜV SÜD EN 62368-1 | TÜVRheinland CERTIFIED EN IEC 61558-1 EN 61558-2-16 | CE UK CA

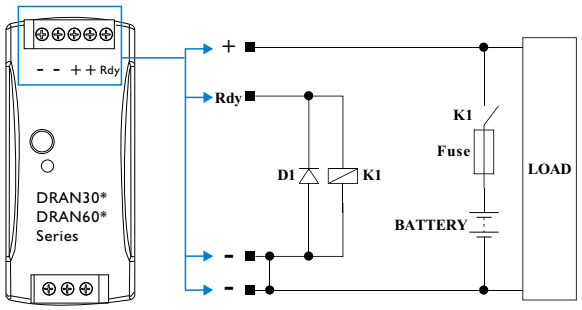
SELECTION CHART

DRAN 60 - 24 A *

- 60 — Wattage
- 24 — 12 : 13.6V OUT / 24 : 27.2V OUT / 48 : 54.5V OUT
- A — SCREW TERMINAL TYPE
- * — DC Backup System

MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
DRAN30-12A*	85~264 VAC	30 WATTS	+ 13.6 VDC	2.2 A	82%	84%
DRAN30-24A*	85~264 VAC	30 WATTS	+ 27.2 VDC	1.1 A	83%	86%
DRAN30-48A*	85~264 VAC	30 WATTS	+ 54.5 VDC	0.55 A	83%	86%
DRAN60-12A*	85~264 VAC	60 WATTS	+ 13.6 VDC	4.4 A	84%	86%
DRAN60-24A*	85~264 VAC	60 WATTS	+ 27.2 VDC	2.2 A	86%	89%
DRAN60-48A*	85~264 VAC	60 WATTS	+ 54.5 VDC	1.1 A	86%	89%



For DC Backup System Application

Note :

1. The suffix "*" is part of the model number, which specifies the product is designed and pre-trim for low-cost DC backup power system with external Lead-Acid battery, Relay and Fuse.
2. The manufacturer is liable neither for the external components nor the damage to the power supply causing by external components.
3. The total consumption current including loading and battery charging current should not exceed the maximum rated current of power supply.
4. The operation concept of DC backup power system :
   A. When AC power alive : The "Rdy" is close circuit to active the external Relay . The power supply feeds current into the external loads and charges through Relay to the external battery as well.
   B. When AC power interrupted : The "Rdy" is remain close circuit to maintain the external Relay remain active, the external battery supply current to the external loads.
   C. When Battery power low : The "Rdy" become open circuit and the external Relay become inactive to disconnect the battery from external loads.

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	DRAN30*	80		135	KHz
		DRAN60*	55		90	KHz
Isolation voltage	Input-Output		3,000 / 4,242			VAC / VDC
	Input-PE		1,768 / 2,500			VAC / VDC
	Output-PE		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°C 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	DRAN30-12A*		608,000		Hours
		DRAN30-24A*		635,000		Hours
		DRAN30-48A*		640,000		Hours
	Bellcore Issue 6 @40°C, GB	DRAN60-12A*		528,000		Hours
		DRAN60-24A*		556,000		Hours
		DRAN60-48A*		560,000		Hours
Altitude during operation	EN 62368-1				5,000	m
Dimension	Screw terminal type			L90 x W40.5 x D114		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
Absolute input max. range	Ta min ... Ta max, Io nom	AC in	85		264	VAC
		DC in	90		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom	DRAN30*		560 / 330		mA
		DRAN60*		1,060 / 590		mA
Rated input current	Vi : 85 VAC, Io nom	DRAN30*			800	mA
		DRAN60*			1,500	mA
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom	DRAN30*			20 / 40	A
		DRAN60*			30 / 60	A
Power dissipation	Vi : 230 VAC, Io nom	DRAN30-12A*		5.6		W
		DRAN30-24A*		5.5		W
		DRAN30-48A*		4.9		W
		DRAN60-12A*		9.0		W
		DRAN60-24A*		8.8		W
		DRAN60-48A*		7.8		W
Leakage current	Input-Output				0.25	mA
	Input-PE				3.5	mA

OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Output voltage accuracy (Adjusted before shipment)	Vi nom, Io max				± 1	%
Minimum load	Vi nom		0			%
Line regulation	Io nom, Vi min ...Vi max				± 0.5	%
Load regulation	Vi nom, Io min ...Io nom				± 0.5	%
Voltage trim range	DRAN30* & DRAN60* series	12V	12		14	VDC
	Vi nom, 0.8 Io nom	24V	24		28	VDC
		48V	48		55	VDC
Hold up time	Vi : 115 / 230 VAC , Io nom		20 / 30			ms

SPECIFICATION

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

OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Turn on time	Vi nom, Io nom				2,000	ms
	Vi nom, Io nom → with Capacitor load				2,000	ms
Rise time	Vi nom, Io nom				150	ms
	Vi nom, Io nom → with Capacitor load				500	ms
Fall time					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
		48V	63			VDC
Capacitor load	Vi nom, Io nom	DRAN30*			3,500	μF
		DRAN60*			7,000	μF
DC ON indicator threshold at start up (Green LED)	Vi nom, Io nom	12V	9.1		10.1	VDC
		24V	18.7		19.7	VDC
		48V	36.5		37.5	VDC

CONTROL AND PROTECTION

Characteristics	Conditions		min.	typ.	max.	unit
Input fuse			T2A / 250 VAC internal			
Internal surge voltage protection	IEC 61000-4-5		Varistor			
Rated over load protection	Vi nom		105		125	%
Power Rdy	Rdy on: Threshold at start up	12V	10.4		11.4	VDC
		24V	21.2		22.2	VDC
		48V	42.8		43.8	VDC
Power Rdy	Rdy off: Threshold after start up	12V	10.3		11.3	VDC
		24V	21.1		22.1	VDC
		48V	42.7		43.7	VDC
Over voltage protection	Vi nom, 0.8 Io nom (Auto Recovery)	12V	15		16.5	VDC
		24V	30		33	VDC
		48V	60		66	VDC
Output short circuit			Fold forward			
Degree of protection			IP20			

APPROVALS AND STANDARDS

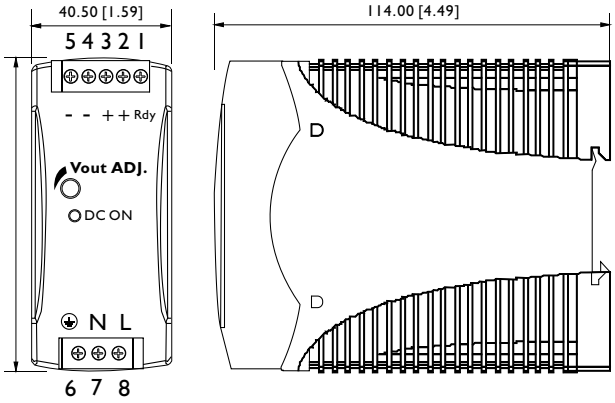
UL / cUL	UL 508 Listed UL 60950-1 Recognized ISA 12.12.01(Class I, Division 2, Groups A, B, C and D)
TUV	BS EN / EN 62368-1 EN 61558-1, EN 61558-2-16 (meet EN 60204-1)
cTUVus	UL 62368-1
CE	BS EN / EN 61000-6-3, BS EN / EN 55032 Class B, BS EN / EN 61000-3-2, BS EN / EN 61000-3-3 BS EN / EN 61000-6-2, BS EN / EN 55035, BS EN / EN 61000-4-2 Level 4, BS EN / EN 61000-4-3 Level 3 BS EN / EN 61000-4-4 Level 4, BS EN / EN 61000-4-5 L-N Level 3, L / N-FG Level 4 BS EN / EN 61000-4-6 Level 3, BS EN / EN 61000-4-8 Level 4, BS EN / EN 61000-4-11 DD ENV / ENV 50204 Level 2, BS EN / EN 61204-3
CCC	GB4943.1, GB/T9254.1, 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	90 x 40.5 x 114 mm (3.6 x 1.59 x 4.49 inches)	
Case material	Plastic	
Weight	DRAN30* : 270 g DRAN60* : 340 g	
Packing	DRAN30* : 0.35 kg ; 40 pcs / 15 kg / 2.16 CUFT	DRAN60* : 0.41 kg ; 40 pcs / 17.5 kg / 2.16 CUFT

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:
AWG26-12 (0.2~2.5mm^2) flexible / solid cable, connector can withstand torque at maximum 5 pound-inches.
4-5 m/m stripping at cable end recommends
Use copper conductors only, 60 / 75°C

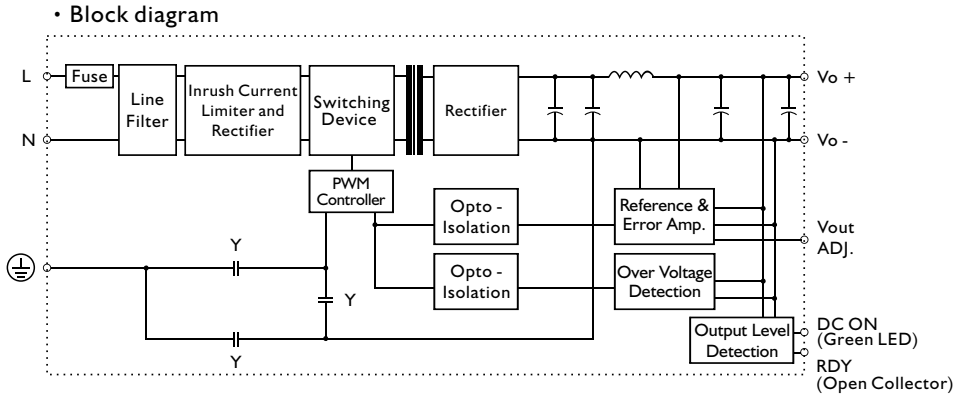
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

PIN ASSIGNMENT

PIN NO.	Designation		Description
1	OUT	RDY	DC OK output for relay
2, 3		+	Positive output terminal
4, 5		-	Negative output terminal
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)
	OTHER	Vout ADJ.	Trimmer-potentiometer for Vout adjustment
		DC ON	Operation indicator LED

CIRCUIT SCHEMATIC

• Block diagram



DERATING CURVE