

Features

- Universal AC Input (85-264VAC)
- Long 7 Year Warranty
- Protections: SCP, OVP, OCP, OTP
- 100% Full Load burn-in test
- DC OK Indicator LED with Relay Contacts
- cooling by free air convection, 5000m operation
- UL, CSA & CE certified with CB Report

RECOM
AC/DC Converter

REDIN60

**60 Watt
DIN-Rail
Power
Supply**



Description

This DIN-rail mounted power supply uses high reliability components to give a long, trouble-free life. The power supply can be end mounted to save space or side mounted for use in low-profile cabinets. Relay contacts simplify DC OK monitoring and the units can deliver 80W start-up power. The REDIN series is fully certified for industrial use and carries a 7-year warranty.

Selection Guide

Part Number	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Trimming Voltage (VDC)	Rated Current (A)	Efficiency typ. (%)	Max. Capacitive Load (μF)
REDIN60-12	85-264	12	12-15	5.0	85	18800
REDIN60-24	85-264	24	24-28	2.5	86	4700

* add suffix /NR for versions without relay

Specifications (measured at T_A= 25°C, 230VAC, full load and after warm up)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	all operating conditions	85VAC		264VAC
max. Input Voltage	max. 1 second			300VAC 375VDC
Output Voltage Adjustment (Factory Setting) ⁽¹⁾	12Vout 24Vout	12-15VDC (12V±5%) 24-28VDC (24V±5%)		
Input Current	full load, 115VAC full load, 230VAC			1.8A 1.0A
absolute max. Input Current	cold start at 25°C, 115VAC cold start at 25°C, 230VAC			40A 60A
No Load Power Consumption	standard (with Relay) /NR option (no Relay)			<1000mW <500mW
Leakage Current	240VAC		<1.0mA	
Start Up time	cold start, 230VAC		500ms	1000ms
Rise time	cold start, 230VAC		20ms	
Hold-up time	full load, 115VAC full load, 230VAC		20ms 50ms	
Input Frequency		47Hz		63Hz
Operating Frequency			65kHz	
Efficiency		see Selection Guide		
Output Ripple and Noise ⁽²⁾	12Vout 24Vout		60mVp-p 75mVp-p	
Over Load	all operating conditions	140% for 5 seconds max.		
Notes:				
Note1:	For more details refer to Vadj. Derating Graph			
Note2:	Ripple and Noise are measured at 20MHz bandwidth by using a 12" twisted pair-wire terminated with 0.1µF & 47µF parallel capacitor.			
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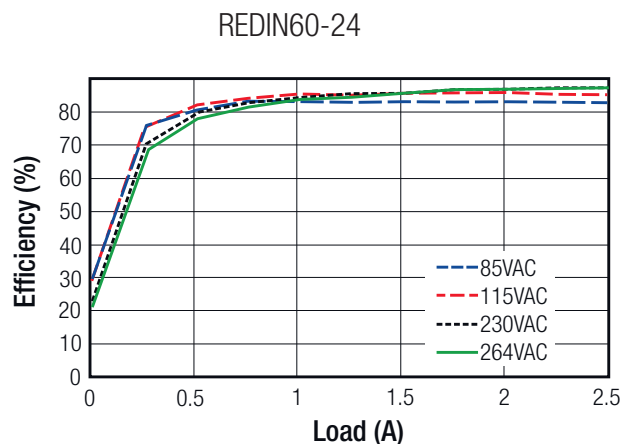
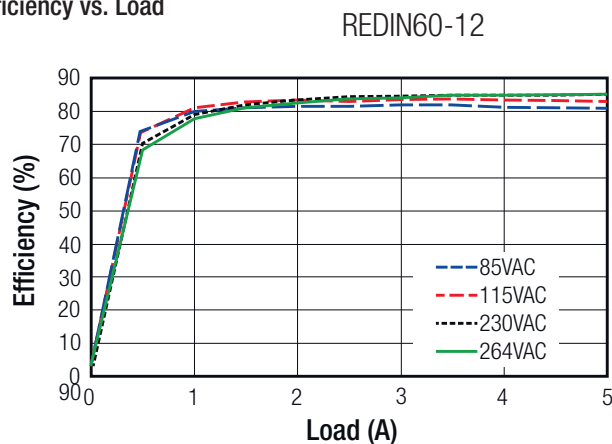


CB-Report
UL-60950-1 Certified
UL-508 Certified
IEC-60950-1 Certified
EN-60715 Compliant
EN-50022 Compliant
CSA C22.2 No. 60950-1-07 Certified

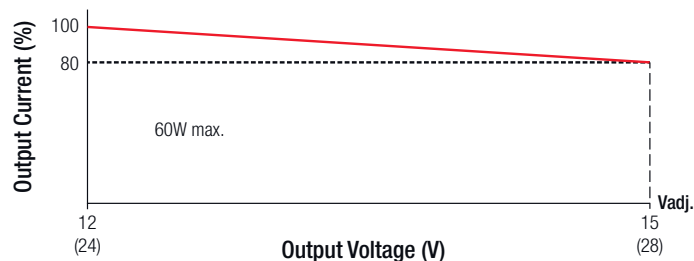
Refer to Applications Notes

Specifications (measured at $T_A = 25^\circ\text{C}$, 230VAC, full load and after warm up)

Efficiency vs. Load



Vadj. Derating



REGULATION

Parameter	Condition	Value
Line Voltage Regulation		± 0.1 typ. / $\pm 1\%$ max.
Load Voltage Regulation		± 0.1 typ. / $\pm 1\%$ max.
Transient Response ⁽³⁾	12Vout (step load change: 2.5A - 5.0A) 24Vout (step load change: 1.25A - 2.5A)	$\pm 5\%$ typ. $\pm 5\%$ typ.
Dwell Time		100Hz & 1kHz 50% duty
Slew Rate		0.5A / μs

Notes:

Note3: Transient Response + E-CAP loading 3300 μF . Other specs with resistive load only.

PROTECTION

Parameter	Condition	Value
Input Fuse		T2.5A, slow blow type
Short Circuit Protection (SCP)	Hiccup	auto-recovery after fault condition
Over Voltage Protection (OVP)	12Vout 24Vout	18VDC max., shut-down latch-off o/p voltage, re-power on to recover 35VDC max., shut-down latch-off o/p voltage, re-power on to recover
Over Current Protection (OCP)		150% typ., auto-recovery after fault condition
Over Temperature Protection (OTP)	detect on inside ambient	105 $^\circ\text{C} \pm 5\%$, shut-down latch-off o/p voltage, re-power on to recover
Isolation Voltage	I/P to O/P I/P to FG O/P to FG	3.75kVAC / 1 minute 1.88kVAC / 1 minute 0.5kVAC / 1 minute
Isolation Resistance	500VDC, 70% RH, I/P to O/P; I/P to FG; O/P to FG	100M Ω min.
Power OK LED	Relay Contacts LED/Relay	1A, 30VDC / 120VAC ON if Vout = 11-16V (12V) / 22-30V (24V)

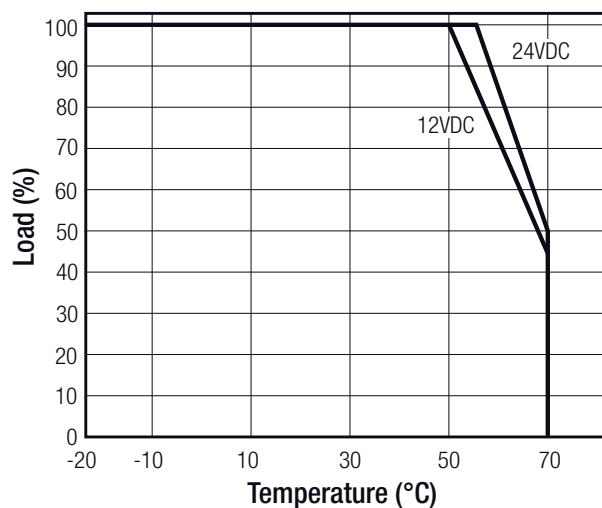
Specifications (measured at $T_A = 25^\circ\text{C}$, 230VAC, full load and after warm up)

ENVIRONMENTAL

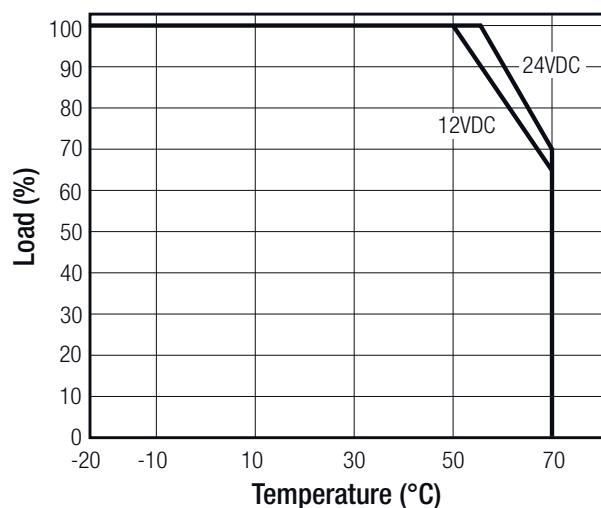
Parameter	Condition	Value
Operating Temperature Range	with derating	-20°C to $+70^\circ\text{C}$ (see graph)
Storage Temperature Range		-30°C to $+85^\circ\text{C}$
Operating Humidity	non-condensing	20% - 90%RH
Storage Humidity		10% - 90% RH
Vibration		10-500Hz 2G, 60min.
Shock	3 times each axis	10G / 11ms, along X, Y and Z axis
Altitude	see derating graph	5000m
MTBF ($+25^\circ\text{C}$)	MIL-HDBK-217F, 115VAC, 60Hz, 75% load	200×10^3 hours
Design Lifetime ($+40^\circ\text{C}$)		87.6×10^3 hours

Derating Graph

$V_{in} \leq 100\text{VAC}$

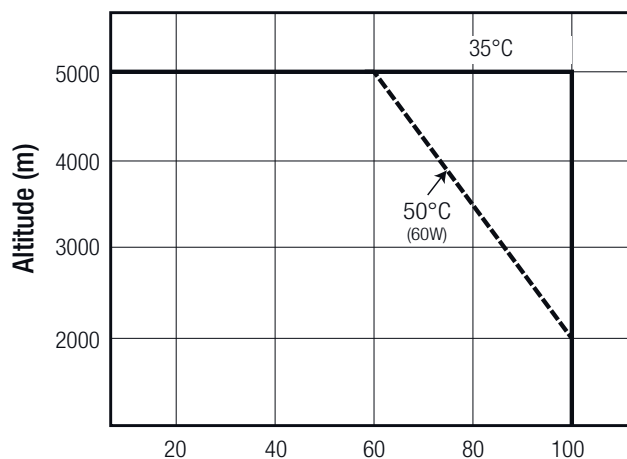


$V_{in} > 100\text{VAC}$

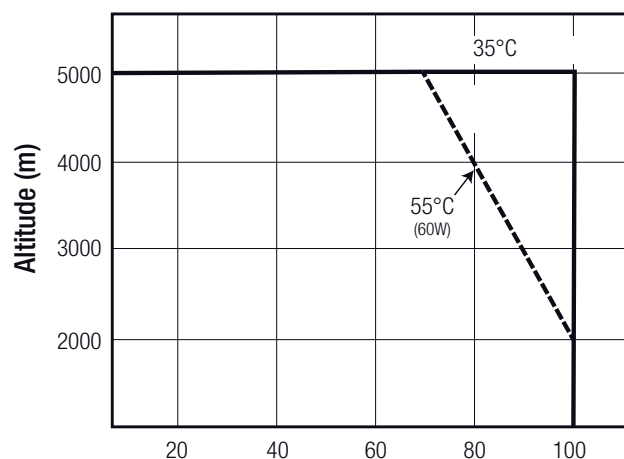


Typical Characteristics

REDIN60-12



REDIN60-24

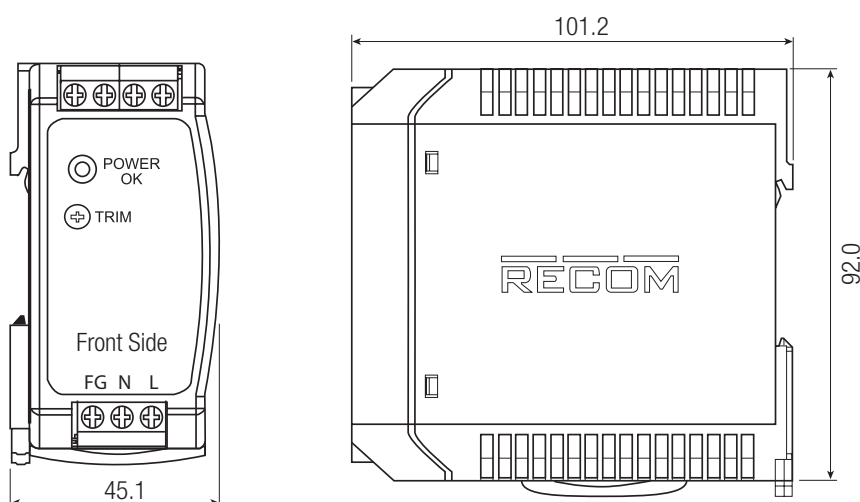


Specifications (measured at T_A= 25°C, 230VAC, full load and after warm up)

SAFETY AND CERTIFICATIONS		
Certificate Type	Report / File Number	Standard
UL General Safety	E224736	UL-60950-1, 2nd Edition
CSA		UL-508 UL-1310 C22.2 No. 60950-1-07, 2nd Edition
IEC/EN General Safety	E224736	IEC/EN-60950-1, 2nd Edition
Chinese Safety Standard	E224736	GB 4943.1-2011
Certificate Type (Environmental)	Report / Condition	Standard / Criterion
EMI Standard	Report: HA150146	EN-55022, Class B
		EN-55024, Class B
		FCC15, Class B
ESD Radiated Immunity Fast Transient Surge Conducted Immunity Power frequency magnetic field immunity test Noise Immunity	R±8kV Contact & Air Discharge 10V/m, 80-3000MHz, 80% AM at 1kHz Level 2 ±2kV / L-N, ±4kV / L, N-FG 10Vrms, 0.15-80MHz, 80% AM at 1kHz 40% reduction, 200ms 70% reduction, 500ms 90% reduction, 5s not applicable input below 75W	EN-61000-4-2, Criteria A EN-61000-4-3, Criteria A EN-61000-4-4, Criteria A EN-61000-4-5, Criteria A EN-61000-4-6, Criteria A EN-61000-4-8, Criteria A EN-61000-4-11, Criteria A EN-61000-4-11, Criteria B EN-61000-4-11, Criteria B
Harmonic Immunity Voltage Flicker		EN-61000-3-2 EN-61000-3-3

DIMENSIONS and PHYSICAL CHARACTERISTICS		
Parameter	Type	Value
Case Material		UL94V-0 plastic
Dimensions (WxHxD)		45.1 x 92.0 x 101.2mm
Weight		332g
Packaging Dimensions (LxWxH)	Cardboard Box	310 x 252 x 285mm
Packaging Quantity	Carton	30pcs

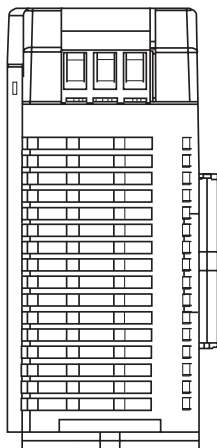
Mechanical Dimensions



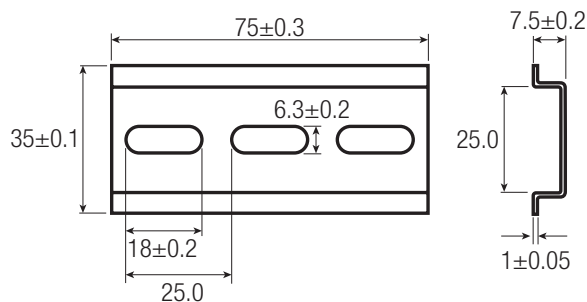
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Specifications (measured at $T_A = 25^\circ\text{C}$, 230VAC, full load and after warm up)

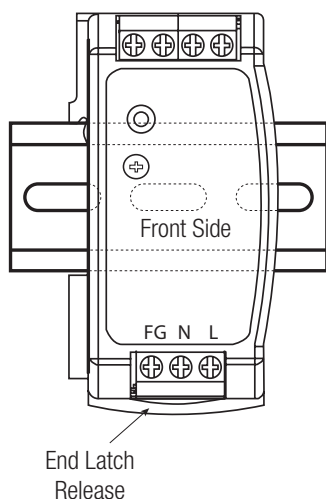
Mechanical Dimensions



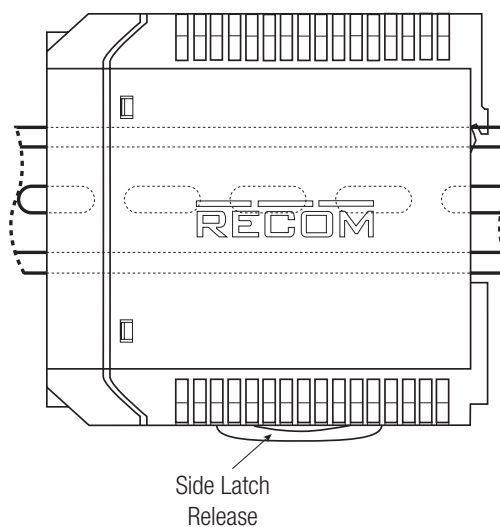
DIN-RAIL mounting bracket
(75mm) included



END MOUNTING



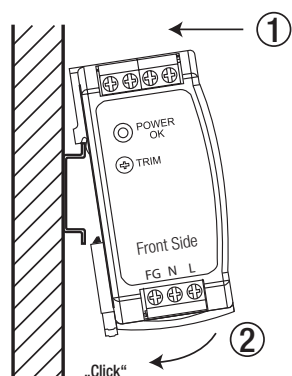
SIDE MOUNTING



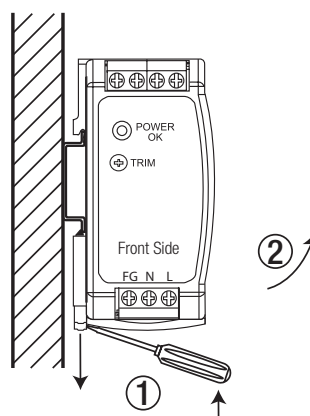
Tolerance: $\pm 0.5\text{mm}$

Mounting Instruction

Mounting



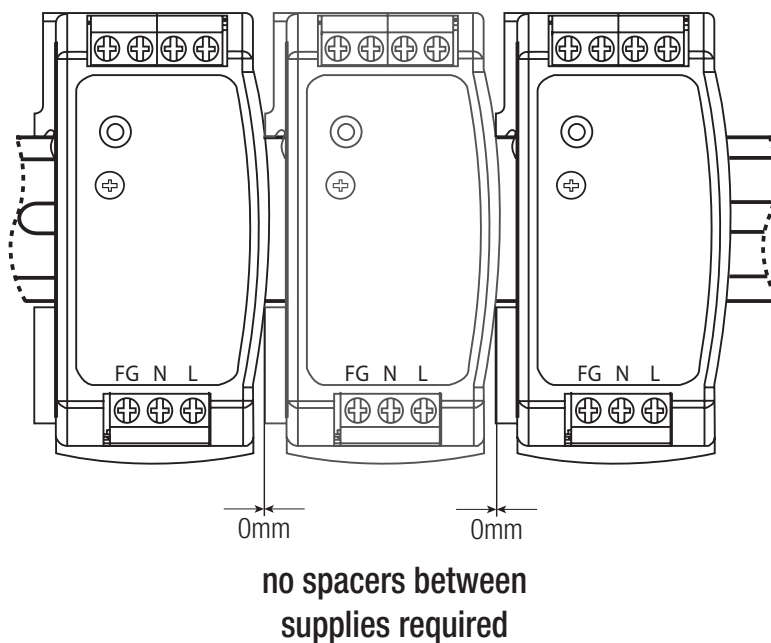
Releasing



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Specifications (measured at $T_A = 25^\circ\text{C}$, 230VAC, full load and after warm up)

Mounting Multiple Power Supplies



Functional Diagram

