



DIN-RAIL MOUNTABLE

The Family of RAX Models

FEATURES

- “Power-OK” LED.
- Remote on/off: TTL compatible signal applied to the optically isolated “RC” terminals; reduces surge stress on input circuit when used instead of switching the mains a-c.
- Active soft-start circuit: Limits a-c turn-on surge.
- Remote error sensing: Compensates for voltage drops up to 0.4V per wire (0.25V in 3.3V and 5V models).
- Remote voltage control: Provision is made for an external resistor to trim the output voltage setting.
- Adjustable voltage: Internal trimmer accessible through the case allows manual adjustment of the voltage setting.
- Overvoltage protection: Power is shut off if output voltage is forced beyond the set limit.



Kepeco’s RAX are general purpose, single output, industrial grade modules in four sizes from 50-300 watts. Enclosed construction with barrier strip input/output provides protection for mounting in industrial environments. RAX meet EN60950, UL 1950 and are certified to the MIL STD 810D environment.

RAX are rugged, single-output power modules that can be individually installed or may be combined into a custom power assembly for multi-output requirements. Please see pages 131-135 for details on Kepeco’s Power Assembly Program.





Model RAX 12-4.2K
50W



Model RAX 24-4.2K
100W



Model RAX 28-6.2K
175W



Model RAX 28-10K
300W

RAX MODEL TABLE

MODEL	OUTPUT VOLTAGE		OVP SETTING	OUTPUT CURRENT			CURRENT LIMIT	RIPPLE				NOISE (SPIKE)	EFFICIENCY
	VOLTS		VOLTS	AMPS			AMPS	mV				mV	PERCENT
	Factory set ⁽¹⁾	Adjustment range	Nom. Input, 25°C	50°C	60°C	71°C	25°C Rectangular Fixed	Source p-p		Switching p-p		d-c to 50MHz p-p max	max load type
50 WATT MODELS													
RAX 3.3-10K	3.3	1.8~3.6	3.9~4.8	10.0	7.0	4.0	10.5~11.0	5	10	25	40	100	75%
RAX 5-10K	5	4.0~5.5	6.0~6.9	10.0	7.0	4.0	10.5~11.0	5	10	25	40	100	
RAX 12-4.2K	12	8.4~13.2	13.7~15.7	4.2	2.9	1.7	4.5~4.8	15	30	25	50	170	
RAX 15-3.4K	15	12.0~16.5	17.0~19.5	3.4	2.4	1.4	3.6~3.9	15	30	25	50	200	
RAX 24-2.1K	24	16.8~26.4	27.0~30.5	2.1	1.5	0.8	2.3~2.5	25	40	25	60	290	
RAX 28-1.8K	28	19.6~30.8	32.0~35.0	1.8	1.3	0.7	2.0~2.2	30	60	25	60	330	
RAX 48-1K	48	32.6~52.8	55.0~63.0	1.0	0.7	0.4	1.1~1.3	35	90	25	60	530	
100 WATT MODELS													
RAX 3.3-20K	3.3	1.8~3.6	3.9~4.8	20.0	14.0	8.0	22.0~24.0	5	10	25	40	100	78%
RAX 5-20K	5	4.0~5.5	6.0~6.9	20.0	14.0	8.0	22.0~24.0	5	10	25	40	100	
RAX 12-8.3K	12	8.4~13.2	13.7~15.7	8.3	5.8	3.3	9.1~10.0	15	30	25	50	170	
RAX 15-6.6K	15	12.0~16.5	17.0~19.5	6.6	4.6	2.6	7.3~8.0	15	30	25	50	200	
RAX 24-4.2K	24	16.8~26.4	27.0~30.5	4.2	2.9	1.7	4.7~5.1	25	40	25	60	290	
RAX 28-3.5K	28	19.6~30.8	32.0~35.0	3.5	2.5	1.4	4.0~4.2	30	60	25	60	330	
RAX 48-2K	48	32.6~52.8	55.0~63.0	2.0	1.4	0.8	2.3~2.5	35	90	25	60	530	
175 WATT MODELS													
RAX 3.3-35K	3.3	1.8~3.6	3.9~4.8	35.0	24.5	14.0	36.8~38.5	5	10	25	40	100	79%
RAX 5-35K	5	4.0~5.5	6.0~6.9	35.0	24.5	14.0	36.8~38.5	5	10	25	40	100	
RAX 12-14K	12	8.4~13.2	13.7~15.7	14.0	9.8	5.6	14.7~15.4	15	30	25	50	170	
RAX 15-11K	15	12.0~16.5	17.0~19.5	11.0	7.7	4.4	11.8~12.1	15	30	25	50	200	
RAX 24-7.2K	24	16.8~26.4	27.0~30.5	7.2	5.0	2.9	8.0~8.3	25	40	25	60	290	
RAX 28-6.2K	28	19.6~30.8	32.0~35.0	6.2	4.3	2.5	7.0~7.3	30	60	25	60	330	
RAX 48-3.6K	48	32.6~52.8	55.0~63.0	3.6	2.5	1.4	4.3~4.5	35	90	25	60	530	
300 WATT MODELS													
RAX 5-60K	5	4.0~5.5	6.0~6.9	60.0	42.0	24.0	65.0~70.0	5	10	25	40	100	77%
RAX 12-25K	12	8.4~13.2	13.7~15.7	25.0	17.5	10.0	28.0~30.0	15	30	25	50	170	
RAX 15-20K	15	12.0~16.5	17.0~19.5	20.0	14.0	8.0	22.0~24.0	15	30	25	50	200	
RAX 24-12K	24	16.8~26.4	27.0~30.5	12.0	8.4	4.8	13.2~14.4	25	40	25	60	290	
RAX 28-10K	28	19.6~30.8	32.0~35.0	10.0	7.5	4.3	12.0~15.0	30	60	25	60	330	
RAX 48-6K	48	32.6~52.8	55.0~63.0	6.0	4.2	2.4	6.8~7.4	35	90	25	60	530	

(1) Nominal input, maximum load, 25°C.



RAX GENERAL SPECIFICATIONS

SPECIFICATION		RATING/DESCRIPTION	CONDITION
Temperature		0-71°C (see model table)	Operating
		-40 to +75°C	Storage
Humidity		95% RH	Non-condensing, operating & storage
Shock		20g, 3 axes (11msec ±5msec pulse duration)	Non-operating 3 shocks each axis
Vibration		5-10Hz: 10mm amplitude, 3 axes	Non-operating 1 hour each axis
		10-55Hz: 2g, 3 axes	
Isolation	Output to case	500V d-c, 100MΩ	25°C, 65% RH
Withstand Voltage	Input to output	3.75KV a-c for 1 minute	25°C, 65% RH Y capacitor removed
	Input to case	2KV a-c for 1 minute	25°C, 65% RH
Safety		UL 1950, CSA 1402C, TÜV EN60950	
Type of Construction		PC card, enclosed	
Enclosure		Aluminum	
Cooling	50W, 100W, 175W	Convection	
	300W	Built-in fan	

RAX INPUT CHARACTERISTICS

SPECIFICATION	50 WATT MODELS	100 WATT MODELS	175 WATT MODELS	300 WATT MODELS	CONDITION	
Voltage Range	90-132 or 180-264V a-c; 240-370V d-c (4)				Jumper selectable (1)	
Brownout Voltage	80/160V a-c; 220V d-c (4)				115/230V a-c	
Current	typ	1.2/0.6A	1.8/0.9A	3.4/1.7A	4.6/2.8A	Maximum load 25°C 115/230V a-c
	max	1.6/0.8A	2.5/1.3A	4.2/2.2A	6.0/3.6A	
Fuse Value	3.15A	5.0A	6.3A	10.0A		
Initial Turn-on Surge	17/34A	17/34A	17/34A	20/40A	115/230V a-c	
Frequency	Nominal 50/60Hz; range 47-440Hz(2)				Single phase	
EMI	FCC, Class A (conducted)					
Soft-start Circuit	Resistor and triac or thyristor					
Leakage Current	0.5mA				UL method, 115V a-c	
	0.75mA				UL/VDE, 230V a-c	
Startup Time	800msec max				Std.(3)	
Holdup Time	typ	30msec			Std.(3)	
	min	20msec				
Circuit Type	Forward converter					
Switching Frequency	~150KHz				Nom. input, rated load	

(1) For d-c, set selector to "230".

(2) At 440Hz the leakage current exceeds the VDE/UL safety specification limits.

(3) Std. condition = nominal input, maximum load, 25°C.

(4) Safety approval is for a-c operation only.

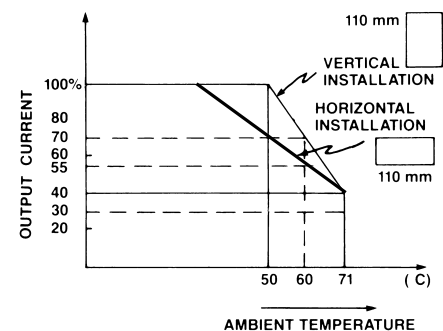
FEATURES

- Undervoltage protection in 300W models: If output voltage falls below 70% of nominal for any reason (including overload) and stays there for more than 20 seconds, power is shut off.
- Rectangular current limiting so you can drive non-linear loads.
- Parallel operation: Units may be paralleled for increased current.
- Holding time: Output is sustained by internally stored energy for 30 milliseconds typically, 20 milliseconds minimum.
- Fan cooling in 300W models: A monitor circuit maintains optimum temperature.
- Built-in EMI filter attenuates conducted noise below the requirements of FCC, Class A.
- Safety: All models recognized by UL 1950, certified by CSA 1402C, approved by TÜV Rheinland to EN60950, and are certified to meet the MIL STD 810D environment.
- Connections: Input and output connections are via screw terminal barrier strip.



RAX are CE marked per the Low Voltage Directive (LVD), EN60950.

DERATING 50, 100, 175W MODELS
(Convection cooled)



DIMENSIONS (HxWxD)

50W	inches — 4.3 x 1.8 x 7.5 mm — 110 x 45 x 190
100W	inches — 4.3 x 2.6 x 7.9 mm — 110 x 65 x 200
175W	inches — 4.3 x 3.9 x 8.7 mm — 110 x 100 x 220
300W	inches — 4.3 x 5.1 x 8.7 mm — 110 x 130 x 220

NET WEIGHT

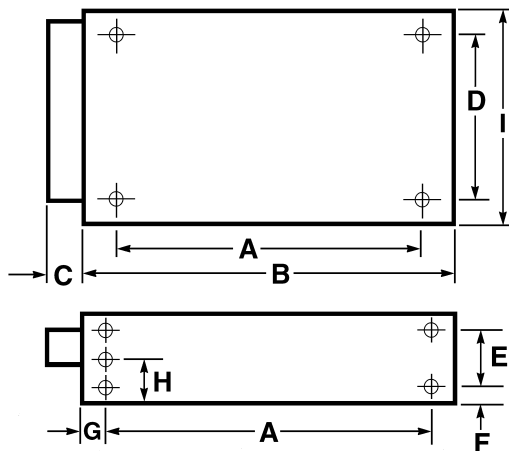
50W	1.80lbs, 0.8Kg
100W	2.90lbs, 1.3Kg
175W	3.96lbs, 1.8Kg
300W	5.50lbs, 2.5Kg

RAX OUTPUT CHARACTERISTICS

SPECIFICATION		RATING/DESCRIPTION	CONDITION
Source Effect	typ	0.8%	Minimum to maximum input
	max	1.5%	
Load Effect	typ	0.8%	10-100% load
	max	1.5%	
Temperature Effect	typ	1.0%	Nominal input, rated load, 0-50°C
	max	2.0%	
Combined Effect (source, load & temperature)	typ	2.0%	
	max	4.0%	
Time Effect (drift)	typ	0.1%	0.5-8.5 hr, maximum load, 25°C
	max	0.5%	
Recovery Characteristics	Excursion	<4.0%	Nominal input, 25°C; step load change from 50% to 100% of rated load
	Recovery within ±1%	1msec	

OUTLINE DIMENSIONAL DRAWINGS

Fractional dimensions in light face type are in inches, **dimensions in bold face type are in millimeters.**



DIMENSIONS

MODEL	A	max. B	max. C	D	E	F	G	H	max. I
50W MODELS	6.30 160	7.48 190	0.98 25	3.54 90	0.59 15	0.59 15	0.71 18	0.79 20	4.33 110
100W MODELS	6.69 170	7.87 200	1.0 25	3.54 90	0.98 25	0.79 20	0.71 18	—	4.33 110
175W MODELS	7.48 190	8.66 220	0.98 25	3.54 90	2.36 60	0.79 20	0.71 18	—	4.33 110
300W MODELS	7.48 190	8.66 220	1.02 26	3.54 90	3.54 90	0.79 20	0.71 18	—	4.33 110

Tolerances: 0.028" (0.7mm) between mounting holes, 0.04" (1.0mm) other dimensions.

Mounting:

50W: 8-32 tapped holes —

(4) bottom; (3) each side; maximum screw penetration 0.28" (7.0mm).

100W, 175W, 300W: 8-32 tapped holes —

(4) bottom; (4) each side; maximum screw penetration 0.28" (7.0mm).

