



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 typ	max	Switching p-p typ	max	d-c to 50MHz p-p max	max load typ
<b>50 WATT MODELS</b>													
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	
<b>100 WATT MODELS</b>													
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	
<b>175 WATT MODELS</b>													
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	
<b>300 WATT MODELS</b>													
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.



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## 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.

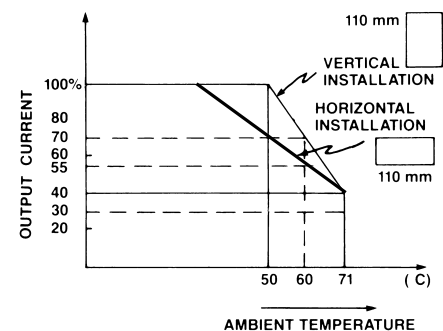
## FEATURES

- 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)

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

## NET WEIGHT

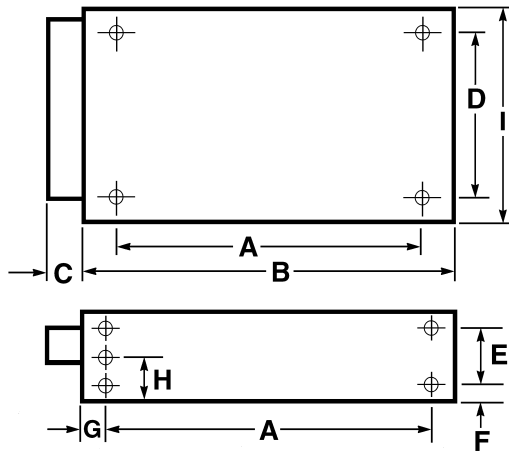
<b>50W</b>	1.80lbs, 0.8Kg
<b>100W</b>	2.90lbs, 1.3Kg
<b>175W</b>	3.96lbs, 1.8Kg
<b>300W</b>	5.50lbs, 2.5Kg

## 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 <b>160</b>	7.48 <b>190</b>	0.98 <b>25</b>	3.54 <b>90</b>	0.59 <b>15</b>	0.59 <b>15</b>	0.71 <b>18</b>	0.79 <b>20</b>	4.33 <b>110</b>
100W MODELS	6.69 <b>170</b>	7.87 <b>200</b>	1.0 <b>25</b>	3.54 <b>90</b>	0.98 <b>25</b>	0.79 <b>20</b>	0.71 <b>18</b>	—	4.33 <b>110</b>
175W MODELS	7.48 <b>190</b>	8.66 <b>220</b>	0.98 <b>25</b>	3.54 <b>90</b>	2.36 <b>60</b>	0.79 <b>20</b>	0.71 <b>18</b>	—	4.33 <b>110</b>
300W MODELS	7.48 <b>190</b>	8.66 <b>220</b>	1.02 <b>26</b>	3.54 <b>90</b>	3.54 <b>90</b>	0.79 <b>20</b>	0.71 <b>18</b>	—	4.33 <b>110</b>

**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).

