AC Input Single Output, Long Life

These products are high-reliability and long-life power supplies developed as host series of the RM-GB. They have achieved a lower 110mm height and a multi-function, as well as taking full countermeasures against external noises or the common-mode noise with satisfying the conditions of a noise terminal voltage and an electrostatic withstand voltage.

#### FEATURES

- High-reliability single output power supply.
- Universal input(RAX30W)
- AC.100V input(RAX), AC.200V input(RAX-E)
- Output voltage external variable function.
- Remote ON-OFF function.
- Remote sensing function.

#### PART NUMBERS AND RATINGS RAX:AC.100V INPUT(UL/CSA APPROVED) WIDE INPUT ONLY FOR 30W TYPE(UL/CSA/TÜV APPROVED)

Output	30W Type		50W Type	
voltage(V)	Current(A)	Part No.	Current(A)	Part No.
3	6	RAX03-6R0		
5	6	RAX05-6R0	10	RAX05-10R
12	2.5	RAX12-2R5	4.2	RAX12-4R2
15	2	RAX15-2R0	3.4	RAX15-3R4
24	1.3	RAX24-1R3	2.1	RAX24-2R1

#### RAX-E:AC.200V INPUT(UL/CSA/TÜV APPROVED)

Output	50W Type			
voltage(V)	Current(A) Part No.			
5	10 RAX05-10RE			
12	4.2 RAX12-4R2E			
15	3.4 RAX15-3R4E			
24	2.1 RAX24-2R1E			

### R Series RAX(30 to 50W)/RAX-E(50W)

### UL/CSA/TÜV Approved(RAX50W: UL/CSA Approved)



**RAX30W TYPE** 

### R Series RAX(30 to 50W)/RAX-E(50W)

AC Input Single Output, Long Life

## UL/CSA/TÜV Approved

SPECIF	ICATIONS AND ST	ANDAR	DS							
Part No.			RAX03-6R0	RAX05-6R0	RAX12-2R5	RAX15-2R0	RAX24-1R3			
Rated output voltage and current*		3V•6A	5V • 6A	12V • 2.5A	15V • 2A	24V • 1.3A				
Maximum output power W		18	30	30	30	31.2				
Input con	ditions			L						
Input volt	age Eac	V	85 to 270[Rating: 100 to 240]							
Input frec	quency	Hz	47 to 66[Rating: 50 to 60](Single phase)							
Input curi	rent	А	1max./0.5max.[A0	C.100/240V]						
Fuse rati	ng	А	2.5[Built-in]	2.5[Built-in]						
Surge cu	rrent	А	18max./36max.[A	C.120/240V, 1st surge	e current, reset after 30	)s minimum.]				
Leakage	current	mA	0.5max./0.75max	0.5max./0.75max.[AC.120/240V]						
Efficiency	/ %	100V	70typ.	75typ.	80typ.	80typ.	80typ.			
Output ch	naracteristics	÷								
Output vo	oltage Edc	V	3	5	12	15	24			
Voltage v	variable range Edc	V	1.8 to 3.6	4 to 5.5	8.4 to 13.2	12 to 16.5	16.8 to 26.4			
Maximun	n output current	А	6	6	2.5	2	1.3			
Minimum	output current	А	0	0	0	0	0			
Overvolta	age threshold Edc	V	3.8 to 4.6	6 to 6.9	13.7 to 15.7	17 to 19.5	27 to 30.5			
Overcurrent threshold A		6.6 to 7.8	6.6 to 7.8	2.8 to 3.6	2.2 to 2.7	1.5 to 1.9				
	Source effect	%	1.5max.(0.8typ.)[Within the input voltage range]							
Voltago	Load effect	%	1.5max.(0.8typ.)[0 to 100% load] Total effect 4max.(2typ.)							
stability	Temperature effect	%	2max.(1typ.), 3V: 3max.(2typ.)[Ambient temperature: -10 to +50°C]							
otability	Drift(Time effect)	%	0.5max.(0.1typ.)[25°C, input and output ratings, after input voltage ON for 30min to 8h]							
	Recovery	%/ms	±4max./1max.[50 to 100% sudden load change, tr, tf $\geq$ 50µs]							
Ripple Ep-p mV		mV	50max.	50max.	80max.	80max.	100max.			
Ripple no	bise Ep-p	mV	100max.	100max.	170max.	200max.	290max.			
Start up t	ime	ms	300max.[AC.100V]							
Hold up t	ime	ms	20min.[AC.100V]							
Auxiliary	functions		1							
Indicator	display		LED(Green) indic	ates when voltage out	put is ON.					
Overvolta	age protection		Output voltage shut-down type, recovers upon reset(interval approx. 30s), set value fixed.							
Overcurrent protection		Rectangular type, automatic recovery.								
Remote (	ON-OFF		Yes(Floating)							
Remote sensing		Yes								
Output voltage external variable function		Yes								
Standard	S		1							
Safety standards		UL1950-3, CSA950-95(C-UL), EN60950(TUV) approved.								
Noise ter	minal voltage		FCC class B mee	t.						
Construc	tions	1	T							
External dimensions mm		110×33×146[H×W×L]								
Weight g		550max.								
Mounting method		Can be attached to 2 sides.								
Case material			Frame and cover: Aluminum							

\* Current rating(maximum output current) is determined for -10 to +50°C. Derating is required when used outside this temperature range.

### AC Input Single Output, Long Life

## R Series RAX(30 to 50W)/RAX-E(50W)

## UL/CSA/TÜV Approved

#### RAX30W TYPE SHAPES AND DIMENSIONS





(Do not insert more than 7mm from surface of housing.)

#### TERMINAL DESIGNATIONS AND FUNCTIONS





Terminal No.	Designations and functions	
1	Operation indicator LED(Green)	This Green LED becomes illuminated when voltage is output.
2	Output voltage external variable terminal	The output voltage can be controlled by connecting a resistance between the RV terminal and
2	(RV)	the output +. In this case, remove a short piece between the +S and the output +.
3	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage.
4	Remote sensing terminals(+SS)	These terminals are used to compensate voltage loss from the output terminal to a load.
		Normally they are shorted with a metal bar.
5	DC output terminals(DC OUTPUT+, -)	Connect to load.
6	Remote $ON_OFE$ terminals(+BC _BC)	Output is turned ON-OFF by disconnecting-connecting the RC terminals(output ON when
0		open). RC terminals are floating.
7	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
8	AC input terminals(L, N)	Connect to AC.100V or AC.200V input line.

• All specifications are subject to change without notice.



[Detail drawing of terminal block]



Dimensions in mm ±1mm : without specified dimensions

**RAX/RAX-E50W TYPES** 

### R Series RAX(30 to 50W)/RAX-E(50W)

AC Input Single Output, Long Life

## UL/CSA/TÜV Approved(RAX50W: UL/CSA Approved)

SPECIF	ICATIONS	AND STA	NDAR	DS					
Part No. AC.100 to 120V input AC.200 to 240V input		o 120V inp	ut	RAX05-10R	RAX12-4R2	RAX15-3R4	RAX24-2R1		
		ut	RAX05-10RE	RAX12-4R2E	RAX15-3R4E	RAX24-2R1E			
Rated output voltage and current*		5V • 10A	12V • 4.2A	15V • 3.4A	24V • 2.1A				
Maximun	n output powe	r	W	50	50.4	51	50.4		
Input con	ditions			I		1	H		
المريط بي مراجع	<b>-</b>	RAX	V	85 to 132[Rating: 100 to 1	85 to 132[Rating: 100 to 120]				
input voit	age ⊑ac	RAX-E	V	170 to 264[Rating: 200 to	240]				
Input free	luency		Hz	47 to 440[Rating: 50 to 60	)](Single phase)				
Innut our	rant	RAX	А	1.6max.[Input and output	ratings]				
input cun	ent	RAX-E	А	0.8max.[Input and output ratings]					
Fuse rati	ng		А	3.15[Built-in]					
Curran ou	reast	RAX	А	15 to 17max.[25°C, input	and output ratings, 1st s	urge current, reset after 15	s minimum.]		
Surge cu	rrent	RAX-E	А	30 to 34max.[25°C, input and output ratings, 1st surge current, reset after 15s minimum.]					
Lackage	aurrant	RAX	mA	0.5max.[25°C, input and c	output ratings]				
Leakage	current	RAX-E	mA	0.75max.[25°C, input and output ratings]					
Efficiency	/		%	75typ.[25°C, input and ou	tput ratings]				
Output ch	naracteristics								
Output vo	oltage Edc		V	5	12	15	24		
Voltage v	variable range	Edc	V	4 to 5.5	8.4 to 13.2	12 to 16.5	16.8 to 26.4		
Maximun	n output curre	nt	А	10	4.2	3.4	2.1		
Minimum	output curren	nt	А	0	0	0	0		
Overvoltage threshold Edc V		6 to 6.9	13.7 to 15.7	17 to 19.5	27 to 30.5				
Overcurrent threshold A		10.5 to 11	4.5 to 4.8	3.6 to 3.9	2.3 to 2.5				
	Source effect %		%	1.5max.(0.8typ.)[Within th	e input voltage range]				
Valtaga	Load effect %		%	1.5max.(0.8typ.)[10 to 100	0% load]	Total effect 4max	.(2typ.)		
vollage	Temperature effect %		%	2max.(1typ.)[Ambient terr	perature: 0 to +60°C]				
Stability	Drift(Time effect) %		%	0.5max.[25°C, input and output ratings, after input voltage ON for 30min to 8h]					
	Recovery		%/ms	±4max./1max.[50 to 100%	6 sudden load change]				
Ripple Ep	р-р		mV	50max.	80max.	80max.	100max.		
Ripple no	oise Ep-p		mV	100max.	170max.	200max.	290max.		
Start up t	ime		ms	200max.[25°C, input and output ratings]					
Hold up t	ime		ms	20min.[25°C, input and output ratings]					
Auxiliary	functions								
Indicator	display			LED(Green) indicates when voltage output is ON.					
Overvolta	age protection			Output voltage shut-down type, recovers upon reset(interval approx. 15s), set value fixed.					
Overcurrent protection				Rectangular type, automatic recovery.					
Remote (	ON-OFF			Yes(Floating)					
Remote sensing				Yes					
Output voltage external variable function			unction	Yes					
Standard	S			I					
Safety standards RAX RAX-E				UL1950-3, CSA950-95(C-UL), EN609500(TÜV) approved.(50W: UL1950-3, CSA950-9595(C-UL) approved)					
				UL1950-3, CSA950-95(C-UL), EN60950(TUV) approved.					
Noise ter	minal voltage			FCC class A meet.					
Construc	tions		r	1					
External	dimensions		mm	110×45×190[H×W×L]					
Weight	-		g	800max.					
Mounting method				Can be attached to 3 sides.					
Case material				Aluminum(Phosphoric acid anodized surface)					

\* Current rating(maximum output current) is determined for 0 to +50°C. Derating is required when used outside this temperature range.

### R Series RAX(30 to 50W)/RAX-E(50W)

AC Input Single Output, Long Life

UL/CSA/TÜV Approved(RAX50W: UL/CSA Approved)

#### RAX/RAX-E50W TYPES SHAPES AND DIMENSIONS





[Detail drawing of terminal block]



Dimensions in mm ±1mm : without specified dimensions



#### TERMINAL DESIGNATIONS AND FUNCTIONS





Terminal No.	Designations and functions	
1	Operation indicator LED(Green)	This Green LED becomes illuminated when voltage is output.
2	Output voltage external variable terminal (RV)	The output voltage can be controlled by connecting a resistance between the RV terminal and the output +. In this case, remove a short piece between the +S and the output +.
3	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage.
4	Remote sensing terminals(+S, -S)	These terminals are used to compensate voltage loss from the output terminal to a load. Normally they are shorted with a metal bar.
5	DC output terminals(DC OUTPUT+, -)	Connect to load.
6	Remote ON-OFF terminals(+RC, -RC)	Output is turned ON-OFF by disconnecting-connecting the RC terminals(output ON when open). RC terminals are floating.
7	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
8	AC input terminals(L, N)	Connect to AC single phase power supply. RAX: AC.100V, RAX-E: AC.200V

### R Series RAX(30 to 50W)/RAX-E(50W)

AC Input Single Output, Long Life

UL/CSA/TÜV Approved(RAX50W: UL/CSA Approved)

#### **BLOCK DIAGRAM**



#### COMMON SPECIFICATIONS

Туре		30W	50W		
Temperature and hum	idity				
	Operating(°C)	-10 to +71[Derating is necessary when operating 0 to +60[Derating is necessary when operating			
Temperature range	Operating( C)	environment temperature exceed 50°C.]	environment temperature exceed 50°C.]		
	Storage(°C)	-25 to +75	-25 to +75		
Humidity rango	Operating(%)RH	20 to 95[Maximum wet-bulb temperature:	20 to 95[Maximum wet-bulb temperature:		
riumiuny range	Storage(%)RH	35°C, without dewing]	35°C, without dewing]		
Vibration and shock					
	5 to 10Hz	All amplitude 10mm[3 directions, each 1h]	All amplitude 10mm[3 directions, each 1h]		
Vibration		Acceleration 39.2m/s <sup>2</sup> (4G)	Acceleration 19.6m/s <sup>2</sup> (2G)		
	10 10 55HZ	[3 directions, each 1h]	[3 directions, each 1h]		
Shock	Acceleration	588m/s <sup>2</sup> (60G)[3 directions, each 3 times]	196m/s <sup>2</sup> (20G)[3 directions, each 3 times]		
SHOCK	Pulse duration	11±5ms	11±5ms		
Withstand voltage and	insulation resistance				
Withstand voltage	Input terminal to case(G)	Eac:2kV, 1min[Normal temperature,	Eac:2kV, 1min[Normal temperature,		
	Input terminal to output terminal	normal humidity, cutout current 5mA]	normal humidity, cutout current 10mA]		
	Input terminal to case(G)	Edu: 500) ( 100) (0 min			
Insulation resistance	Input terminal to output terminal	Edc:500V, 100IVI2 MIN.	EUC.300V, 100IVIS211111. [Normal temporature_permal humidity]		
	Output terminal to case(G)	[Normal temperature, normal nurnicity]	[Normal temperature, normal nurnicity]		

#### OUTPUT POWER-AMBIENT TEMPERATURE(DERATINGS) RAX30W



#### RAX50W, RAX-E50W



AC Input Single Output, Long Life

#### OVERCURRENT PROTECTION

The fixed current and voltage threshold type protection function operates if output load current exceeds an overcurrent detection value. The output automatically recovers by removing the cause.

#### **REMOTE ON-OFF**

Power supply output voltage can be turned ON/OFF by this terminal for a power supply sequence or the like.

Between +RC and –RC: Turned on upon setting to high level (2.4 to 24V) or being open.

Between +RC and -RC: Turned off upon setting to low level (0 to 0.4V) or shorted.

The RC terminals are at a floating level to the AC input terminals and the DC output terminals.

Keep the +RC terminal open when not in use since it is internally pulled up.

# REMOTE ON-OFF CIRCUIT DIAGRAM RAX30W



#### RAX50W, RAX-E50W



#### OUTPUT VOLTAGE EXTERNAL VARIABLE FUNCTION(RV)

The output voltage settings (approx. -20 to +10% of the rated output voltage) can be adjusted by attaching an external trimmer to the RV terminal.



## R Series RAX(30 to 50W)/RAX-E(50W)

### UL/CSA/TÜV Approved(RAX50W: UL/CSA Approved)

#### **OTHER CONDITIONS**

- Unless conditions are otherwise specified in the specifications or standards, 25°C and rated input-output should be applied.
- Ripple and noise (50MHz or lower) should be specified at a temperature within a range of 0 to +50°C.