

## KEY FEATURES

- Switching Power Module for PCB Mountable
- Fully Encapsulated Plastic Case
- Universal Input Range 90-264VAC, 47-440 Hz
- Regulated Output
- Low Ripple and Noise
- Screw Terminal For Optional
- CE, UL Approval
- 3-Year Product Warranty



## ELECTRICAL SPECIFICATIONS

All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Model No. (Single Output)	APC-3.3S-E1	APC-5S-E1	APC-12S-E1	APC-15S-E1	APC-24S-E1
Max Output Wattage (W)	5W	5W	5W	5W	5W
Input	Voltage				
	90-264 VAC or 120-370 VDC				
	Frequency (Hz)				
	47-440 Hz				
	Current (Full load)				
	120 mA max. (115 VAC) / 70 mA max. (230 VAC)				
Inrush Current (<2ms)					
23 A max. (115 VAC) / 46 A max. (230 VAC)					
Leakage Current					
0.75 mA max.					
External Fuse (recommend)					
1.5 A slow blow type					
Output	Voltage (V.DC.)				
	3.3V	5V	12V	15V	24V
	Voltage Accuracy				
	±2%				
	Current (mA) max				
	1500	1000	416	333	200
	Line Regulation (LL-HL) (typ.)				
	±0.3%				
	Load Regulation (5-100%) (typ.)				
	±0.5%				
	Minimum Load				
	4%	1%			
	Maximum Capacitive Load				
40000 uF	19000 uF	4000 uF	3500 uF	900 uF	
Ripple					
<0.2% Vout +40mV max (Vp-p)					
Noise					
<0.5% Vout +50mV max (Vp-p)					
Efficiency					
63%	71%	75%	75%	74%	
Hold-up Time					
15 ms min.					
Switching Frequency					
100 kHz					
Protection	Over Power Protection				
	Hiccup technique, auto-recovery				
	Over Voltage Protection				
Zener diode clamp					
Short Circuit Protection					
Hiccup mode, indefinite (automatic recovery)					
Isolation	Input-Output (V.AC)				
	3000V				
	Input-FG (V.AC)				
1500V					
Output-FG (V.AC)					
500V					
Environment	Operating Temperature				
	-40°C...+70°C (with derating)				
	Storage Temperature				
	-40°C...+85°C				
	Temperature Coefficient				
±0.02%/°C					
Humidity					
95% RH					
MTBF					
>300,000 h @ 25°C (MIL-HDBK-217F)					
Physical	Dimension (L x W x H)				
	2.15 x 1.77 x 0.82 Inches ( 54.7 x 44.9 x 21.0 mm ) Tolerance ±0.5 mm				
	Case Material				
	Plastic resin with Fiberglass (flammability to UL 94V-0)				
Weight					
80 g					
Cooling Method					
Free air convection					
Safety	Agency Approvals				
UL/cUL, CE					
EMC	EMI (Conducted & Radiated Emission)				
	EN 55022 class B				
EMS (Noise Immunity)					
EN 50082-1					

## ELECTRICAL SPECIFICATIONS

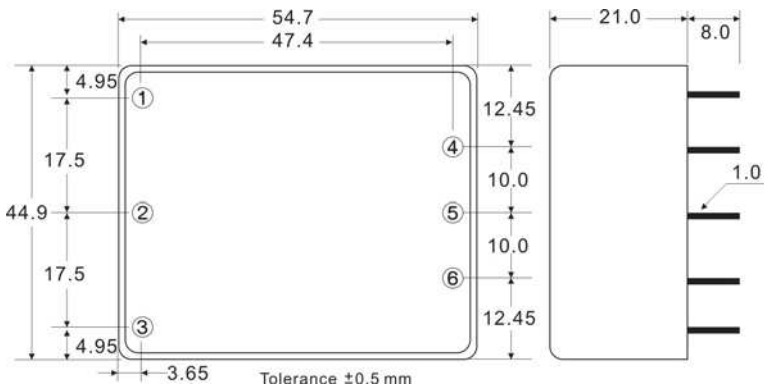
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Model No. ( Dual Output )	APC-5D-E1	APC-12D-E1	APC-15D-E1	
Max Output Wattage (W)	5W	5W	5W	
Input	Voltage			
	90-264 VAC or 120-370 VDC			
	Frequency (Hz)			
	47-440 Hz			
	Current (Full load)			
	120 mA max. (115 VAC) / 70 mA max. (230 VAC)			
Inrush Current (<2ms)				
23 A max. (115 VAC) / 46 A max. (230 VAC)				
Leakage Current				
0.75 mA max.				
External Fuse (recommend)				
1.5 A slow blow type				
Output	Voltage (V.DC.)	±5V	±12V	±15V
	Voltage Accuracy	±2%		
	Current (mA) max	±500	±200	±160
	Line Regulation (LL-HL) (typ.)	±0.3%		
	Load Regulation (5-100%) (typ.)	±0.5%		
	Minimum Load	0%	0%	3%
	Maximum Capacitive Load	±9500 uF	±1400 uF	±950 uF
	Ripple	<0.2% Vout +40mV max (Vp-p)		
	Noise	<0.5% Vout +50mV max (Vp-p)		
	Efficiency	72%	74%	74%
	Hold-up Time	15 ms min.		
	Switching Frequency	100 kHz		
	Protection	Over Power Protection	Hiccup technique, auto-recovery	
Over Voltage Protection		Zener diode clamp		
Short Circuit Protection		Hiccup mode, indefinite (automatic recovery)		
Isolation	Input-Output (V.AC)	3000V		
	Input-FG (V.AC)	1500V		
	Output-FG (V.AC)	500V		
Environment	Operating Temperature	-40°C...+70°C (with derating)		
	Storage Temperature	-40°C...+85°C		
	Temperature Coefficient	±0.02%/°C		
	Humidity	95% RH		
	MTBF	>300,000 h @ 25°C (MIL-HDBK-217F)		
Physical	Dimension (L x W x H)	2.15 x 1.77 x 0.82 Inches ( 54.7 x 44.9 x 21.0 mm ) Tolerance ±0.5 mm		
	Case Material	Plastic resin with Fiberglass (flammability to UL 94V-0)		
	Weight	80 g		
	Cooling Method	Free air convection		
Safety	Agency Approvals	UL/cUL, CE		
EMC	EMI (Conducted & Radiated Emission)	EN 55022 class B		
	EMS (Noise Immunity)	EN 50082-1		

### NOTE

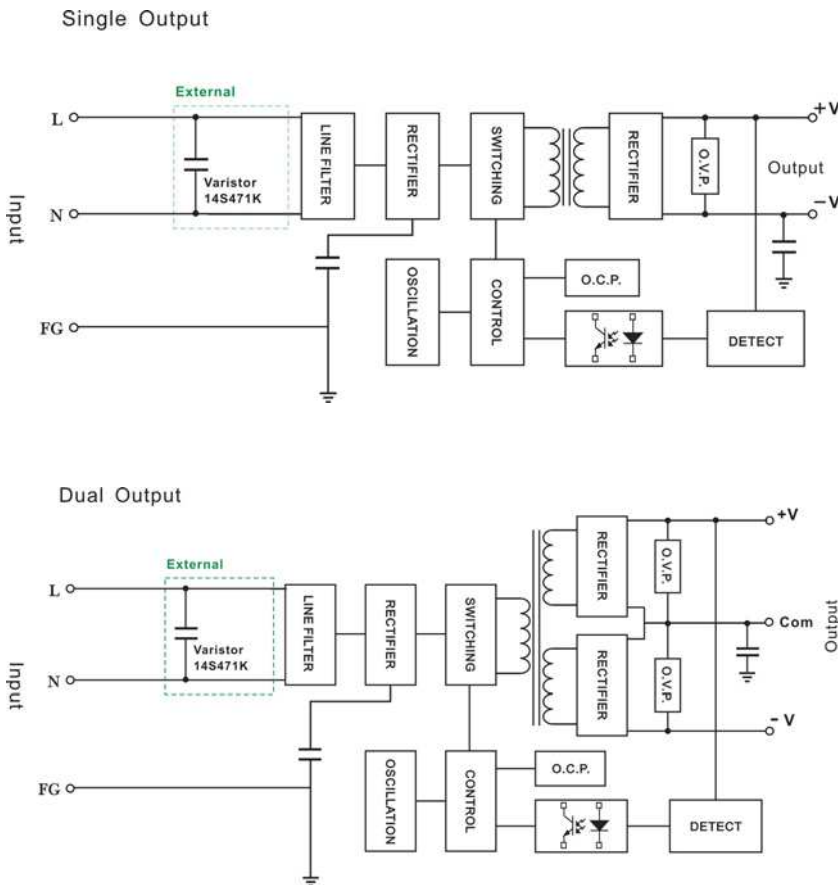
1. Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.
2. It's recommended to add Varistor 14S471K at L / N input side in parallel.

**MECHANICAL DIMENSION ( Top View )**

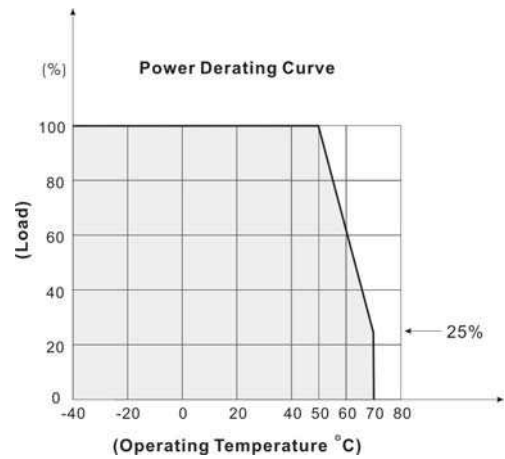


PIN#	Single	Dual
1	FG	FG
2	AC IN (N)	AC IN (N)
3	AC IN (L)	AC IN (L)
4	-DC OUT	-DC OUT
5	NO PIN	COMMON
6	+DC OUT	+DC OUT

**BLOCK DIAGRAM**

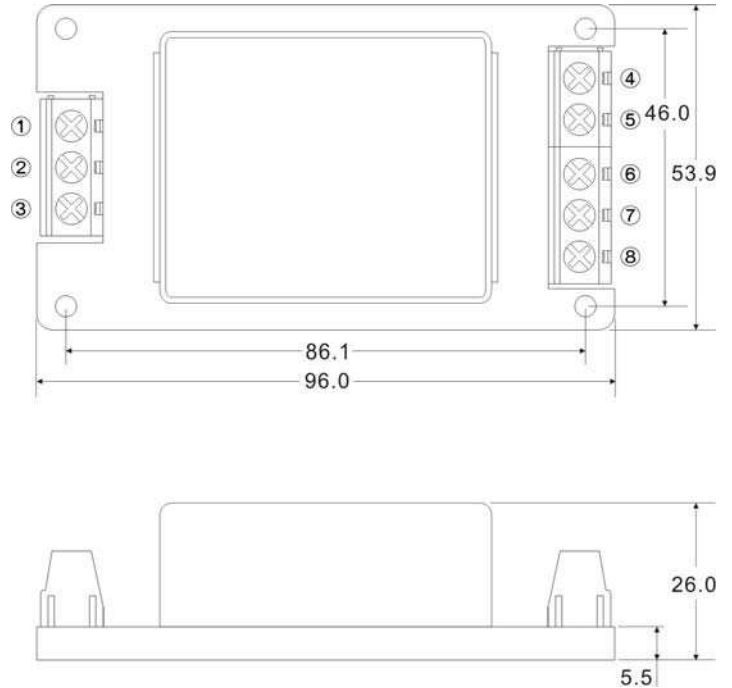


**DERATING**



**APC-E1 SERIES**
**5 Watts**
**SCREW TERMINAL**
**APC-E1-A2**


PIN#	Single	Dual
1	FG	FG
2	AC IN (N)	AC IN (N)
3	AC IN (L)	AC IN (L)
4.	NO CONNECT	NO CONNECT
5	-DC OUT	-DC OUT
6	NO CONNECT	COMMON
7	+DC OUT	+DC OUT
8	NO CONNECT	NO CONNECT


**APC- E1-A5**


PIN#	Single	Dual
1	FG	FG
2	AC IN (N)	AC IN (N)
3	AC IN (L)	AC IN (L)
4.	NO CONNECT	NO CONNECT
5	-DC OUT	-DC OUT
6	NO CONNECT	COMMON
7	+DC OUT	+DC OUT
8	NO CONNECT	NO CONNECT

