

# AQF-30 Series

## 30 Watts Universal Input Range AC/DC Power Modules Single, Dual and Triple Outputs

### Key Features

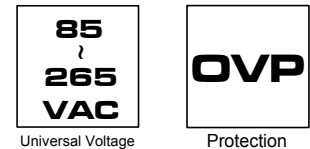
- High Efficiency up to 80%
- 85~265VAC, 47~440Hz Universal Input Range
- Single, Dual and Triple Output Modules
- PCB and Chassis Mounting Packages
- I/O Isolation 3000VAC
- EMI Complies With EN55022 Class B and FCC part 15, level B
- EMC Complies With EN61000
- MTBF > 250,000 Hours
- UL 60950-1 Safety Approval
- IEC61140 Safety Class II Approval
- Operating Temperature 71°C (Reference to Derating Curve)



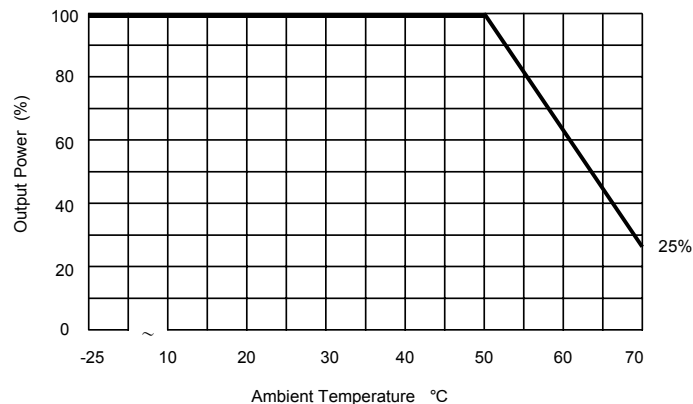
AQF-30 is a 30-Watt series of AC-DC power modules. These modules have universal input range of 85-265VAC and are available in 13 models with efficiency as high as 80%.

Other features include continuous short circuit protection, overvoltage protection, output current limitation, EMC EN61000-4(-2,-3,-4) and EMI EN55022 level B approved which conducted noise compliance minimize design-in time, cost and eliminate the need for external components.

The AQF-30 series has IEC / EN / UL 60950-1 safety approval qualifies this product for worldwide markets. The series is a wide variety of applications including in commercial and industrial of the MTBF 250,000 hours.



### Derating Curve



## Model Selection Guide

Model Number	Output Voltage	Output Current			Capacitive Load	Input Current		Efficiency
						115VAC, 60Hz		
	VDC	Max. mA	Min. mA	Peak mA	Max. uF	@Max. Load mA (Typ.)	@No Load mA (Typ.)	@Max. Load % (Typ.)
AQF-30S05	5	6000	600	---	8000	557	60	78
AQF-30S12	12	2500	250	---	3900	543	60	80
AQF-30S15	15	2000	200	---	3900	543	60	80
AQF-30S24	24	1250	125	---	1500	543	60	80
AQF-30S48	48	625	63	---	1000	543	60	80
AQF-30D12	±12	±1300	±130	---	# 1500	565	60	80
AQF-30D15	±15	±1000	±100	---	# 1500	543	60	80
AQF-30D512	*5	3000	300	4500	3900	572	60	76
	*12	1250	125	1800	1500			
AQF-30T512	*5	3000	600	4500	2200	572	60	76
	12	600	120	900	1500			
	-12	-600	-120	900	1500			
AQF-30T512A	*5	3000	600	4500	2200	572	60	76
	12	1000	200	1500	1500			
	-12	-250	-50	500	1500			
AQF-30T515	*5	3000	300	4500	2200	572	60	76
	15	500	50	750	1500			
	-15	-500	-50	750	1500			
AQF-30T5312P	*5	4500	900	6000	2200	588	60	71
	+3.3	1000	220	1500	2200			
	+12	250	50	500	1500			
AQF-30T3512P	*3.3	4000	800	5300	2200	483	60	71
	+5	1500	300	2000	2200			
	+12	250	50	500	1500			

\*Output floating (see note 8)  
# For each output

## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature	Ambient	-25	71	°C
Storage Temperature		-40	85	°C
Humidity		---	95	%
Cooling	Free-Air Convection			
Conducted EMI	EN55022 Class B			
Conducted EMC	Standard	specification requirement		Performance Criteria
	EN61000-4-2	Air $\pm 8KV$ Cont. $\pm 4KV$		B
	EN61000-4-3	80~1000MHz 10V/m 80% AM1KHz modulation		A
	EN61000-4-4	AC port $\pm 2KV$ DC, SL, TL $\pm 2KV$ not less than 1 min.		B
	EN61000-4-5	1.2/50uS(8/20uS) AC dif. $\pm 1KV$ DC $\pm 0.5KV$		B
	EN61000-4-6	0.15~80MHz 10Vrms (functional earth ports included) 80% AM 1kHz modulation		B
	EN61000-4-11	30% 10ms 60% 100ms 95% 5000ms		B C C

## Note:

1. Specifications typical at  $T_a = +25^\circ C$ , resistive load, 115VAC, 60Hz input voltage, rated output current unless otherwise noted.
2. Ripple & Noise measurement bandwidth is 0~20 MHz.
3. These power modules require a minimum output loading to maintain specified regulation.
4. Operation under no-load conditions will not damage these devices; however they may not meet all listed specifications.
5. Other input and output voltage may be available, please contact factory.
6. Specifications subject to change without notice.
7. Peak current can't be drawn from all output at the same time.
8. Floating (or isolated) output of a power supply that is not connected to any other output.
9. To order the power module with chassis mounting style, please add a suffix C (e.g. AQF-30S05C).
10. Part Number for DIN-Rail bracket: AC-DIN-02

## Input Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	All Models	85	---	265	VAC
Input Frequency Range		47	---	440	Hz
Inrush Current (Cold Start at 25°C)	115VAC	---	---	20	A
	230VAC	---	---	40	A

## Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit		
Output Voltage Accuracy	Single / Dual Output	---	±1.0	±2.0	%		
	Dual Positive / Triple Output	Vo1	---	±1.0	±2.0	%	
		Vo2&Vo3	---	±3.0	---	%	
Line Regulation	Vin=Min. to Max.	---	±0.2	±1.0	%		
Load Regulation	Iout=Min. to Max.	Single Output Models	---	±0.5	±1.0	%	
		Dual Output Models	---	±2.5	±5.0	%	
		Triple Output Models	Vo1	---	±2.5	±5.0	%
			Vo2&Vo3	---	±4.0	---	%
Cross Regulation— Dual Positives / Triple Output	Vo1	Measured output Io = 20% to 100% of rated load Other output are set at 50% of rated load	---	±2.0	---	%	
	Vo2		---	±5.0	---	%	
	Vo3		---	±5.0	---	%	
Ripple & Noise (20MHz)	3.3 & 5.0VDC Output Models	---	1.5	1.8	%V <sub>pp</sub> of Vo		
	Other Output Models	---	1.0	1.3	%V <sub>pp</sub> of Vo		
Over Voltage Protection	Zener diode clamp	---	120	---	% of Vo		
Temperature Coefficient		---	±0.02	---	%/°C		
Overshoot		---	---	5	%		
Current Limitation	85VAC, Hiccup technique, auto-recovery	105	---	---	%		
Short Circuit Protection	Hiccup mode, indefinite (automatic recovery)						

## General Specifications

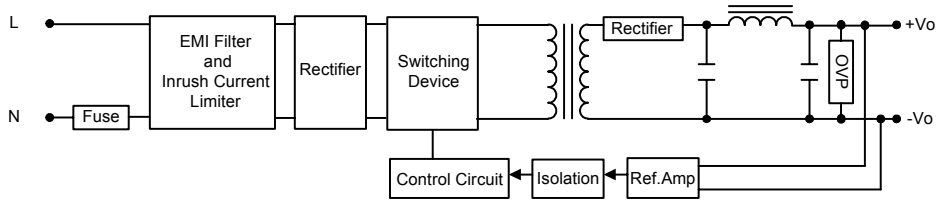
Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input to Output, 60 Seconds	3000	---	---	VAC
Isolation Test Voltage	Input to Output, Flash Tested for 1 Second	4700	---	---	VDC
Isolation Resistance	500VDC	100	---	---	MΩ
Switching Frequency		---	100	---	KHz
Hold-up Time	115VAC, 60Hz	---	20	---	ms
MTBF	MIL-HDBK-217F @ 25°C, Ground Benign	250	---	---	K Hours

## Input Fuse

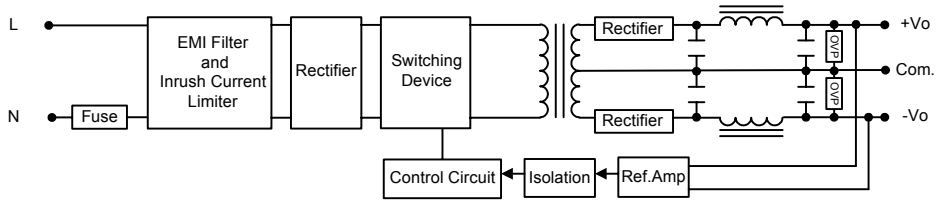
All Models	
Built-in Fuse	3.5A / 250VAC
External Fuse (Recommended)	1.5A Slow – Blow Type

## Block Diagram

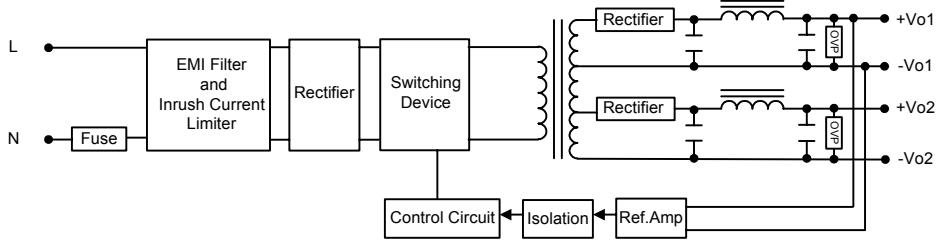
### Single Output



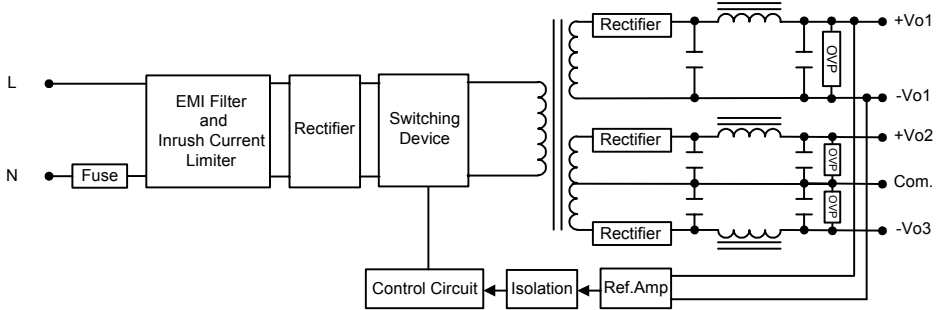
### Dual Output 1



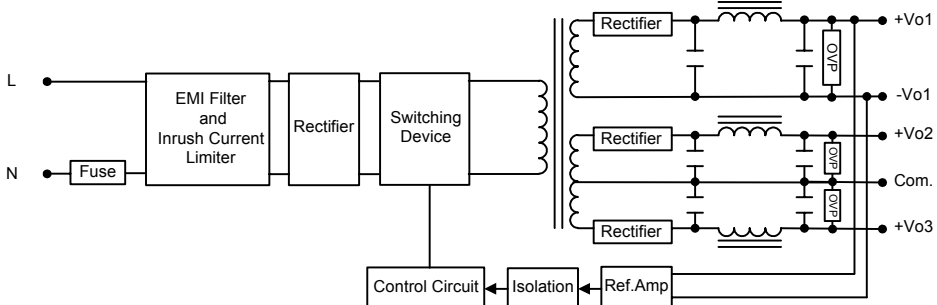
### Dual Output 2



### Triple Output 1

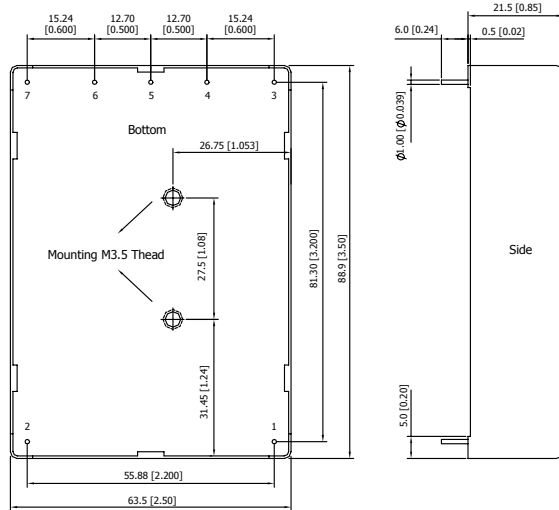


### Triple Output 2



## Mechanical Dimensions

### PCB mounting



### Pin Connections

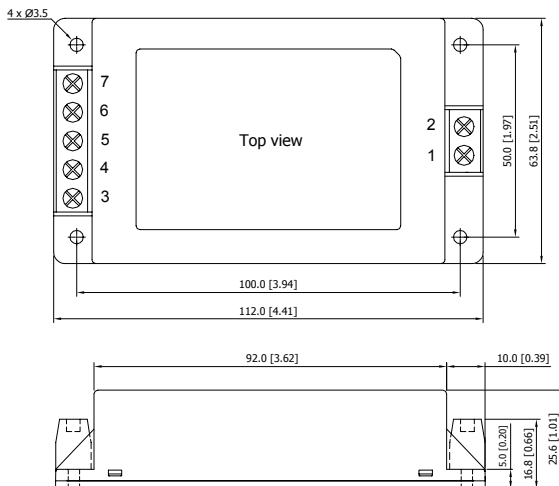
Pin	Single Output	Dual Output1	Dual Output2	Triple Output1	Triple Output2
1	AC(N) – AC Neutral				
2	AC(L) – AC Line				
3	+Vout	+Vout	+Vout2	+Vout2	+Vout2
4	No Pin		+Vout1	+Vout1	+Vout1
5	-Vout	Common	-Vout2	Common 2/3	Common 2/3
6	No Pin		-Vout1	-Vout1	-Vout1
7	NC	-Vout	NC	-Vout3	+Vout3

NC: No Connection

### Physical Characteristics

Case Size	:	88.9×63.5×21.5 mm 3.50×2.50×0.85 inches
Case Material	:	Plastic resin + Fiberglass
Weight	:	177g
Flammability	:	UL94V-0

### Chassis mounting



### Pin Connections

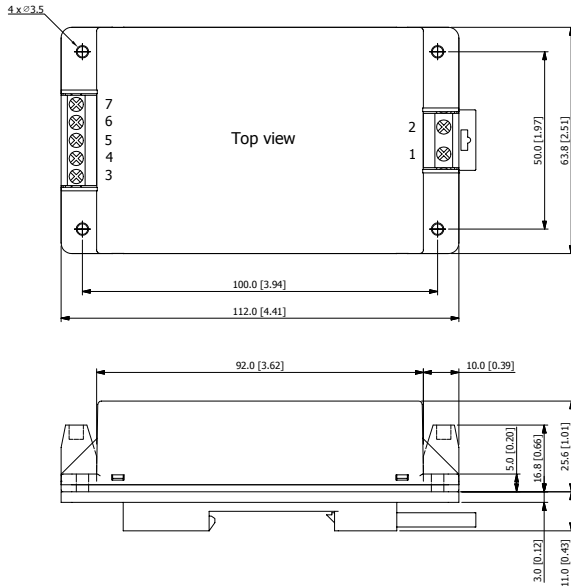
Pin	Single Output	Dual Output1	Dual Output2	Triple Output1	Triple Output2
1	AC(N) – AC Neutral				
2	AC(L) – AC Line				
3	+Vout	+Vout	+Vout2	+Vout2	+Vout2
4	NC		+Vout1	+Vout1	+Vout1
5	-Vout	Common	-Vout2	Common 2/3	Common 2/3
6	NC		-Vout1	-Vout1	-Vout1
7	NC	-Vout	NC	-Vout3	+Vout3

NC: No Connection

### Physical Characteristics

Case Size	:	112.0×63.8×25.6 mm 4.41×2.51×1.01 inches
Case Material	:	Plastic resin + Fiberglass
Weight	:	191g
Flammability	:	UL94V-0

## DIN-Rail Package



Tolerance	Millimeters	Inches
	$X.X \pm 0.5$	$X.XX \pm 0.02$
	$X.XX \pm 0.25$	$X.XXX \pm 0.01$
Pin	$\pm 0.1$	$\pm 0.004$

## Pin Connections

Pin	Single Output	Dual Output1	Dual Output2	Triple Output1	Triple Output2
1	AC(N) – AC Neutral				
2	AC(L) – AC Line				
3	+Vout	+Vout	+Vout2	+Vout2	+Vout2
4	NC		+Vout1	+Vout1	+Vout1
5	-Vout	Common	-Vout2	Common 2/3	Common 2/3
6	NC		-Vout1	-Vout1	-Vout1
7	NC	-Vout	NC	-Vout3	+Vout3

NC: No Connection

## Physical Characteristics

Case Size	:	112.0x63.8x36.6 mm
	:	4.41x2.51x1.44 inches
Case Material	:	Plastic resin + Fiberglass
Weight	:	245g
Flammability	:	UL94V-0