AHF-10 Series

10 Watts Universal Input Range AC/DC Power Modules

Single and Dual Outputs

Key Features

- *High Efficiency up to 77%*
- *85~265VAC, 47~440Hz Universal Input Range*
- *Single and Dual Output Modules*
- *I/O Isolation 3000VAC*
- *EMI Complies With EN55022 Class B and FCC part 15, level B*
- *EMC Complies With EN61000*
- *MTBF > 300,000 Hours*
- *UL 60950−1 Safety Approval*
- *IEC61140 Safety Class II Approval*
- *Operating Temperature 71°C (Reference to Derating Curve)*

AHF-10 is a 10-Watt series of AC-DC power modules. These modules have universal input range of 85-265VAC and are available in output voltages of 3.3V, 5V, 12V, 15V, 24V, ±12 and ±15V with efficiency as high as 77%.

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 AHF-10 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 300,000 hours.

85 ~ 265 VAC — Universal Voltage

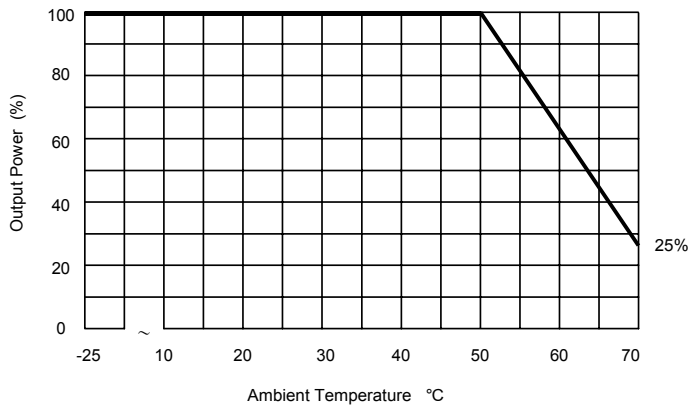
OVP — Protection

3000 VAC — I/O Isolation

EMI — EN55022

EMC — EN61000

Derating Curve



Model Selection Guide

Model Number	Output Voltage	Output Current		Capacitive Load	Input Current		Efficiency
					115VAC, 60Hz		
		Max.	Min.	Max.	@Max. Load	@No Load	@Max. Load
	VDC	mA	mA	uF	mA (Typ.)	mA (Typ.)	% (Typ.)
AHF−10S03	3.3	2000	200	3900	137	15	70
AHF−10S05	5	2000	200	3300	199	15	73
AHF−10S12	12	833	83	2200	191	15	76
AHF−10S15	15	666	66	2200	191	15	76
AHF−10S24	24	416	42	1000	190	15	76
AHF−10D12	±12	±380	±38	# 1000	172	15	77
AHF−10D15	±15	±300	±30	# 1000	169	15	77

 # For each output.

Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature	Ambient	−25	71	℃
Storage Temperature		−40	85	℃
Humidity		−−−	95	%
Cooling	Free−Air Convection			
Conducted EMI	EN55022 Class B			
Conducted EMC	Standard	specification requirement		Performance Criteria
	EN61000−4−2	Air ±8KV Cont. ±4KV		B
	EN61000−4−3	80~1000MHz 10V/m 80% AM1KHz modulation		A
	EN61000−4−4	AC port ±2KV DC, SL, TL ±2KV not less than 1 min.		B
	EN61000−4−5	1.2/50uS(8/20uS) AC dif. ±1KV DC ±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 Ta=+25℃, 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.

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℃)	115VAC	−−−	−−−	10	A
	230VAC	−−−	−−−	20	A

Input Fuse

All Models	
Built-in Fuse	2A / 250VAC
External Fuse (Recommended)	1.5A Slow - Blow Type

Output Specifications

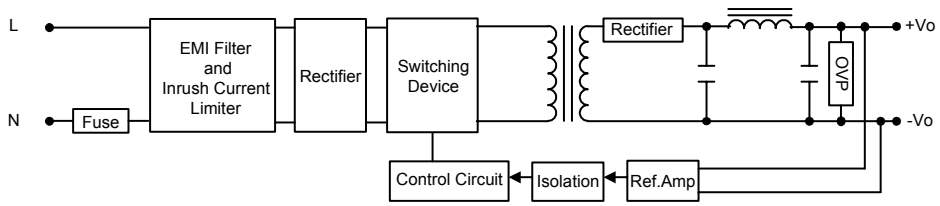
Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±1.0	±2.0	%
Line Regulation	Vin=Min. to Max.	---	±0.5	±1.0	%
Load Regulation - Single output	Iout=Min. to Max.	---	±0.5	±1.0	%
- Dual output		---	±2.5	±5.0	%
Ripple & Noise (20MHz)	3.3 & 5.0VDC Output Models	---	1.5	1.8	%V_{pp} of Vo
	Other Output Models	---	0.8	1.0	%V_{pp} of Vo
Over Voltage Protection	Zener diode clamp	---	120	---	% of Vo
Temperature Coefficient		---	±0.01	±0.02	%/°C
Overshoot		---	---	5.0	%
Current limitation	85VAC, Hiccup technique, auto-recovery	105	---	---	%
Short circuit protection	Hiccup mode, indefinite (automatic recovery)				

General Specifications

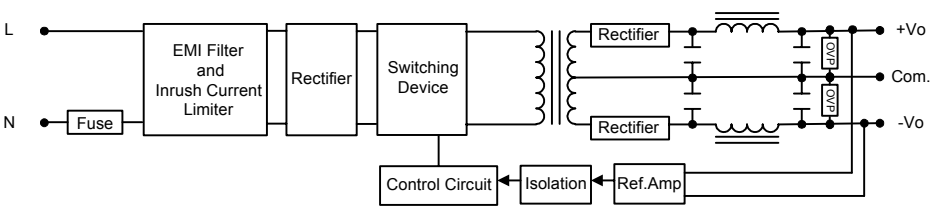
Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input to Output, 60 Seconds	3000	---	---	VAC
Isolation Test Voltage	Input to Output, Flash Tested for 1 Second	4700	---	---	VDC
Isolation Resistance	500VDC	100	---	---	MΩ
Switching Frequency		---	100	---	KHz
Hold-up Time	115VAC, 60Hz	---	20	---	ms
MTBF	MIL-HDBK-217F @ 25°C, Ground Benign	300	---	---	K Hours

Block Diagram

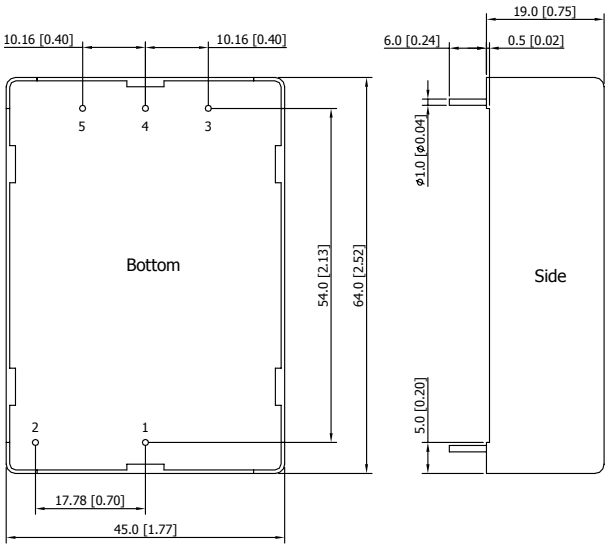
Single Output



Dual Output



Mechanical Dimensions



Tolerance	Millimeters	Inches
	X.X±0.5	X.XX±0.02
	X.XX±0.25	X.XXX±0.01
Pin	±0.1	±0.004

Pin Connections

Pin	Single Output	Dual Output
1	AC(N) − AC Neutral	
2	AC(L) − AC Line	
3	−Vout	
4	NC	Common
5	+Vout	

NC: No Connection

Physical Characteristics

Case Size : 64.0×45.0×19.0 mm
2.52×1.77×0.75 inches

Case Material : Plastic resin + Fiberglass

Weight : 92 g

Flammability : UL94V−0