FEATURES

NEW

- Ultra Compact Size 1.5 x 1.0 x 0.6"
- Fully Encapsulated Module for PCB Mounting
- Universal Input 85~264VAC, 47~440Hz
- Protection Class II as per IEC/EN 60536
- I/O Isolation 4000VAC with Reinforced Insulation
- No Min. Load Requirement
- Operating Ambient Temp. Range -25℃ to +70℃
- Overload/Voltage and Short Circuit Protection
- Design-in EMI Emission meets EN 55032/14-1 Class B & FCC Level B
- Design-in EMC Immunity meets EN 61000-4-2,3,4,5,6,8,11
- Eco Design, Low No Load Input Power 150mW max.
- Safety Approval to UL/cUL/IEC/EN 62368-1 (60950-1), TUV IEC/EN 60335-1 & CE Marking

PRODUCT OVERVIEW

The new ACF-10 Series from MINMAX is a new range of ultra-small, fully encapsulated 10 Watt AC/DC power supply modules. They are designed for easy PCB mounting featureing measuring only 1.5"x1"x0.6". The ACF-10 series consist 7 models featuring universal AC input (85~264VAC) and tight regulated single output voltage ranging from 3.3~48VDC; 4000VAC isolation with reinforced insulation; design-in EMI mission meets EN 55032/14-1 class B; design-in EMC immunity meets EN 61000-4-2,3,4,5,6,8,11; no minimum load requirement; short circuit / overload / overvoltage protection and low stand-by power consumption <150mW as well. Units have been qualified via CB report and class II protection level for both UL/cUL/IEC/EN 62368-1,60950-1 (Audio & ITE Safety) and TUV/IEC/EN 60335-1 (Household Safety) certifications.

The ACF-10 power supplies provide a good solution for space critical applications in consumer appliances, industrial electronics, instrumentation, household and communication equipment where PCB space is critical and limited.

Model Selection Guide

Model Number	Output Voltage	Output Current		Input Current		Max. capacitive Load	Efficiency (typ.)
				115VAC, 60Hz	230VAC, 50Hz		
		Max.	Peak(1)	@Max. Load			@Max. Load, 115VAC
	VDC	mA	mA	mA(typ.)		μF	%
ACF-10S03	**3.3**	**2600**	3380	186	121	4400	77
ACF-10S05	**5**	**2000**	2600	209	136	2200	80
ACF-10S09	**9**	**1100**	1440	199	130	680	83
ACF-10S12	**12**	**830**	1080	198	129	390	84
ACF-10S15	**15**	**660**	860	197	128	240	84
ACF-10S24	**24**	**410**	530	191	124	100	86
ACF-10S48	**48**	**210**	270	201	130	24	84

Input Specifications

Parameter	Conditions / Model	Min.	Typ.	Max.	Unit
Input Voltage Range	All Models	85	---	264	VAC
Input Frequency Range		47	---	440	Hz
Input Voltage Range		120	---	370	VDC
No-Load Power Consumption		---	---	0.15	W
Inrush Current (Cold Start at 25°C)	115VAC	---	---	20	A
	230VAC	---	---	40	A

Output Specifications

Parameter	Conditions / Model		Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy			---	±1.0	±2.0	%
Line Regulation	Vin=Min. to Max. @Full Load		---	---	±0.5	%
Load Regulation	Io=0% to 100%		---	---	±1.0	%
Minimum Load	No minimum Load Requirement					
Ripple & Noise	0-20 MHz Bandwidth	3.3V & 5VDC Output Models	---	---	60	mV_{P-P}
		Other Output Models	---	---	1	$\%V_{PP}$ of Vo
Over Voltage Protection	Zener diode clamp		---	125	---	% of Vo
Temperature Coefficient			---	±0.01	±0.02	%/℃
Over Load Protection	Foldback, auto-recovery (long term overload condition may cause damage)		---	150	---	%Inom.
Short Circuit Protection	Hiccup mode, Automatic Recovery					

General Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds	4000	---	---	VAC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
Switching Frequency		---	45	---	kHz
Hold-up Time	115VAC, 60Hz	---	8	---	ms
	230VAC, 50Hz	---	40	---	ms
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground Benign	452,916	---	---	Hours
Protection Class II	According IEC/EN 60536				
Safety Approvals	UL/cUL 60950-1 recognition(UL certificate), IEC/EN 60950-1(CB-report) UL/cUL 62368-1 recognition (UL certificate), IEC/EN 62368-1(CB-report) IEC/EN 60335-1 recognition(TUV certificata,CB-report)				

EMC Specifications

Parameter	Standards & Level		Performance
EMI	Conduction and Radiation	EN 55014-1, EN 55032, FCC part 15	Class B
EMS	EN 55014-2, EN 55024		
	ESD	EN 61000-4-2 Air ± 8kV , Contact ± 6kV	A
	Radiated immunity	EN 61000-4-3 10V/m	A
	Fast transient	EN 61000-4-4 ±2kV	A
	Surge	EN 61000-4-5 ±1kV	A
	Conducted immunity	EN 61000-4-6 10Vrms	A
	PFMF	EN 61000-4-8 30A/Mm	A
	Dips	EN 61000-4-11 30% 10ms	A
	Interruptions	EN 61000-4-11 >95% 5000ms	B

Environmental Specifications

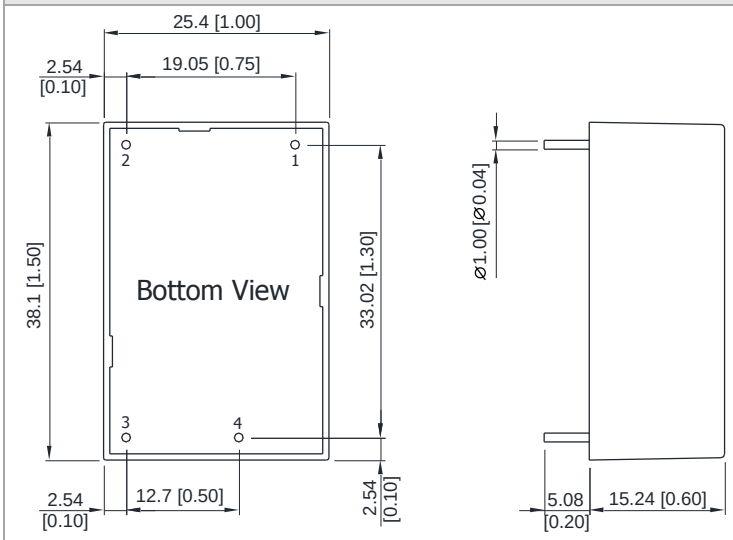
Parameter	Conditions	Min.	Max.	Unit
Operating Ambient Temperature Range	Natural Convection	-25	+70	℃
Storage Temperature Range		-40	+85	℃
Power Derating	+50℃ to +70℃	0.25		W / ℃
Cooling	Natural Convection			
Humidity (non condensing)		---	95	% rel. H
Lead Temperature (1.5mm from case for 10Sec.)		---	260	℃

Notes

1. Peak load lasting <30s with a maximum duty cycle of 10%, average output power not to exceed maximum power.
2. All specifications typical at Ta=+25℃, resistive load, 115VAC, 60Hz input voltage and after warm-up time rated output current unless otherwise noted.
3. We recommend to protect the converter by a slow blow fuse in the input supply line.
4. Other input and output voltage may be available, please contact factory.
5. Specifications are subject to change without notice.

Package Specifications

Mechanical Dimensions



Pin Connections

Pin	Function
1	AC(N)
2	AC(L)
3	-Vout
4	+Vout

- All dimensions in mm (inches)
- Tolerance: ±0.5 (±0.02)
- Pin diameter ∅ 1.0 ±0.1 (0.04±0.004)

Physical Characteristics

Case Size	:	38.1x25.4x15.24mm (1.50x1.00x0.60 inches)
Case Material	:	Plastic resin (flammability to UL 94V-0 rated)
Pin Material	:	Tinned Copper
Weight	:	29g