

**FEATURES**

- ▶ 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°C to +70°C
- ▶ Overload/Voltage and Short Circuit Protection
- ▶ EMI Emission EN 55032/14-1 Class B & FCC Level B Approved
- ▶ EMC Immunity EN 61000-4-2,3,4,5,6,8,11 Approved
- ▶ Eco Design, Low No Load Power Consumption < 150mW
- ▶ Safety Approval to UL/cUL/IEC/EN 62368-1 (60950-1), TUV IEC/EN 60335-1 & CE Marking

**NEW**

**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 featuring 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; EMI emission EN 55032/14-1 class B approved; EMC immunity EN 61000-4-2,3,4,5,6,8,11 approved; 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) 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 VDC	Output Current		Input Current		Max. capacitive Load μF	Efficiency (typ.) @Max. Load, 115VAC %
		Max.	Peak <sub>(1)</sub>	115VAC, 60Hz	230VAC, 50Hz		
		mA	mA	@Max. Load mA(typ.)			
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 <sub>P-P</sub>
		Other Output Models	---	---	1	%V <sub>PP</sub> of Vo
Over Voltage Protection	Zener diode clamp	---	125	---	% of Vo	
Temperature Coefficient		---	±0.01	±0.02	%/°C	
Over Load Protection	Foldback, auto-recovery (long term overload condition may cause damage)	---	150	---	%Inom.	
Short Circuit Protection	Hiccup mode, Automatic Recovery					

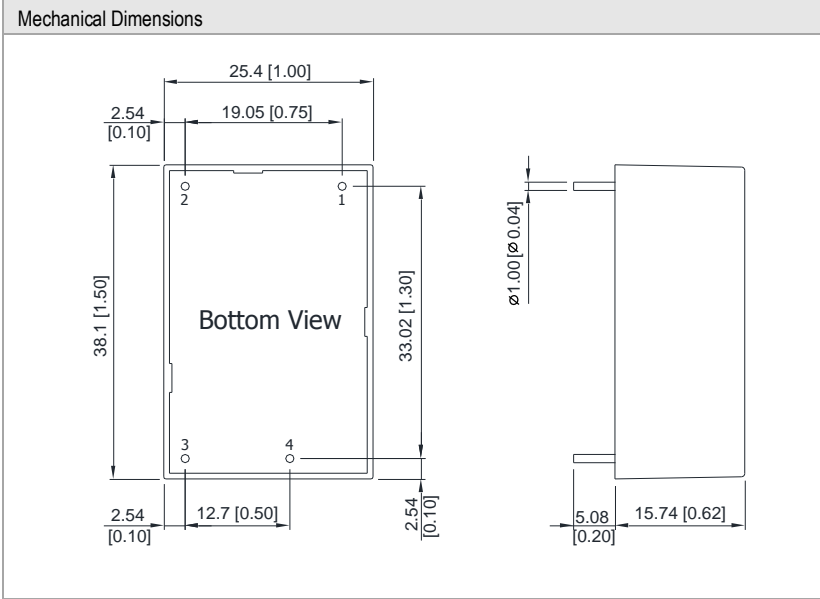
General Specifications					
Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds	4000	---	---	VAC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
Switching Frequency		---	45	---	kHz
Hold-up Time	115VAC, 60Hz	---	8	---	ms
	230VAC, 50Hz	---	40	---	ms
MTBF (calculated)	MIL-HDBK-217F@25°C, 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	°C
Storage Temperature Range		-40	+85	°C
Power Derating	+50°C to +70°C		0.25	W / °C
Cooling	Natural Convection			
Humidity (non condensing)		---	95	% rel. H
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

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°C, 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**



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

- ▶ All dimensions in mm (inches)
- ▶ Tolerance:  $\pm 0.5$  ( $\pm 0.02$ )
- ▶ Pin diameter  $\varnothing 1.0 \pm 0.1$  ( $0.04 \pm 0.004$ )

**Physical Characteristics**

Case Size	: 38.1x25.4x15.74mm (1.50x1.00x0.62 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Pin Material	: Tinned Copper
Weight	: 29g