

## FEATURES

- ▶ **Ultra-compact Dimensions:**  
52.4x27.2x23.5 mm (2.1x1.1x0.9")
- ▶ **Fully encapsulated Module with Solder Pins for PCB Mounting**
- ▶ **Universal Input 85-264 VAC, 47-440 Hz**
- ▶ **Eco Design, compliant to Energy Star specification and ErP Directive 2009/125/EC**
- ▶ **Protection Class II**
- ▶ **Safety Approval to cUL/UL/IEC/EN 60950-1**
- ▶ **Over Load and Over Voltage Protection**
- ▶ **3 Year Product Warranty**



## PRODUCT OVERVIEW

The MINMAX AGF-10 series is a new range of fully encapsulated AC/DC power supply modules. They are designed for direct PCB mounting with solder pins. The product features EMI-filter to EN55022, class B and EMS compliance to the EN 61000-4 standard. Universal input voltage 85-264VAC and International safety approvals qualifies these power modules for applications in products with worldwide markets.

The AGF-10 series provide a cost effective solution for many space critical applications in commercial and industrial electronic equipment.

### Model Selection Guide

Model Number	Output Voltage	Output Current		Input Current		Max. capacitive Load	Efficiency (typ.) @Max. Load
		Max.	mA	115VAC, 60Hz			
				@Max. Load			
VDC		mA (typ.)	uF	%			
<b>AGF-10S03</b>	<b>3.3</b>	<b>2500</b>	171	2200	70		
<b>AGF-10S05</b>	<b>5</b>	<b>2000</b>	201	2200	72		
<b>AGF-10S12</b>	<b>12</b>	<b>833</b>	191	1000	76		
<b>AGF-10S15</b>	<b>15</b>	<b>667</b>	193	1000	75		
<b>AGF-10S24</b>	<b>24</b>	<b>417</b>	201	680	72		

### Input Specifications

Parameter	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		---	---	0.3	W
Inrush Current (Cold Start at 25°C)		115VAC	---	---	15
	230VAC	---	---	30	A

### Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±1.0	±2.0	%
Line Regulation	V <sub>in</sub> =Min. to Max.	---	±0.5	±1.0	%
Load Regulation	I <sub>out</sub> =Min. to Max.	---	±0.5	±1.0	%
Ripple & Noise (20MHz)	3.3 & 5.0VDC Output Models	---	1.5	1.8	%V <sub>PP</sub> of V <sub>o</sub>
	Other Output Models	---	0.8	1.0	%V <sub>PP</sub> of V <sub>o</sub>
Minimum Load		---	10	---	%I <sub>nom</sub> .
Over Voltage Protection	Zener diode clamp	---	120	---	% of V <sub>o</sub>
Temperature Coefficient		---	±0.01	±0.02	%/°C
Overshoot		---	---	5	% V <sub>out</sub>
Current Limitation	Foldback, auto-recovery (long term overload condition may cause damage)	105	---	---	%I <sub>nom</sub> .
Short Circuit Protection	Hiccup mode, indefinite (automatic recovery)				

**General Specifications**

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	Input to Output, 60 Seconds	3000	---	---	VACrms
I/O Isolation Resistance	500 VDC	100	---	---	MΩ
Switching Frequency		---	125	---	KHz
Hold-up Time		---	20	---	ms
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	300,000	---	---	Hours
EMC Emission	Conducted and radiated	EN 55011, class B, EN 55022, class B, FCC part 15, class B			
EMC Immunity according EN61000-6-1	Standard	Specification Requirement			Performance Criteria
	EN61000-4-2	Air ±8KV Cont. ±4KV			B
	EN61000-4-3	80~1000MHz, 10V/m 80% AM, 1KHz 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
	EN61000-4-8	50Hz/60Hz, 30A/m			A
	EN61000-4-11	30%, 10ms 60%, 100ms, 95%, 5000ms			B C
Protection Class II		According IEC/EN 60536			
Safety Approvals		cUL/UL 60950-1, IEC/EN 60950-1			

**Input Fuse**

All Models	
External Fuse (Recommended)	1.5A Slow – Blow Type

**Environmental Specifications**

Parameter	Conditions
Temperature Range (operational)	Ambient -25°C to +70°C
Power Derating	+50°C to +70°C 0.375W / °C
Storage Temperature Range	-40°C to +85°C
Over Temperature Protection	at 90°C (automatic recovery at 67°C)
Cooling	Free-Air convection
Humidity (non condensing)	--- 95 % rel. H

**Notes**

- All specifications typical at Ta=+25°C, resistive load, 115VAC, 60Hz input voltage and after warm-up time rated output current unless otherwise noted.
- Ripple & Noise measurement bandwidth is 0~20 MHz
- These power modules require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage the power supplies however they may not meet all listed specifications.
- All AC/DC modules should be externally fused at the front end for protection.
- Other input and output voltage may be available, please contact factory.
- Specifications subject to change without notice

### Package Specifications

Mechanical Dimensions		Pin Connections	
		Pin	Function
		1	AC(N) – AC Neutral
		2	AC(L) – AC Line
		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	: 52.4x27.2x23.5mm (2.06x1.07x0.93 Inches)
Case Material	: Plastic resin + Fiberglass (flammability to UL 94V-0 rated)
Weight	: 54g