

FEATURES

- ▶ Fully Encapsulated Plastic Case for PCB Mounting
- ▶ Universal Input 85-264VAC, 47-440Hz
- ▶ Operating Ambient Temp. Range -25°C to +70°C
- ▶ Overload/Voltage and Short Circuit Protection
- ▶ EMI Emission EN55032 Class B
- ▶ EMC Immunity EN61000-4-2,3,4,5,6,8,11 Approved
- ▶ Eco Design, Compliant to Energy Star Specification and ErP Directive 2009/125/EC
- ▶ UL/cUL/IEC/EN 62368-1(60950-1) Safety Approval & CE Marking



PRODUCT OVERVIEW

The MINMAX AGF-10 series is a 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 EN 55032, 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 provides a superior solution for many space critical applications in commercial and industrial electronic equipment.

Model Selection Guide

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

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 | | | --- | --- | 0.3 | W |
| Inrush Current | 115VAC | Cold Start at 25°C | --- | --- | 15 | A |
| | 230VAC | | --- | --- | 30 | A |
| External Fuse (Recommended) | All Models | | 1.5A Slow – Blow Type | | | |

Output Specifications

| Parameter | Conditions / Model | | Min. | Typ. | Max. | Unit |
|---------------------------------|---|----------------------------|------|------------|------------|------------------------|
| Output Voltage Setting Accuracy | | | --- | ± 1.0 | ± 2.0 | %Vnom. |
| Line Regulation | Vin=Min. to Max. | | --- | ± 0.5 | ± 1.0 | % |
| Load Regulation | Io=Min. to Max. | | --- | ± 0.5 | ± 1.0 | % |
| Ripple & Noise | 0-20 MHz Bandwidth | 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 |
| Minimum Load | | | --- | 10 | --- | %Inom. |
| Over Voltage Protection | Zener diode clamp | | --- | 120 | --- | % of Vo |
| Temperature Coefficient | | | --- | ± 0.01 | ± 0.02 | %/°C |
| Overshoot | | | --- | --- | 5 | % Vout |
| Over Load Protection | Foldback, auto-recovery | | 105 | --- | --- | %Inom. |
| | (long term overload condition may cause damage) | | | | | |
| Short Circuit Protection | Hiccup mode, Automatic Recovery | | | | | |

General Specifications

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------|--|---------|------|------|-------|
| I/O Isolation Voltage | Input to Output, 60 Seconds | 3000 | --- | --- | VAC |
| 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 |
| 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) | | | | |

EMC Specifications

| Parameter | Standards & Level | | | Performance |
|-----------|--------------------|---------------------------------------|-----------------------------|-------------|
| EMI | Conduction | EN 55032 | Without external components | Class B |
| | Radiation | | | |
| EMS | EN 55024 | | | |
| | ESD | EN 61000-4-2 air ± 8kV, Contact ± 4kV | | B |
| | Radiated immunity | EN 61000-4-3 10V/m | | A |
| | Fast transient | EN 61000-4-4 ±2kV | | B |
| | Surge | EN 61000-4-5 ±1kV | | B |
| | Conducted immunity | EN 61000-4-6 10Vrms | | B |
| | PFMF | EN 61000-4-8 30A/m | | A |
| | Dips | EN 61000-4-11 30% 10ms | | B |
| | Interruptions | EN 61000-4-11 >95% 5000ms | | C |

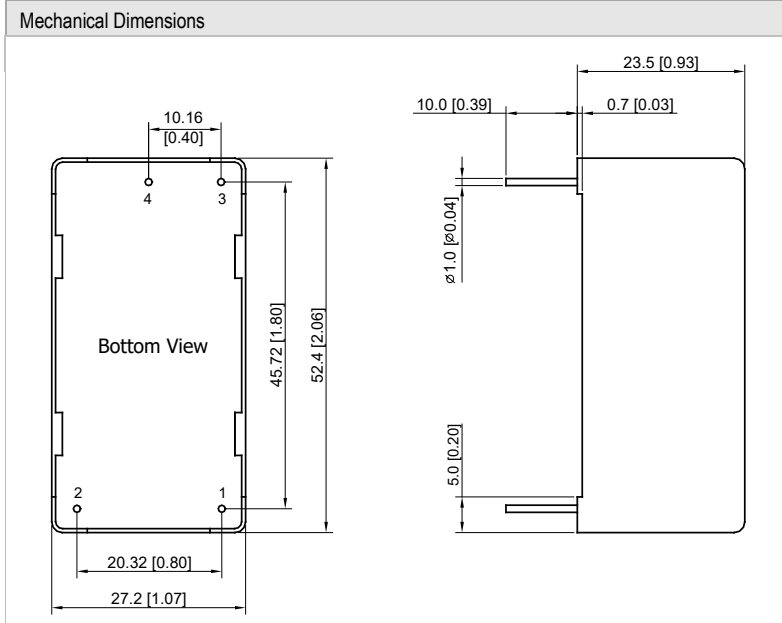
Environmental Specifications

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|--|-------|------|------|----------|
| Operating Ambient Temperature Range | | -25 | --- | +70 | °C |
| Power Derating | +50°C to +70°C | 0.375 | | | W / °C |
| Storage Temperature Range | | -40 | --- | +85 | °C |
| Thermal Shutdown | Shutdown, Internal IC Junction Temperature | --- | 142 | --- | °C |
| | Automatic Recovery, Internal IC Junction Temperature | --- | 67 | --- | °C |
| Humidity (non condensing) | | --- | --- | 95 | % rel. H |
| Lead Temperature (1.5mm from case for 10Sec.) | | --- | --- | 260 | °C |

Notes

- Specifications typical at Ta=+25°C, resistive load, 115VAC, 60Hz input voltage and after warm-up time rated output current unless otherwise noted.
- We recommend to protect the converter by a slow blow fuse in the input supply line.
- 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.
- Other input and output voltage may be available, please contact MINMAX.
- Specifications are subject to change without notice.

Package Specifications



Pin Connections

| Pin | Function |
|-----|--------------------|
| 1 | AC(N) – AC Neutral |
| 2 | AC(L) – AC Line |
| 3 | +Vout |
| 4 | -Vout |

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: ± 0.5 (± 0.02)
- ▶ Pin pitch tolerance: ± 0.25 (± 0.01)
- ▶ Pin diameter $\varnothing 1.0 \pm 0.1$ (0.04 ± 0.004)

Physical Characteristics

| | |
|---------------|--|
| Case Size | : 52.4x27.2x23.5mm (2.06x1.07x0.93 Inches) |
| Case Material | : Plastic resin (flammability to UL 94V-0 rated) |
| Weight | : 54g |