

**FEATURES**

- ▶ Fully Encapsulated Plastic Case for PCB, Chassis and DIN-Rail Mounting Version
- ▶ Universal Input 85~264VAC, 47~440Hz
- ▶ Protection Class II as per IEC/EN 60536
- ▶ I/O Isolation 4000VAC with Reinforced Insulation
- ▶ Operating Temp. Range -40°C to +80°C
- ▶ Overload/Voltage and Short Circuit Protection
- ▶ EMI Emission meets EN55011/22 Class B & FCC Level B
- ▶ EMC Immunity meets EN61000-4-2,3,4,5,6,8,11
- ▶ UL/cUL/IEC/EN 60950-1 and UL508 Safety Approval
- ▶ Medical Safety meets 2xMOPP per 3<sup>rd</sup> Edition of IEC/EN 60601-1 & ANSI/AAMI ES60601-1
- ▶ CE Marking with EMC and LVD


**PRODUCT OVERVIEW**

The new MINMAX AYM-60 series is a range of fully encapsulated AC/DC power modules. These high performance products feature an extended operating temperature range of -40°C to +80°C. Universal input voltage 85-264VAC and UL/IEC/EN safety approvals including medical safety and UL508 listing qualify these power supplies modules for applications in products with worldwide markets. EMI-filter meets EN55022, class B and FCC, part 15, class B. The AYM-60 series power modules provide an economical solution for many space critical applications in commercial, medical and industrial electronic equipment.

**Model Selection Guide**

Model Number	Output Voltage VDC	Output Current Max. mA	Input Current		Max. capacitive Load μF	Efficiency (typ.) @Max. Load, 115VAC %
			115VAC, 60Hz	230VAC, 50Hz		
			@Max. Load mA(typ.)			
AYM-60S051	5.1	10000	880	528	8000	84
AYM-60S12	12	5000	1000	600	3900	87
AYM-60S15	15	4000	1000	600	3300	87
AYM-60S24	24	2500	1000	600	1500	87
AYM-60S48	48	1250	988	593	680	88

**Input Specifications**

Parameter	Model	Min.	Typ.	Max.	Unit
AC Voltage Input Range	All Models	85	---	264	VAC
Input Frequency Range		47	---	440	Hz
DC Voltage Input Range		120	---	370	VDC
No-Load Power Consumption		---	---	0.5	W
Inrush Current (Cold Start at 25°C)	115VAC	---	---	30	A
	230VAC	---	---	60	A

**Output Specifications**

Parameter	Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy		---	±1.0	±2.0	%Vom.	
Line Regulation	Vin=Min. to Max. @Full Load	---	±0.2	±1.0	%	
Load Regulation	Io=0% to 100%	---	±0.5	±1.0	%	
Minimum Load	No minimum Load Requirement					
Ripple & Noise <sub>(3)</sub>	0-20 MHz Bandwidth	5.1VDC Output Models	---	2.0	3.0	%V <sub>PP</sub> of Vo
		Other Output Models	---	1.0	1.5	%V <sub>PP</sub> of Vo
Over Voltage Protection	Zener diode clamp	---	120	---	% of Vo	
Temperature Coefficient		---	±0.02	---	%/°C	
Overshoot		---	---	5	%	
Current Limitation	85VAC, Hiccup Mode, auto-recovery (long term overload condition may cause damage)	105	---	---	%Inom.	
Short Circuit Protection	Hiccup mode, indefinite (automatic recovery)					

**General Specifications**

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	Reinforced Insulation, Rated For 60 Seconds	4000	---	---	VACrms
Leakage Current		---	80	---	µA
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
Switching Frequency		---	65	---	KHz
Hold-up Time	115VAC, 60Hz	---	20	---	ms
	230VAC, 50Hz	---	80	---	ms
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	125,000			Hours
Protection Class II	According IEC/EN 60536				
Safety Approvals	IEC/EN 60950-1 CB Report, cUL/UL 60950-1, CSA-C22.2 No.60950-1, UL508 listed certificate IEC/EN 60601-1 3 <sup>rd</sup> Edition CB Report, ANSI/AAMI ES60601-1 2XMOPP, CAN/CSA-C22.2 No.60601-1 certificate				

**EMC Specifications**

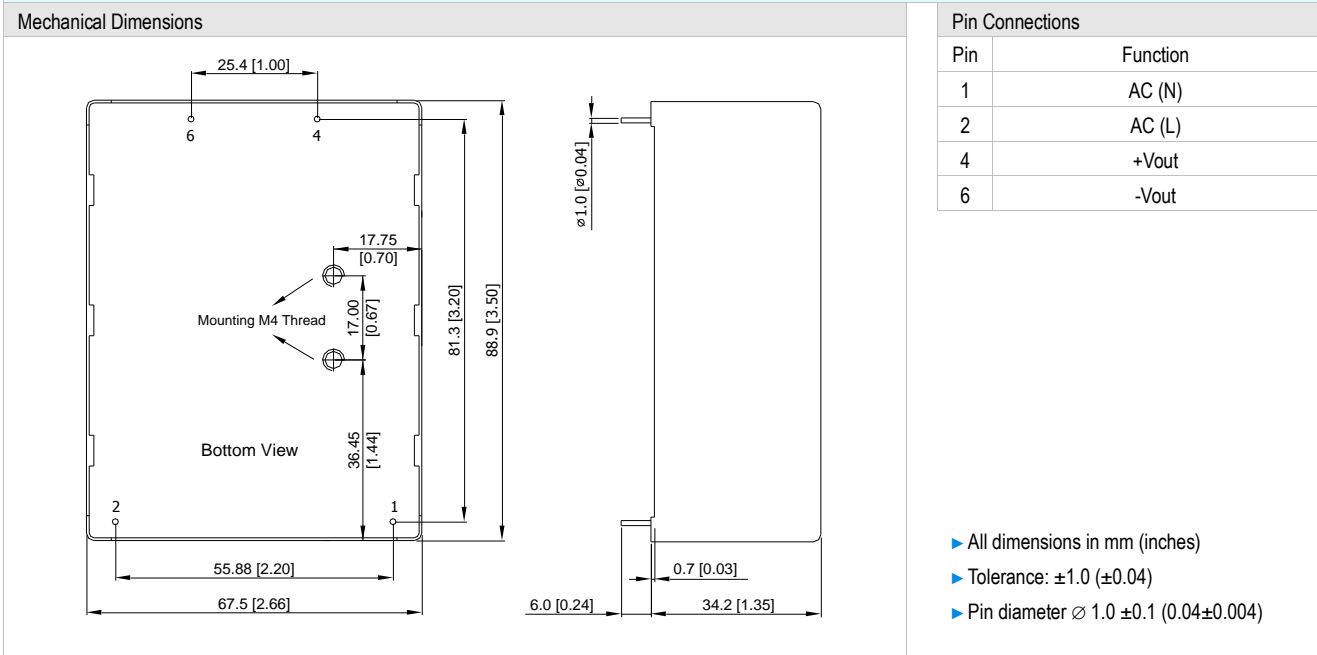
Parameter	Standards & Level		Performance
EMI	Conduction	EN55011, EN55022, EN61000-6-4, EN61000-6-3, FCC part 15	Class B
	Radiation		
EMS	EN60601-1-2, EN55024, EN61000-6-2, EN61000-6-1		
	ESD	EN61000-4-2 Air ± 8kV , Contact ± 4kV	A
	Radiated immunity	EN61000-4-3 10V/m	A
	Fast transient	EN61000-4-4 ±2kV	A
	Surge	EN61000-4-5 ±1kV	A
	Conducted immunity	EN61000-4-6 10Vrms	A
	PFMF	EN61000-4-8 30A/m	A
	Dips	EN61000-4-11 30% 10ms	A
	Interruptions	EN61000-4-11 >95% 5000ms	B

**Environmental Specifications**

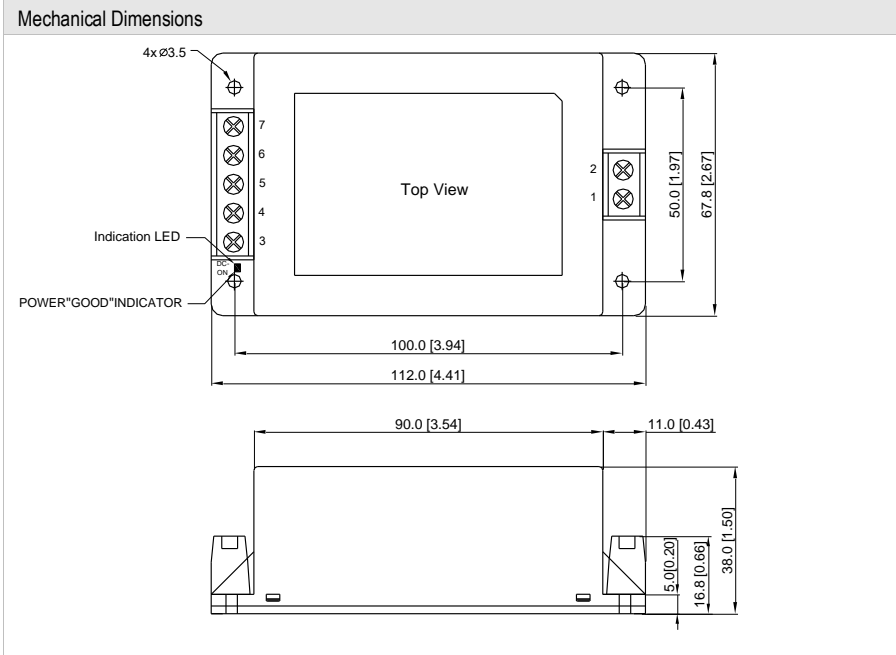
Parameter	Conditions	Min.	Max.
Temperature Range (operational)	Ambient	-40°C	+80°C
Power Derating	Above +60°C		2.3W / °C
Storage Temperature Range		-40°C	+95°C
Humidity (non condensing)		---	95% rel. H
Cooling	Natural Convection		
Lead Temperature (1.5mm from case for 10Sec.)		---	260°C

**Notes**

- 1 **This product is not designed for use in critical life support systems, equipment used in hazardous environment, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet.**
- 2 Specifications typical at Ta=+25°C, resistive load, 115VAC, 60Hz input voltage, after warm-up time rated output current unless otherwise noted.
- 3 Ripple & Noise of PCB mounting type measured with a 0.1µF/50V MLCC and a 1µF/50V Aluminum electrolytic.
- 4 Safety approvals cover frequency 47-63 Hz.
- 5 We recommend to protect the converter by a slow blow fuse in the input supply line.
- 6 Other input and output voltage may be available, please contact factory.
- 7 That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- 8 Specifications are subject to change without notice.

**Package Specifications PCB Mounting**

**Physical Characteristics**

Case Size	: 88.9x67.5x34.2mm (3.50x2.66x1.35 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Pin Material	: Copper Alloy with Gold Plate Over Nickel Subplate
Weight	: 360g

**Package Specifications Chassis Mounting (order code suffix C)**


**Connections**

Pin	Function
1	AC (N)
2	AC (L)
3	NC
4	+Vout
5	NC
6	-Vout
7	NC

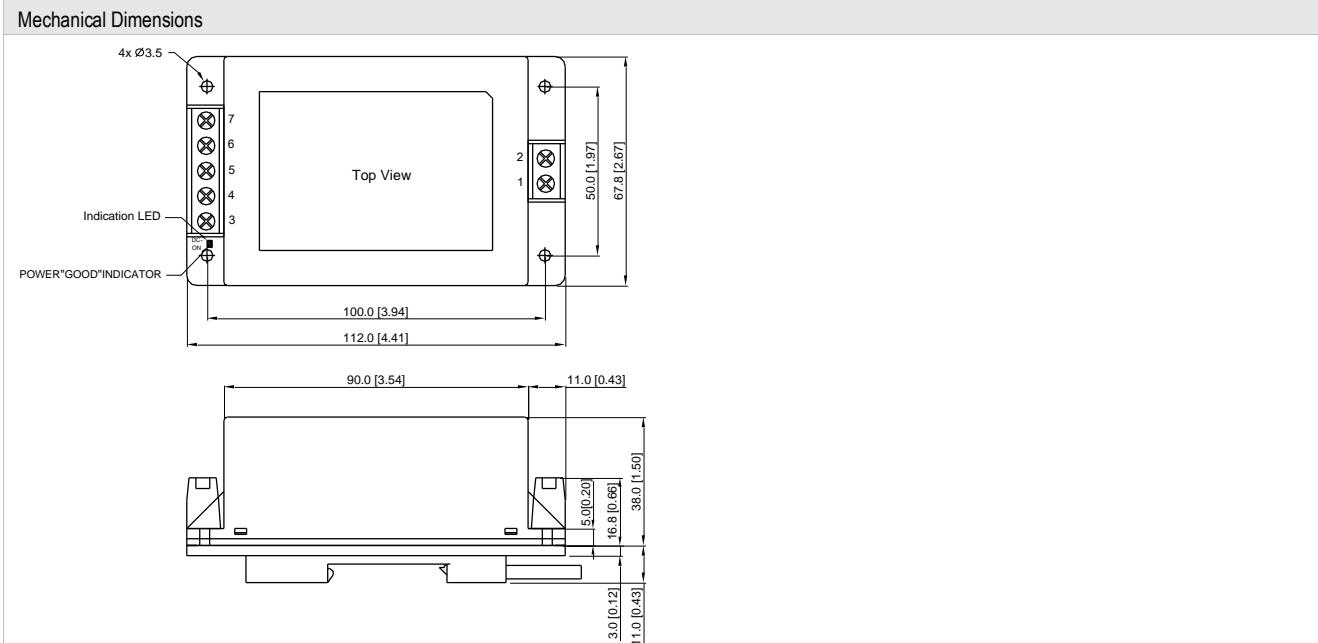
NC: No Connection

▶ All dimensions in mm (inches)

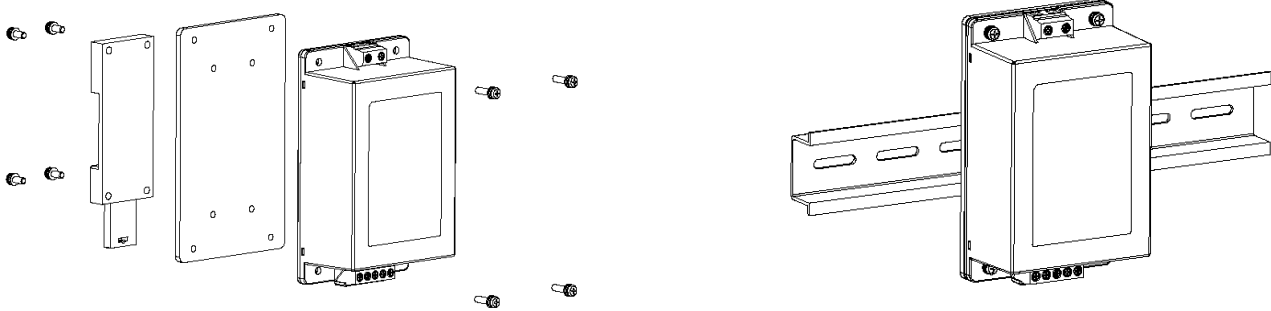
 ▶ Tolerance:  $\pm 1.0$  ( $\pm 0.04$ )

**Physical Characteristics**

Case Size	: 112.0x67.8x38.0mm (4.41x2.67x1.50 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Weight	: 380g

**Package Specifications with DIN Rail Mounting Bracket**

**Physical Characteristics**

Case Size	: 112.0x67.8x38.0mm (4.41x2.67x1.50 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Weight	: 433g

**DIN-Rail Mounting Bracket (Order Code for Kit : AC-DIN-02)**


Order Code Table			
PCB Mounting	Chassis Mounting	With DIN Rail Mounting by two Order Code	
AYM-60S051	AYM-60S051C	AYM-60S051C	AC-DIN-02
AYM-60S12	AYM-60S12C	AYM-60S12C	AC-DIN-02
AYM-60S15	AYM-60S15C	AYM-60S15C	AC-DIN-02
AYM-60S24	AYM-60S24C	AYM-60S24C	AC-DIN-02
AYM-60S48	AYM-60S48C	AYM-60S48C	AC-DIN-02