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 Ambient Temp. Range -40℃ to +80℃
- Overload/Voltage and Short Circuit Protection
- Designed-in EMI Emission meets EN 55011/32 Class B & FCC Level B
- Designed-in EMC Immunity meets EN61000-4-2,3,4,5,6,8,11
- Medical EMC Standard meets 4th Edition of EMI EN 55011 and EMS EN60601-1-2
- Medical Safety meets 2xMOPP per 3rd Edition of IEC/EN 60601-1 & ANSI/AAMI ES60601-1
- UL508 Safety Approval Specifically for Industrial Application
- UL/cUL/IEC/EN 60950-1 Safety Approval & CE Marking

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 EN 55011/32, class B and FCC,part15, 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	Output Current	Input Current		Max. capacitive Load	Efficiency (typ.)
			115VAC, 60Hz	230VAC, 50Hz		
		Max.	@Max. Load			@Max. Load, 115VAC
	VDC	mA	mA(typ.)		μF	%
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	Conditions / 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℃)	115VAC	---	---	30	A
	230VAC	---	---	60	A

Output Specifications

Parameter	Conditions / Model		Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy			---	±1.0	±2.0	%Vnom.
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(3)	0-20 MHz Bandwidth	5.1VDC Output Models	---	2.0	3.0	%V_{PP} of Vo
		Other Output Models	---	1.0	1.5	%V_{PP} of Vo
Over Voltage Protection	Zener diode clamp		---	120	---	% of Vo
Temperature Coefficient			---	±0.02	---	%/℃
Overshoot			---	---	5	%
Over Load Protection	85VAC, Hiccup Mode, auto-recovery (long term overload condition may cause damage)		105	---	---	%Inom.
Short Circuit Protection	Hiccup mode, 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℃, Ground Benign	125,000			Hours
Protection Class II	According IEC/EN 60536				
Safety Standards	UL/cUL 60950-1, CSA C22.2 No 60950-1				
	ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1				
	IEC/EN 60950-1, IEC/EN 60601-1 3rd Edition 2xMOPP				
	UL508, CSA C22.2 No.107.1-01				
Safety Approvals	UL/cUL 60950-1 recognition (UL certificate), IEC/EN 60950-1 (CB-report), UL/cUL 508 listed certificate				
	ANSI/AAMI ES60601-1 2xMOPP recognition (UL certificate), IEC/EN 60601-1 3rd Edition (CB-report)				

Environmental Specifications

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

EMC Specifications

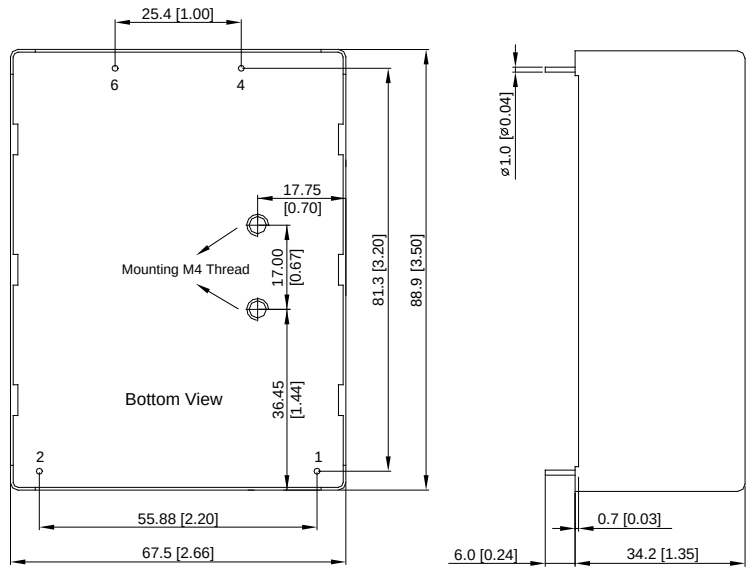
Parameter	Standards & Level				Performance
EMI	Conduction and Radiation	EN 55011, EN 55032, EN 61000-6-4, EN 61000-6-3, FCC part 15			Class B
EMS	EN 60601-1-2 4th, EN 55024, EN 61000-6-2, EN 61000-6-1				
	ESD	EN 61000-4-2 Air ± 15kV, Contact ± 8kV			A
	Radiated immunity	EN 61000-4-3 10V/m			A
	Fast 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/m			A
	Dips & Interruptions	EN 61000-4-11	0% of 230VAC	0.5 cycle	A
			0% of 230VAC	1 cycle	A
			70% of 230VAC	25/30 cycle	A
			0% of 230VAC	250/300 cycle	B

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℃, 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

Mechanical Dimensions



Pin Connections

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

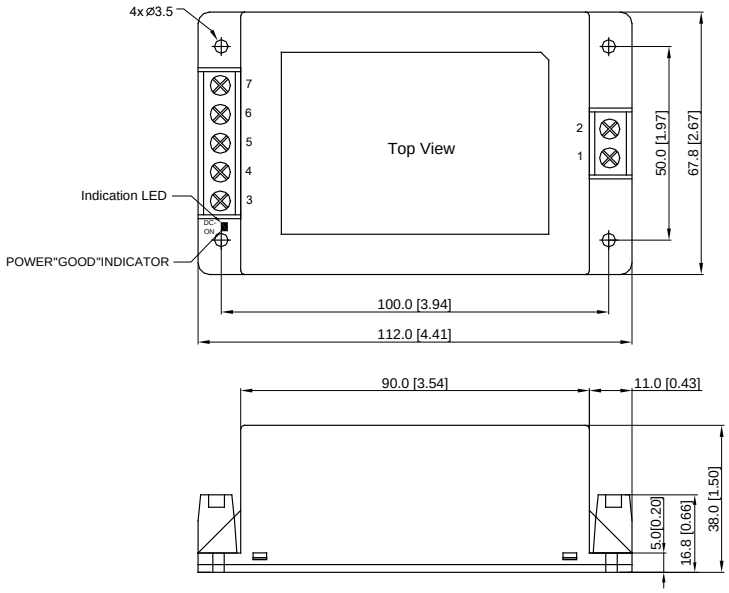
- All dimensions in mm (inches)
- Tolerance: ±1.0 (±0.04)
- Pin diameter ∅ 1.0 ±0.1 (0.04±0.004)

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)

Mechanical Dimensions



Connections

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

NC: No Connection

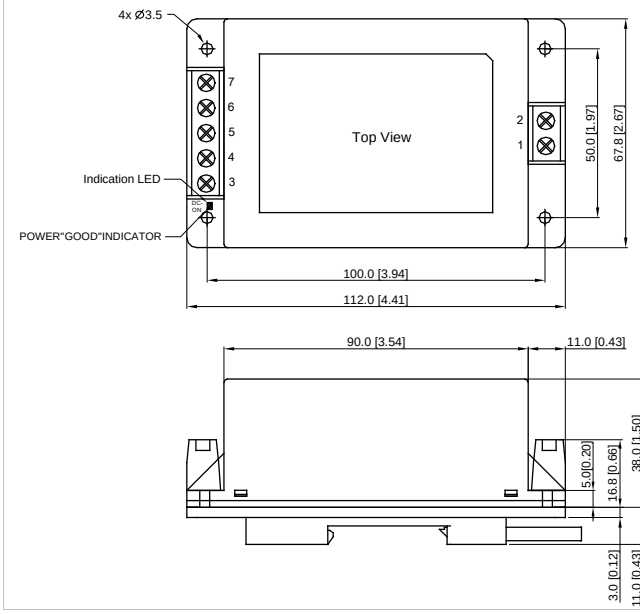
- All dimensions in mm (inches)
- Tolerance: ±1.0 (±0.04)

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

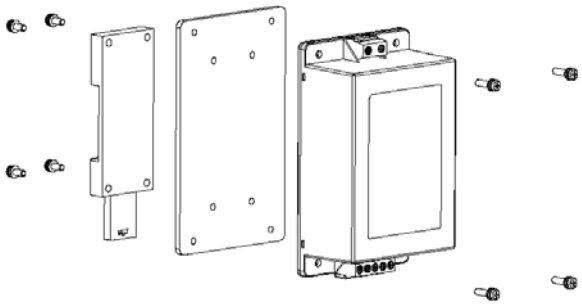
Mechanical Dimensions

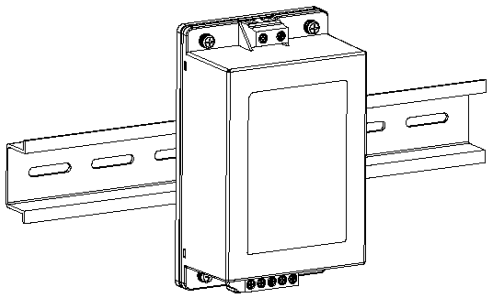


Physical Characteristics

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