

FEATURES

- ▶ Fully Encapsulated Plastic Case for PCB, Chassis and DIN-Rail Mounting Version
- ▶ Universal Input 85~264VAC, 47~440Hz
- ▶ I/O Isolation 4000VAC with Reinforced Insulation
- ▶ Operating Ambient Temp. Range -40°C to +80°C
- ▶ Overload/Voltage and Short Circuit Protection
- ▶ EMI Emission EN 55011/32 Class B Approved
- ▶ EMC Immunity EN 61000-4-2,3,4,5,6,8,11 Approved
- ▶ Medical EMC Standard with 4th Edition of EMI EN 55011 & EMS EN 60601-1-2 Approved
- ▶ Medical Safety with 2xMOPP per 3rd Edition of IEC/EN 60601-1 & ANSI/AAMI ES 60601-1 Approved
- ▶ UL508 Safety Approval Specifically for Industrial Application
- ▶ UL/cUL/IEC/EN 62368-1(60950-1) Safety Approval & CE Marking


PRODUCT OVERVIEW

The new MINMAX AJM-24 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 UL 508 listing qualify these power supplies modules for applications in products with worldwide markets EMI Emission EN 55011/32 Class B Approved. The AJM-24 series power modules provide a perfect 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. Load			
	VDC	mA	mA(typ.)		μF	%
AJM-24S05	5	3000	282	169	2200	77
AJM-24S09	9	2666	424	255	1000	82
AJM-24S12	12	2000	419	252	1000	83
AJM-24S15	15	1600	424	255	680	82
AJM-24S24	24	1000	409	246	470	85
AJM-24D12	±12	±1000	414	249	470#	84
AJM-24D15	±15	±800	414	249	330#	84

For each output

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			---	---	0.3	W
Inrush Current	115VAC	Cold Start at 25°C	---	---	20	A
	230VAC		---	---	40	A

Output Specifications						
Parameter	Conditions / Model		Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy			---	±2.0	---	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load		---	±0.5	---	%
Load Regulation	Io=0% to 100%	Single Output Model	---	±0.5	---	%
		Dual Output Models	---	±2.5	---	%
Minimum Load	No minimum Load Requirement					
Ripple & Noise	0-20 MHz Bandwidth	5V Output Models	---	1.5	1.8	%V _{PP} of Vo
		Other Output Models	---	1.0	1.3	%V _{PP} of Vo
Over Voltage Protection	Zener diode clamp			120		% of Vo
Temperature Coefficient			---	±0.02	---	%/°C
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					

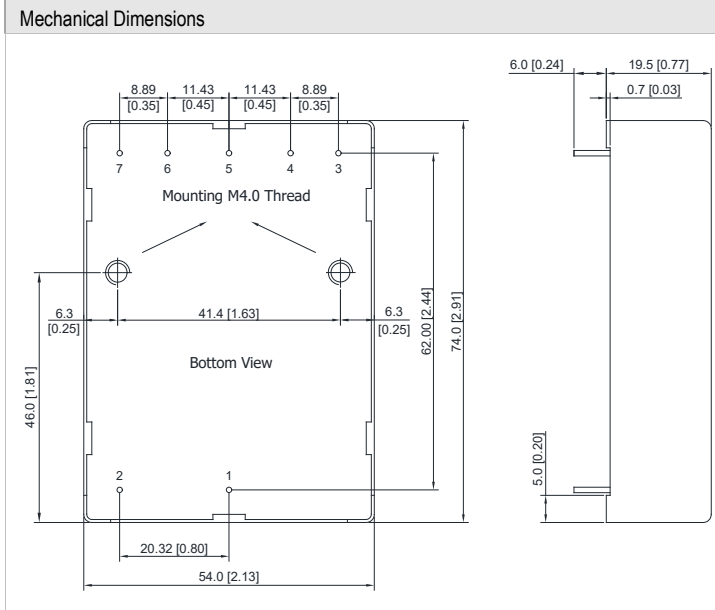
General Specifications						
Parameter	Conditions		Min.	Typ.	Max.	Unit
I/O Isolation Voltage	Reinforced Insulation, Rated For 60 Seconds		4000	---	---	VAC
Leakage Current			---	80	---	μA
I/O Isolation Resistance	500 VDC		1000	---	---	MΩ
Switching Frequency			---	132	---	kHz
Hold-up Time	115VAC, 60Hz		---	20	---	ms
	230VAC, 50Hz		---	80	---	ms
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign		400,000			Hours
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 3 rd Edition 2xMOPP					
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)					
	ANSI/AAMI ES60601-1 2xMOPP recognition (UL certificate), IEC/EN 60601-1 3 rd Edition (CB-report)					

Environmental Specifications						
Parameter	Conditions / Model		Min.	Typ.	Max.	Unit
Operating Ambient Temperature Range			-40	---	+80	°C
Power Derating	Above +65°C	5V Output Models	---	---	0.75	W / °C
		Other Models	---	---	1.2	W / °C
Storage Temperature Range			-40	---	+95	°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

EMC Specifications					
Parameter	Standards & Level			Performance	
EMI	Conduction	EN 55011, EN 55032, EN 61000-6-4,		Without external components Class B	
	Radiation	EN 61000-6-3			
EMS	EN 60601-1-2 4 th , 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

- 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.
- Specifications typical at Ta=+25°C, resistive load, 115VAC, 60Hz input voltage, after warm-up time rated output current unless otherwise noted.
- Safety approvals cover frequency 47-63 Hz.
- We recommend to protect the converter by a slow blow fuse in the input supply line.
- Other input and output voltage may be available, please contact MINMAX.
- Specifications are subject to change without notice.

Package Specifications PCB Mounting


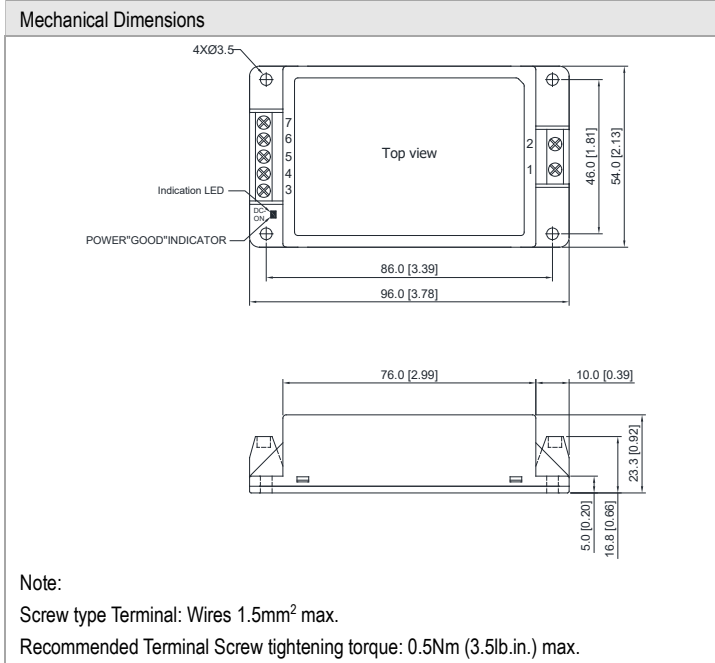
Pin Connections

Pin	Single Output	Dual Output	Diameter mm (inches)
1	AC (N)	AC (N)	∅ 1.0 [0.04]
2	AC (L)	AC (L)	∅ 1.0 [0.04]
3	No Pin	No Pin	∅ 1.0 [0.04]
4	-Vout	-Vout	∅ 1.0 [0.04]
5	No Pin	Common	∅ 1.0 [0.04]
6	+Vout	+Vout	∅ 1.0 [0.04]
7	No Pin	No Pin	∅ 1.0 [0.04]

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

Physical Characteristics

Case Size	: 74.0x54.0x19.5mm (2.91x2.13x0.77 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Pin Material	: Copper Alloy
Weight	: 137g

Package Specifications Chassis Mounting (order code suffix C)


Connections

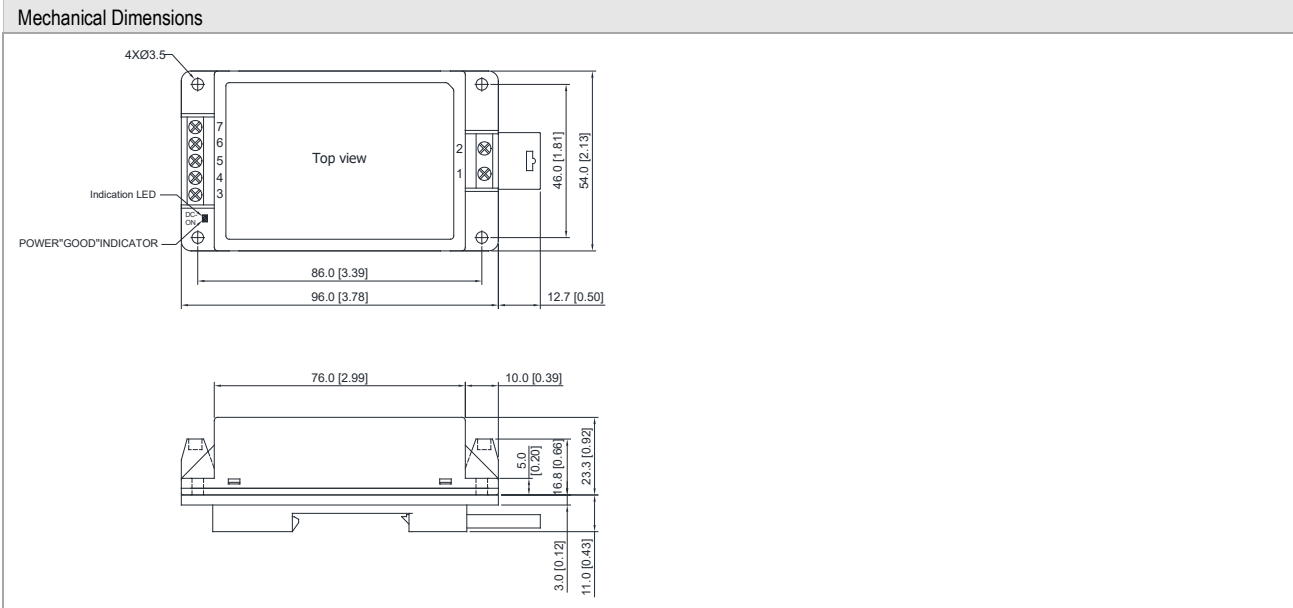
Pin	Single Output	Dual Output
1	AC (N)	AC (N)
2	AC (L)	AC (L)
3	NC	NC
4	-Vout	-Vout
5	NC	Common
6	+Vout	+Vout
7	NC	NC

NC: No Connection

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: ± 0.5 (± 0.02)

Physical Characteristics

Case Size	: 96.0x54.0x23.3mm (3.78x2.13x0.92 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Weight	: 147g

Package Specifications with DIN Rail Mounting Bracket

Physical Characteristics

Case Size	: 96.0x54.0x23.3mm (3.78x2.13x0.92 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Weight	: 201g

DIN-Rail Mounting Bracket (Order code for Kit : AC-DIN-01)


Order Code Table			
PCB Mounting	Chassis Mounting	With DIN Rail Mounting by two Order Code	
AJM-24S05	AJM-24S05C	AJM-24S05C	AC-DIN-01
AJM-24S09	AJM-24S09C	AJM-24S09C	AC-DIN-01
AJM-24S12	AJM-24S12C	AJM-24S12C	AC-DIN-01
AJM-24S15	AJM-24S15C	AJM-24S15C	AC-DIN-01
AJM-24S24	AJM-24S24C	AJM-24S24C	AC-DIN-01
AJM-24D12	AJM-24D12C	AJM-24D12C	AC-DIN-01
AJM-24D15	AJM-24D15C	AJM-24D15C	AC-DIN-01