

FEATURES

- ▶ Industrial Standard SIP-7 Package
- ▶ Ultra-high I/O Isolation 8000VDC with Reinforced Insulation, rate for 480Vrms working voltage
- ▶ Operating Ambient Temp. Range -40°C to +95°C
- ▶ Short Circuit Protection
- ▶ UL/cUL/IEC/EN 62368-1 Safety Approval

NEW

PRODUCT OVERVIEW

The MINMAX MAEU01-HI series is a new range of high performance 1W DC-DC converter within encapsulated SIP-7 package which specifically design for high isolation applications where reinforced insulation and high working voltage are required. There are 9 models available for input voltage of 5, 12, 24VDC. The I/O isolation is specified for 8000VDC with reinforced insulation, which rated for 480Vrms working voltage. Further features include short circuit protection and operating ambient temp. range by -40°C to 95°C.

These converters offer a cost-effective solution for wind turbine, solar panel, transportation systems, industrial control equipment where a high I/O isolation and insulation with working voltage is required.

Model Selection Guide

Model Number	Input Voltage (Range)	Output Voltage	Output Current		Input Current		Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load		
			VDC	VDC	mA	mA		mA(typ.)
MAEU01-05S05HI	5 (4.5 ~ 5.5)	5	200	4	253	50	220	79
MAEU01-05S12HI		12	84	1.68	252			80
MAEU01-05S15HI		15	68	1.36	252			81
MAEU01-12S05HI	12 (10.8 ~ 13.2)	5	200	4	105	35	220	79
MAEU01-12S12HI		12	84	1.68	104			81
MAEU01-12S15HI		15	68	1.36	108			79
MAEU01-24S05HI	24 (21.6 ~ 26.4)	5	200	4	55	20	220	76
MAEU01-24S12HI		12	84	1.68	53			79
MAEU01-24S15HI		15	68	1.36	54			79

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	24V Input Models	21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	9	VDC
	12V Input Models	-0.7	---	18	
	24V Input Models	-0.7	---	30	
Input Filter	All Models	Internal Capacitor			

Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Setting Accuracy		---	±1.0	±3.0	%Vnom.
Line Regulation	For Vin Change of 1%	---	±1.2	±1.5	%
Load Regulation	Io=10% to 100%	---	---	±10	%
Ripple & Noise	0-20 MHz Bandwidth	---	---	75	mV _{P-P}
Temperature Coefficient		---	±0.01	±0.02	%/°C
Short Circuit Protection	Continuous, Automatic Recovery				

Isolation, Safety Standards

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage	60 Seconds Reinforced insulation, rated for 480Vrms working voltage	3000	---	---	VAC
	Tested for 1 second	8000	---	---	VDC
I/O Isolation Resistance	500 VDC	10	---	---	GΩ
I/O Isolation Capacitance	100kHz, 1V	---	20	---	pF
Safety Approvals	UL/cUL 62368-1 recognition(UL certificate), IEC/EN 62368-1(CB-report)				

General Specifications

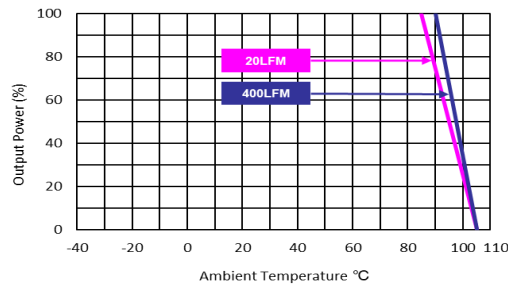
Parameter	Conditions	Min.	Typ.	Max.	Unit
Switching Frequency		---	60	---	kHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	4,373,058	---	---	Hours

EMC Specifications

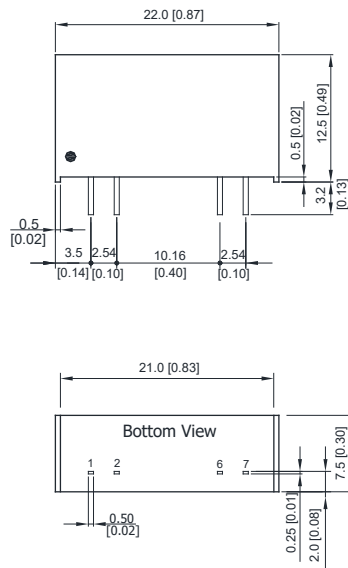
Parameter	Standards & Level			Performance
EMI	Conduction	EN 55032	With external components	Class A ₍₅₎
	Radiation		Without external components	
EMS	EN 55024, EN55035			
	ESD	EN 61000-4-2 Air ± 15kV , Contact ± 8kV		A
	Radiated immunity	EN 61000-4-3 10V/m		A
	Fast transient (e)	EN 61000-4-4 ±2kV		A
	Surge (e)	EN 61000-4-5 ±1kV		A
	Conducted immunity	EN 61000-4-6 10Vrms		A
	PFMF	EN 61000-4-8 100A/m (1 min.), 1000A/m (1 sec.)		A

Environmental Specifications

Parameter	Min.	Max.	Unit
Operating Ambient Temperature Range (See Power Derating Curve)	-40	+95	°C
Case Temperature	---	+105	°C
Storage Temperature Range	-50	+125	°C
Humidity (non condensing)	---	95	% rel. H
Lead Temperature (1.5mm from case for 10Sec.)	---	260	°C

Power Derating Curve

Notes

- 1 Specifications typical at $T_a=+25^{\circ}\text{C}$, resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
- 3 We recommend to protect the converter by a slow blow fuse in the input supply line.
- 4 Other input and output voltage may be available, please contact MINMAX.
- 5 To meet EN 55032 Class A an external filter, please contact MINMAX.
- 6 To meet EN 61000-4-4 & EN 61000-4-5 an external capacitor across the input pins is required, please contact MINMAX.
- 7 Specifications are subject to change without notice.

Package Specifications
Mechanical Dimensions

Pin Connection

Pin	Function
1	+Vin
2	-Vin
6	-Vout
7	+Vout

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: $X.X \pm 0.5$ ($X.XX \pm 0.02$)
 $X.XX \pm 0.25$ ($X.XXX \pm 0.01$)
- ▶ Pins ± 0.05 (± 0.002)

Physical Characteristics

Case Size	: 22.0x7.5x12.5mm (0.87x0.30x0.49 inches)
Case Material	: Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Pin Material	: Alloy 42
Weight	: 4.1g