



3ACE1W_4 series

3W - AC-DC converter

AC-DC Converter

3 Watt

- ⊕ Wide input voltage range: 85-305VAC/120-430VDC
- ⊕ No load power consumption $\leq 0.25W$
- ⊕ Transfer efficiency up to 76%(Typ.)
- ⊕ Switching frequency: 65KHz
- ⊕ Protections: short circuit and over current
- ⊕ Isolation voltage: 4000VAC
- ⊕ Meets IEC62368/UL62368/EN62368 test standard
- ⊕ PCB mounting

Introducing our versatile 3ACE1W_4 series with a wide input voltage range of 85-305VAC/120-430VDC, ensuring reliable performance in diverse applications. With an impressively low no-load power consumption of $\leq 0.25W$ and transfer efficiency up to 76%, it operates efficiently even under challenging conditions. Featuring a 65KHz switching frequency, it provides robust protections against short circuits and over-current events. With an isolation voltage of 4000VAC, it meets stringent IEC62368/UL62368/EN62368 test standards and comes with TUV(CE) certification, guaranteeing safety and reliability. Designed for PCB mounting, this ultra-compact module is ideal for industrial-level applications.



Common specifications	
Short circuit protection	Full input voltage range - Continuous, self-recovery Hiccup
Over current protection	Full input voltage range - $\geq 130\%$ Io self-recovery - Hiccup
Switching frequency	65 KHz
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-40°C - +105°C
Soldering temperature	Wave soldering 260 \pm 4°C, time 5-10S Manual soldering 360 \pm 8°C, time 4-7S
Relative humidity	10-90% RH
Hot plug	Unavailable
Remote control terminal	Unavailable
Safety standard	EN62368, IEC62368, UL62368
Vibration	10-55Hz,10G,30Min,along X,Y,Z
Safety standard	CLASS II
Class of case material	UL94 V-0
MTBF (MIL-HDBK-217F@25°C)	>300,000 Hours

Input specifications					
Item	Operating condition	Min	Typ	Max	Units
Input voltage range	AC input	85	220	305	VAC
	DC input	120	310	430	VDC
Input frequency range		47	50	63	Hz
Input current	115VAC			0.12	A
	220VAC			0.08	
Surge current	115VAC			15	A
	220VAC			20	
Leakage current	0.5mA TYP/230VAC/50Hz				
Recommended external Input fuse	2A/250VAC slow fusing				

Example:
3ACE1W_0554
3 = 3Watt; AC = AC-DC; E1 = Cost effective; W = Wide input;
05 = 5Vout; S = Single output; 4 = 4 kVAC isolation

Output specifications					
Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	Full input voltage range, any load - Vo		± 2.0	± 3.0	%
Line regulation	Nominal load - Vo			± 0.5	%
Load regulation	Nominal input voltage, 20%-100% load - Vo			± 1.0	%
No load consumption	Input 115VAC Input 220VAC			0.25	W
Minimum load	Single Output	0			%
Start up delay time	Nominal input voltage (full load)		50		mS
Power-off holding time	Input 115VAC (full load)		50		mS
	Input 220VAC (full load)		100		
Dynamic response	Overshoot range 25%-50%-25%	-5.0		+5.0	% mS
	Recovery time 50%-75%-50%		5.0		
Output overshoot	Full input voltage range		$\leq 10\%V_o$		%
Temperature drift		-	$\pm 0.03\%$	-	%/°C
Ripple & noise*	Full input voltage range	-	60	150	mV

Note: *Tested by twisted pair method, please check "Ripple & Noise Test" at back

Isolation specifications					
Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage (test 1min, leakage Current $\leq 5ma$)	I/P-O/P I/P-Case I/P-FG	4000			VAC
Insulation resistance	I/P-O/P @ DC500V	100			MΩ

- The product should be used within the specification range, or it will cause permanent damage to it;
- The input terminal should connect to fuse;
- If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75% with nominal input voltage and rated output load (pure resistance load);
- All index testing methods in this datasheet are based on our company's corporate standards;
- The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
- We can provide product customization service,
- Specifications are subject to change without prior notice, please follow up with our website for newest manual.

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EMC specifications						
EMC	EMI	CE	CISPR22/EN55032	CLASS B (See Recommended Circuit on photo 1)		
EMC	EMI	RE	CISPR22/EN55032	CLASS B (See Recommended Circuit on photo 1)		
EMC	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (See Recommended Circuit on photo 1)	
EMC	EMS	CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (See Recommended Circuit on photo 1)	
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV	Perf.Criteria B	
EMC	EMS	Surge	IEC/EN61000-4-5	line to line ±2KV / line to ground ±4KV	Perf.Criteria B(See Recommend Circuit photo 1)	
EMC	EMS	EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B	
EMC	EMS	Voltage dips and variations	IEC/EN61000-4-11	0%~70%	Perf.Criteria B	

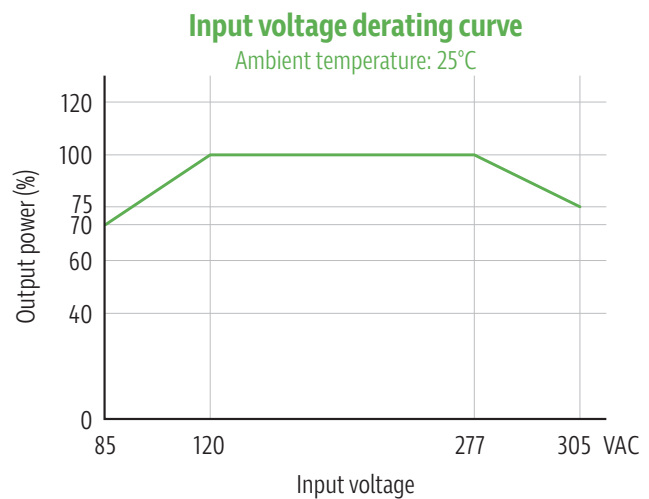
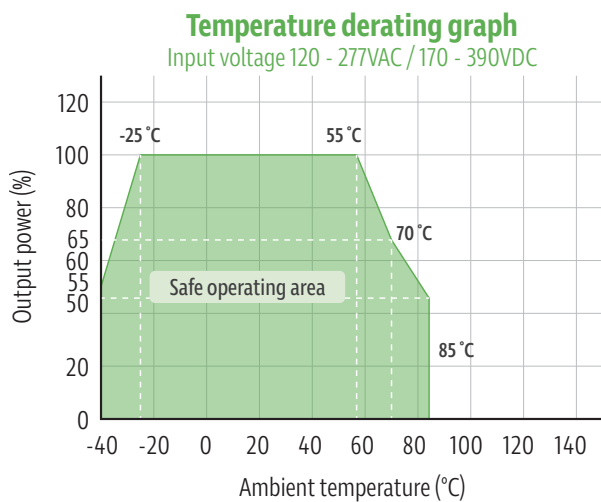
Product Selection Guide

Approval	Model	Output Power (W)	Output Voltage Vo(V)	Output Current Io(mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (Max)	Efficiency Full Load, 220VAC Typ. (%)
	3ACE1W_05S4	5	5	1000	2000	100	72
	3ACE1W_12S4	5	12	416	800	120	75
	3ACE1W_12.5S4	5	12.5	400	800	120	76
	3ACE1W_15S4	5	15	333	800	120	76
	3ACE1W_24S4	5	24	208	300	150	78

Note:

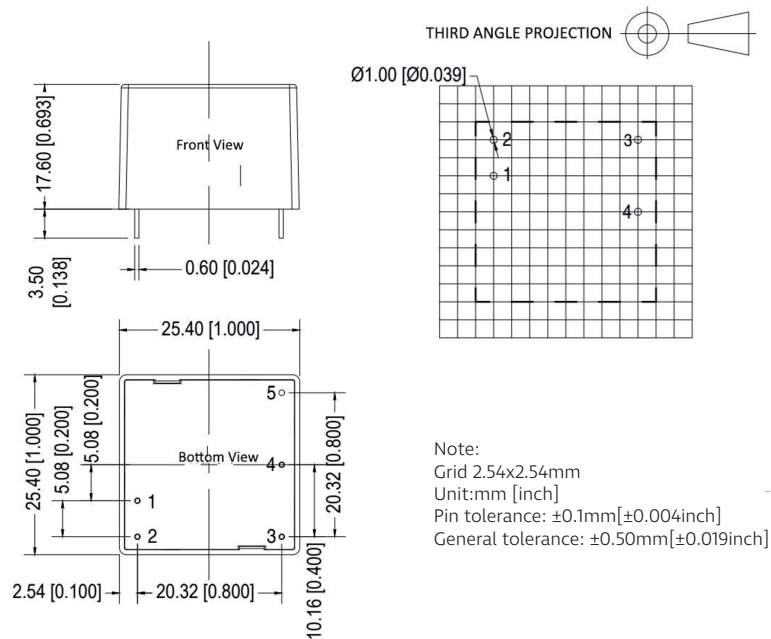
- 1: The typical value of output efficiency is based on module is full loaded and burned-in after half an hour.
- 2: The fluctuation range of full load efficiency(%TYP) in table is ±2%, full load efficiency= output power/module's input power.
- 3: Suffix „/CM“ is for chassis mounting (3ACE1W_24S4/CM); Suffix „/DR“ is for DIN-rail mounting (3ACE1W_24S4/DR)..

Product characteristic curve



- Note 1: Input Voltage should be derated based on Input voltage derating curve when it is 85~120VAC/277~305VAC/120~170VDC/390~430VDC.
- Note 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

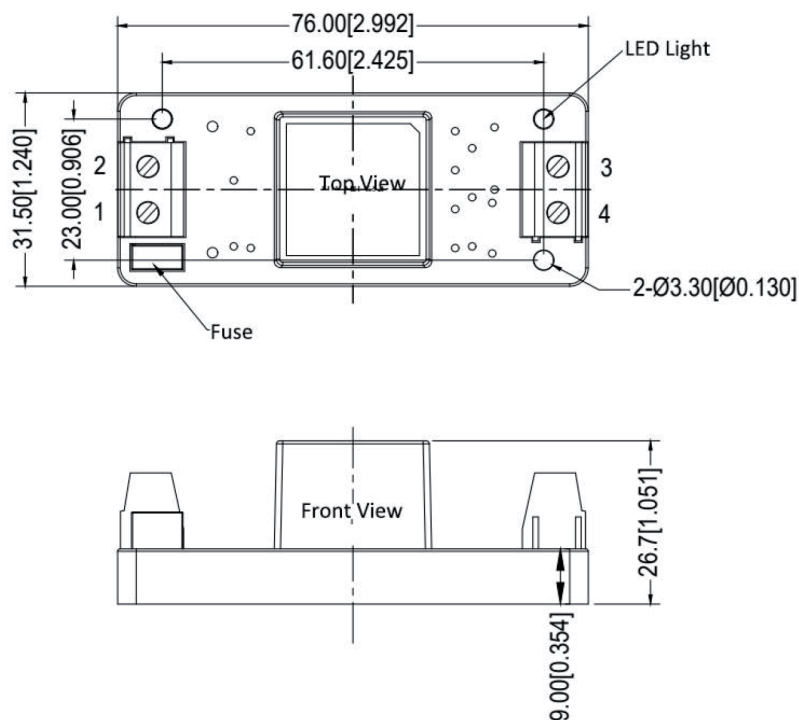
Dimensions and recommended layout



Pin	1	2	3	4	5
Single	AC(L)	AC(N)	+Vo	-Vo	NP

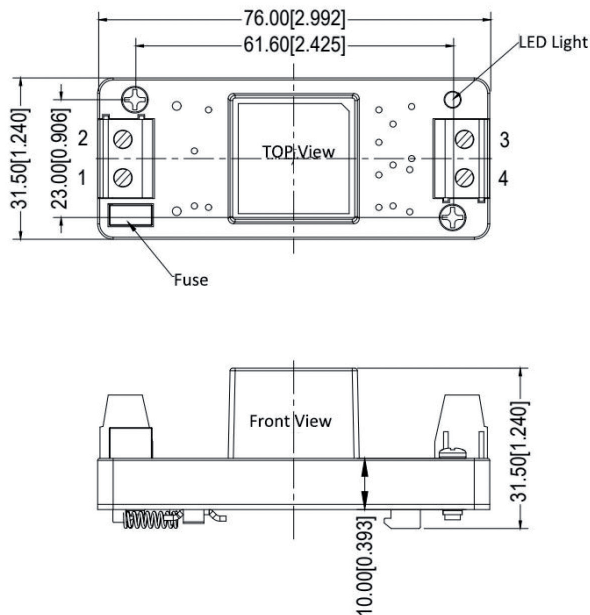
Dimensions and recommended layout

Chassis mounting



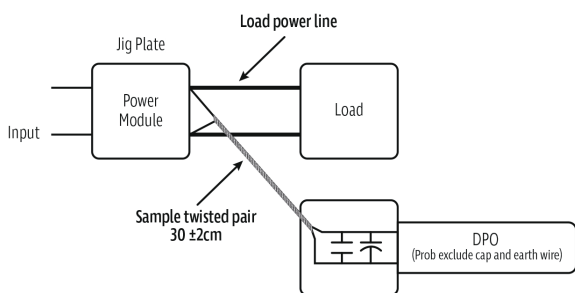
Dimensions and recommended layout

DIN Rail mounting



Ripple & noise test: (twisted pair method 20mHZ bandwidth)

Twisted pair method (20MHz bandwidth)



Test Method:

1. Connect the twisted pair, set the oscilloscope bandwidth to 20MHz, use a 100M bandwidth probe, and terminate with a 0.1uF polypropylene capacitor and a 10uF high-frequency low-resistance electrolytic capacitor in parallel. Configure the oscilloscope to sample mode.
2. Connect the input terminal to the power supply and the output terminal to the electronic load using a jig plate. Use a 30cm (±2 cm) sampling line, and select the power line from appropriately insulated wires of the corresponding diameter according to the output current flow.

Typical EMC Recommended Circuit

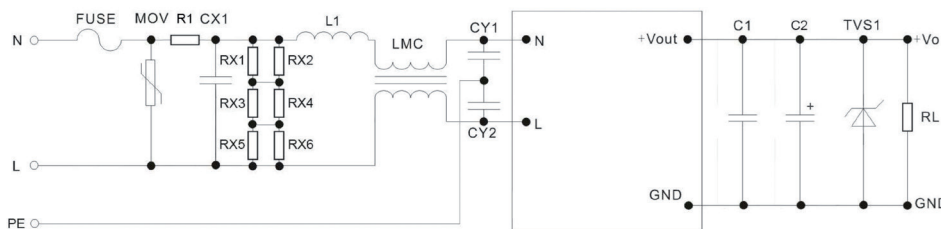


Photo 1

Products Number	FUSE (necessary)	MOV	R1	CX1	RX1, RX2, RX3, RX4, RX5, RX6	L1	LMC	CY1, CY2	C1	C2	TVS1
3ACE1W_05S4	2A/250V (Slowing Fuse)	14D 561K	33Ω/3W (Wire- wound resistor)	334/305 VAC	1206,1.5M	1.2mH/0.3A	20mH	1nF/400 VAC	1uF/50V	100uF/16V	SMBJ7.0A
3ACE1W_12S4	2A/250V (Slowing Fuse)	14D 561K	33Ω/3W (Wire- wound resistor)	334/305 VAC	1206,1.5M	1.2mH/0.3A	20mH	1nF/400 VAC	1uF/50V	68uF/16V	SMBJ20A
3ACE1W_12.5S4	2A/250V (Slowing Fuse)	14D 561K	33Ω/3W (Wire- wound resistor)	334/305 VAC	1206,1.5M	1.2mH/0.3A	20mH	1nF/400 VAC	1uF/50V	68uF/16V	SMBJ20A
3ACE1W_15S4	2A/250V (Slowing Fuse)	14D 561K	33Ω/3W (Wire- wound resistor)	334/305 VAC	1206,1.5M	1.2mH/0.3A	20mH	1nF/400 VAC	1uF/50V	68uF/16V	SMBJ20A
3ACE1W_24S4	2A/250V (Slowing Fuse)	14D 561K	33Ω/3W (Wire- wound resistor)	334/305 VAC	1206,1.5M	1.2mH/0.3A	20mH	1nF/400 VAC	1uF/50V	47uF/35V	SMBJ30A