10ACE1W_4R series

10W - Single Output AC-DC Converter



AC-DC Converter 10 Watt

- Input voltage range: 85-305VAC/100-430VDC
- DIP package type
- Operating temperature range: -40°C to +85°C
- 4000VAC isolation voltage
- Up to 85% efficiency
- Short circuit protection (SCP)
- Over current protection
- OVC III (meets EN61558-1)
- Meets: IEC/EN62368, IEC/EN55032, UL62368-1
- MTBF: 3,200,000 hours

Introducing our latest 10ACE1W_4R series, designed to meet rigorous industry standards. With a wide input voltage range of 85-305VAC/120-430VDC, this module ensures reliable performance across various applications. It boasts an impressive no-load power consumption of ≤0.2W and a transfer efficiency of 85%. It features robust protections against short circuits and over current. With an isolation voltage of 4000VAC, it meets IEC62368/UL62368/EN62368 test standards. This ultra-reliable module is designed for easy PCB mounting, making it an ideal choice for your industrial designs.

SHORT CIRCUIT PROTECTED

100% RoHS compliant 6/6

c UL us
UL62368 - E347551
Pending

Common specifications

Short circuit protection	Continuous, self recovery
Over current protection	110 (typ.) %Io
Over temperature protection	Shut down output voltage; recovers automatically after temperature decreases.
Power derating	+50°C - +85°C 3.3 / 5V (min.) 1.71 %/°C +55°C - +85°C 9/12/15/18/24V (min.) 2.0 %/°C 85VAC - 100VAC (min.) 1 %/VAC 277VAC - 305VAC (min.) 0.54 %/VAC
Working temperature	-40°C - +85°C
Storage temperature	-40°C - +85°C
Storage humidity	95% RH (non condensing)
Soldering profile	Wave soldering, 260°C (±5°C); time: 5 - 10s Manual welding, 360°C (±10°C); time: 3 - 5s
Safety standard	IEC/EN/BS EN62368-1, EN61558-1, EN60335-1; UL62368-1
Safety class	CLASS II
MTBF	>3,200,000 h (MIL-HDBK-217F@25°C)
Hot plug	Unavailable
Case material	Black plastic, flame-retardant and heat-resistant (UL94V-0)
Package dimensions	40.00 x 25.40 x 21.50mm
Weight	36.6g (typ.)
Cooling method	Free air convection

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy	10% - 100% load		±2		%
Linear regulation	Nominal load		±0.5		%
Load regulation	0% - 100% load		±1.0		%
Ripple & noise	20MHz bandwidth		60	150	mV
Temperature drift coefficient			±0.02		%/°C
Stand by power consumption	230VAC		0.10		W
Min. load		0			%
Over current protection		110			%Io
Hold up time	230VAC		40		ms

Note: The test method for ripple and noise adopts the proximity test method, with a 10uF electrolytic capacitor and a 1uF ceramic capacitor.

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage	Input-output, test time 1 minute, leakage current less than 5mA	4000			VAC
Isolation resistance	Input-output, isolated voltage 500VDC	100			MΩ

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage	AC Input DC Input	85 100		305 430	VAC VDC
Input current	115VAC 230VAC			0.23 0.15	A
Inrush current	115VAC 230VAC		25 40		A
Input frequency		47		63	HZ
Fuse	2A/300V, slow blow, required				
Leakage current	230VAC/50Hz	0.1mA RMS Max.			

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this datasheet are measured at Ta = 25°C, humidity <75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this datasheet are based on our company's corporate standards;
6. For specific requirements please contact our technical team directly;
7. Product specifications are subject to change without prior notice.

Example:
10ACE1W_09S4R
10 = 10Watt; AC = AC-DC; E1 = Series; W = Wide input; 09 = 9Vout;
S = Single output; 4 = 4kVAC isolation; R = Revised version

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EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS B EN55014-1	
EMI	RE	CISPR32/EN55032 CLASS B EN55014-1	
EMS	RS	IEC/EN61000-4-3 10V/m EN55014-2	perf. criteria A perf. criteria A
EMS	EFT	IEC/EN61000-4-4 ±2kV (EMC solutions - recommended circuit: 2-1) IEC/EN61000-4-4 ±4kV (EMC solutions - recommended circuit: 2-2) EN55014-2	perf. criteria B perf. criteria A perf. criteria B
EMS	Surge	IEC/EN61000-4-5 line to line ±1kV IEC/EN61000-4-5 line to line ±2kV (EMC solutions - recommended circuit: 2-2) IEC/EN61000-4-5 line to line ±2kV/line to PE ±4kV/ (EMC solutions - recommended circuit: 2-2) EN55014-2	perf. criteria B perf. criteria B perf. criteria A perf. criteria B
EMS	CS	IEC/EN61000-4-6 10Vr.m.s EN55014-2	perf. criteria A perf. criteria A
EMS	ESD	IEC/EN61000-4-2 contact ±8kV/ Air±15kV	perf. criteria B

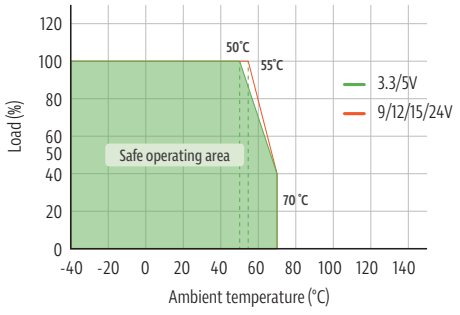
Product Selection Guide

Approval	Part number	Input Voltage (VAC)	Out Power (W)	Out Voltage (VDC)	Out Current (mA) max.	Full Load Efficiency % (typ.)	Capacitive Load (µF) max.
	10ACE1W_03S4R	85-305	8.6	3.3	2600	75	6000
	10ACE1W_05S4R	85-305	10	5	2000	79	5000
	10ACE1W_09S4R	85-305	10	9	1100	81	3600
	10ACE1W_12S4R	85-305	10	12	830	83	2000
	10ACE1W_15S4R	85-305	10	15	660	84	820
	10ACE1W_18S4R	85-305	10	18	556	84	820
	10ACE1W_24S4R	85-305	10	24	410	85	470

Note: 1. All the above data were tested within the parameter range of typical application circuits.
2. Please use suffix „/CM" is for chassis mounting (10ACE1W_24S4R/CM); Please use suffix „/DR" is for DIN-rail mounting (10ACE1W_24S4R/DR)...
3. The product images are for reference only. Please refer to the actual product for details.

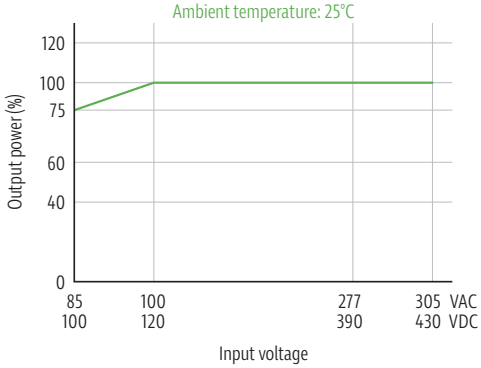
Typical characteristics

Temperature derating graph



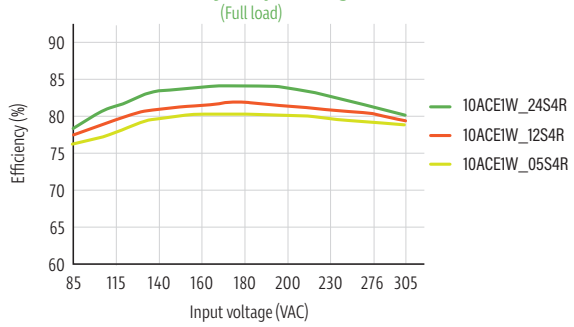
Input voltage derating curve

Ambient temperature: 25°C



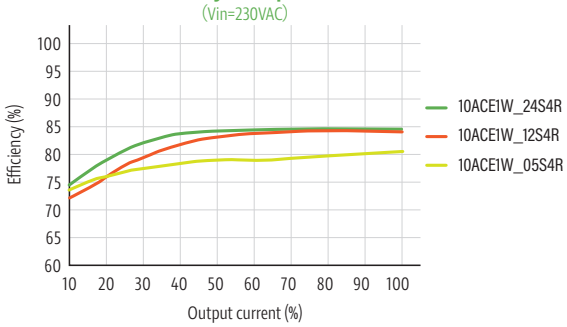
Efficiency vs input voltage

(Full load)



Efficiency vs output load

(Vin=230VAC)



Notes: 1. For input voltages of 85-100VAC/277-305VAC, voltage derating should be carried out on the basis of temperature derating.
2. This product is suitable for use in a natural wind-cooled environment.

Application circuit

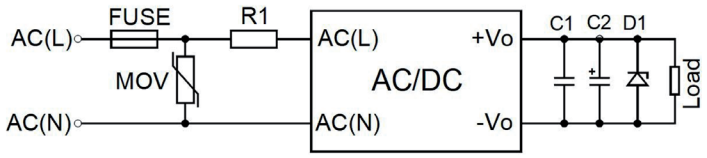


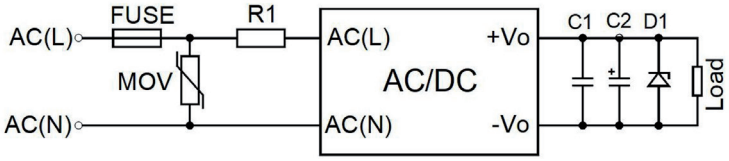
Figure 1

Reference Table for Selection of Peripheral Devices

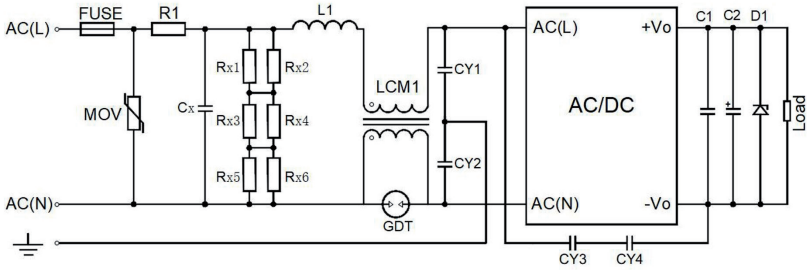
Out Voltage	FUSE	MOV	R1	C1	C2	D1
3.3/5VDC	2A/300VAC Slow-blow, Required	14D561K	12Ω/5W (Wire-wound resistor, Required)	1uF/16V	220uF/16V	See Note2
9/12/15VDC				1uF/25V	100uF/25V	
18/24VDC				1uF/50V	100uF/35V	

Note:
1. FUSE and Mov Can be selected based on actual needs.
2. D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage.

EMC Solutions - Recommended circuits



EMC Recommended circuit (2-1)

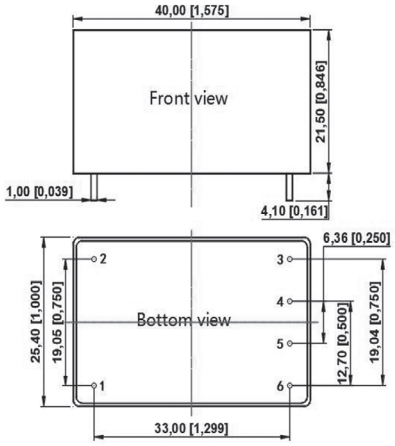


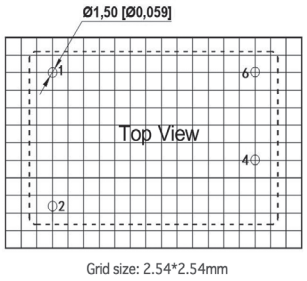
EMC Recommended circuit (2-2)

Recommended parameter values for EMC solution circuits

Model	Recommended value
FUSE	2A/300VAC, Slow-blow, Required
MOV	14D561K
Cx	0.33uF/305VAC
R1	12Ω/5W(Wire-wound resistor, Required)
L1	1.2mH/0.5A
CY1, CY2	2.2nF/400VAC
CY3, CY4	1.0nF/400VAC
GDT	300V/1KA
LCM	22mH Common mode Choke
Rx1, Rx2, Rx3, Rx4	1.5MΩ/1206

Mechanical dimensions and recommended layout



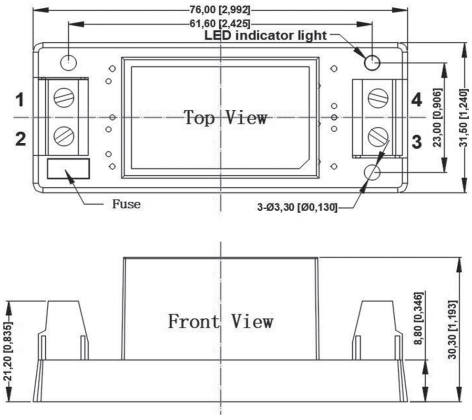


Pin Function Table

Pin	Function
1	AC (L)
2	AC (N)
3	No Pin
4	+Vo
5	No Pin
6	-Vo

Note:
Unit: mm [inch]
Pin section tolerances:±0.10 [±0.004]
General tolerances:±0.50 [±0.020]

Mechanical dimensions and recommended layout (chassis mounting)

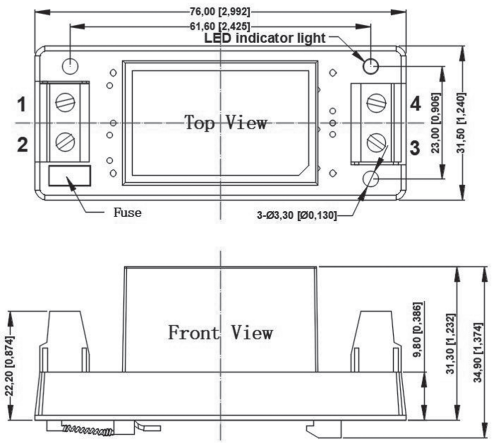


Pin Function Table

Pin	Function
1	AC (L)
2	AC (N)
3	-Vo
4	+Vo

Note:
Size unit: mm [inch]
Wire diameter: 24-12AWG
Tightening torque: Max 0.4 N ·m
Unmarked tolerance: ±1.00 [±0.039]

Mechanical dimensions and recommended Layout (DIN rail)



Pin Function Table

Pin	Function
1	AC (L)
2	AC (N)
3	-Vo
4	+Vo

Note:
Size unit: mm [inch]
Wire diameter: 24-12AWG
Tightening torque: Max 0.4 N ·m
Mounting rail: TS35, rail needs to connect safety ground
Unmarked tolerance: ±1.00 [±0.039]