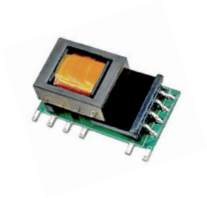
10ACFE3W_4 series

10W - Single Output AC-DC Converter



AC-DC Converter 10 Watt

- Input range 85-305VAC and 100-430VDC
- Open frame SIP package
- Operating temperature range: -40°C - +85°C
- IEC/EN61558 and IEC/EN60335
- IEC/UL62368-1 approved
- 4000VAC isolation voltage
- Up to 85% efficiency
- Short Circuit Protection
- Overcurrent protection
- Overvoltage protection

Introducing our new AC-DC converter 10ACFE3W_4 series, a compact and efficient solution designed to meet the rigorous demands of modern applications. With a wide input range of 85-305VAC and 100-430VDC, it ensures reliable performance across diverse environments. Its open-frame SIP package enables space-saving integration while maintaining excellent functionality. Engineered to operate in extreme conditions, this converter boasts an operating temperature range of -40°C to +85°C. It is fully compliant with IEC/EN61558 and IEC/EN60335 standards, ensuring safety and reliability for industrial and consumer applications alike. With a robust 4000VAC isolation voltage, it offers superior protection for connected devices. Achieving up to 85% efficiency, this converter delivers energy-saving performance. It includes comprehensive protection features such as Short Circuit Protection, Overcurrent Protection, and Overvoltage Protection, safeguarding your systems from potential damage.

UL62368 - E347551

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	-40°C - -25°C 10W (min.) 1 %/°C +55°C - +85°C 10W (min.) 2.5 %/°C 85VAC - 100VAC 10W (min.) 1 %/VAC 277VAC - 305VAC 10W (min.) 0.535 %/VAC
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-50°C - +105°C
Soldering profile	Wave soldering, 260°C (± 5°C); time: 5 - 10s Manual welding, 360°C (± 5°C); time: 3 - 5s
Safety standard	IEC/UL62368-1, IEC/EN60335-1, IEC/EN61558-1
Safety class	CLASS II
MTBF	>300,000 h (MIL-HDBK-217F@25°C)
Hot plug	Unavailable
Package dimensions	32.00 x 14.50 x 20.00mm
Weight	10.2g (typ.)
Cooling method	Free air convection

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage	AC Input	85		305	VAC
Input current	115VAC (10W/15W load) 230VAC (10W/15W load)			0.3/0.4 0.18/0.25	A
Impulse current	115VAC (10W/15W load) 230VAC (10W/15W load)		15/18 30/35		A
Input frequency		47		63	HZ
Fuse	1A, slow-blow, required				

Example:
10ACFE3W_1005S4
10 = 10Watt; AC = AC-DC; F = Open Frame; E3 = Cost effective; W = Wide input;
10 = 10Vin; 05 = 5Vout; S = Single output; 4 = 4kVAC isolation

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy	3.3VDC - 10% - 100% load Others - 10% - 100% load		±1 ±1	±3 ±2	%
Linear regulation (Rated load)			±0.5		%
Load regulation (10% - 100% load)	3.3 VDC output other voltages		±2 ±1		%
Ripple & noise	20MHz bandwidth, 10% - 100% load		80	150	mV
Temperature coefficient			±0.15		%/°C
Stand-by power consumption	230VAC		0.10	0.25	W
Min. Load		0			%Io

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

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. Suggested dual output module load imbalance: ≤ ± 5%. If it exceeds ± 5%, it cannot be guaranteed that the product performance meets all performance indicators in this datasheet;
4. The maximum capacitive load is tested within the input voltage range and under full load conditions;
5. Unless otherwise specified, all indicators in this manual are measured at Ta = 25°C, humidity <75% RH, nominal input voltage, and output rated load;
6. All indicator testing methods in this manual are based on our company's corporate standards;
7. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
8. Product specifications are subject to change without prior notice.

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EMC specifications				
EMI	CE	CISPR32/EN55032 CLASS A (application circuit 1, 4) CISPR32/EN55032 CLASS B (application circuit 2, 39		
EMI	RE	CISPR32/EN55032 CLASS A (application circuit 1, 4) CISPR32/EN55032 CLASS B (application circuit 2, 3)		
EMS	ESD	IEC/EN61000-4-3	10V/m	perf. criteria A
EMS	RS	IEC/EN61000-4-4 IEC/EN61000-4-4	±2kV (application circuit 1, 2) ±4kV (application circuit 3, 4)	perf. criteria B perf. criteria B
EMS	EFT	IEC/EN61000-4-5 IEC/EN61000-4-5	line to line ±1kV (application circuit 1, 2) line to line ±2kV (application circuit 3, 4)	perf. criteria B perf. criteria B
EMS	Surge	IEC/EN61000-4-6	10Vr.m.s	perf. criteria A
EMS	CS	IEC/EN61000-4-2	Contact ±6kV / Air ±8kV	perf. criteria B

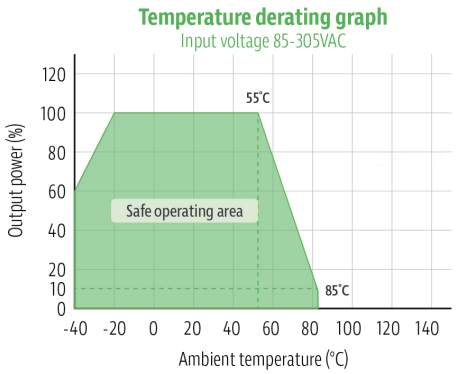
Product Selection Guide

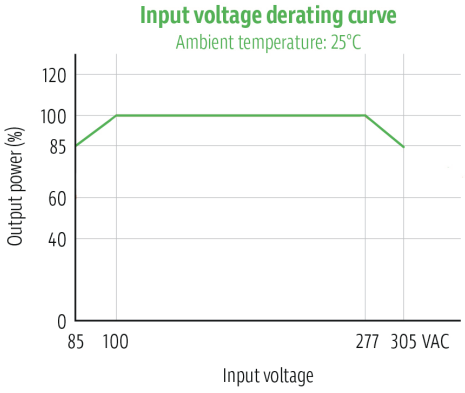
Approval	Part number	Input Voltage (VAC)	Out Power (W)	Out Voltage (VDC)	Out Current (mA) max.	Full Load Efficiency % (typ.)	Capacitive Load(µF) max.
UL	10ACFE3W_03S4	85-305	6.6	3.3	2000	74	1500
UL	10ACFE3W_05S4	85-305	10	5	2000	78	1500
UL	10ACFE3W_09S4	85-305	10	9	1100	79	1000
UL	10ACFE3W_12S4	85-305	10	12	840	83	680
UL	10ACFE3W_15S4	85-305	10	15	670	83	470
UL	10ACFE3W_24S4	85-305	10	24	420	84	330
UL	10ACFE3W_03S4	85-305	9.9	3.3	3000	75	5000

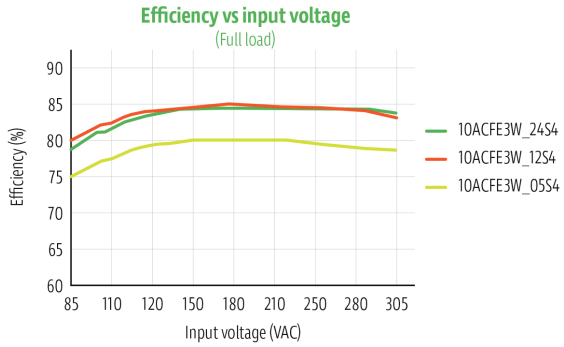
Note:

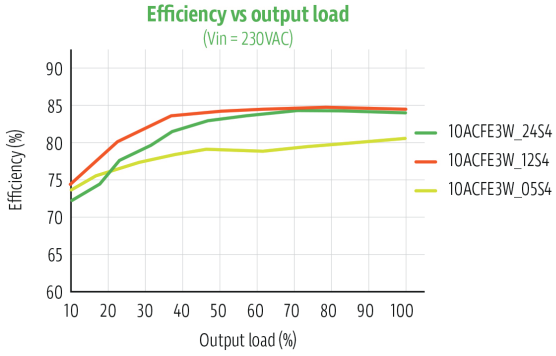
1. Output voltage - refers to the voltage value of the load end after adding the peripheral application circuit;
2. For safer use, it is recommended that when using this product, in addition to welding and fixing, it should be fixed with glue.

Typical characteristics

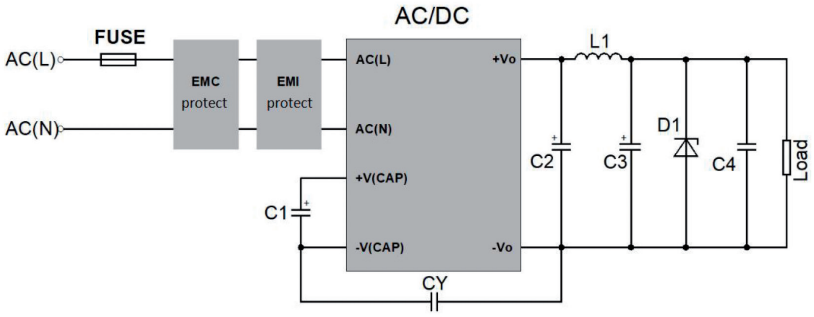








Application circuit

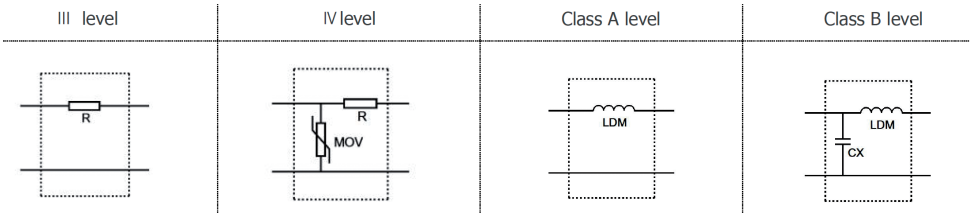


Reference table for selection of peripheral devices

Output voltage	C1*	C2*	L1*	C3*	C4	CY*	D1
3.3/5VDC 10W	22uF/450V	820uF/16V (Solid state capacitor)	2.2uH 6.5A 15mΩMAX	150uF/25V	0.1uF/50V	1nF/400VAC	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
9/12VDC 10W	22uF/450V	470uF/25V (Solid state capacitor)	2.2uH 6.5A 15mΩMAX	150uF/25V	0.1uF/50V	1nF/400VAC	
15/24VDC 10W	22uF/450V	470uF/35V	3.3uH 5A 25mΩMAX	100uF/35V	0.1uF/50V	1nF/400VAC	

Note:
1. *: Must be connected.
2. FUSE, EMC protection, and EMI protection are selected based on actual application needs;
3. C1 is a filtering electrolytic capacitor, which is a required component. It is recommended to use ripple current> 400mA@100kHz electrolytic capacitors.
4. C2, C4, and L1 form a Pi type filtering circuit, and it is recommended to use high-frequency low resistance electrolytic capacitors or solid-state capacitors.
5. When selecting L1, ripple requirements can be considered, while paying attention to current and internal resistance values.

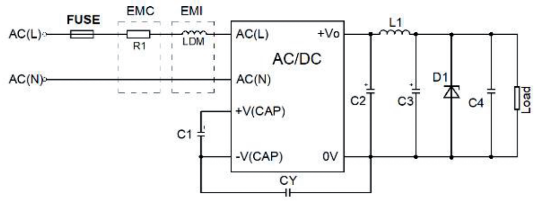
EMS Solutions - recommended circuits



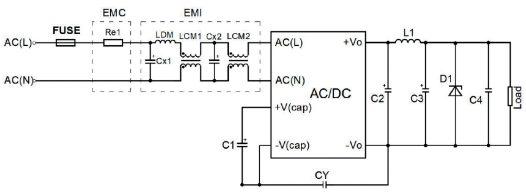
Environmental Application - EMC Solution Selection Table

Recommended circuit	Application environment	Application industry	Input Voltage	Ambient temperature	EMI	EMS
1	Basic applications		85-305VAC	-40°C - +85°C	Class A	III level
2	Indoor civilian	Smart Home, Home appliances	85-305VAC	-25°C - +55°C	Class B	III level
	Indoor ordinary	Intelligent buildings, smart agriculture	85-305VAC	-25°C - +55°C	Class B	III level
3	Indoor industry	Production workshop	85-305VAC	-25°C - +55°C	Class B	IV level
4	Outdoor ordinary	Intelligent transportation, charging stations, communication, security	85-305VAC	-40°C - +85°C	Class A	IV level

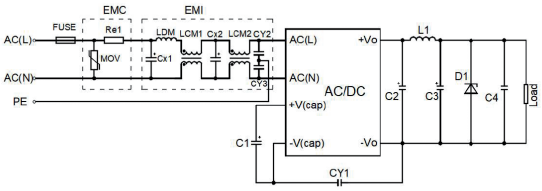
EMC Solutions - recommended circuits

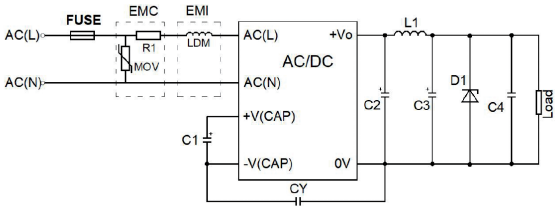


Recommended circuit 3



Recommended circuit 4

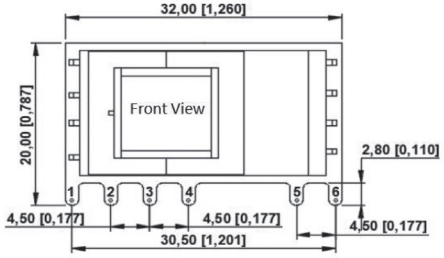


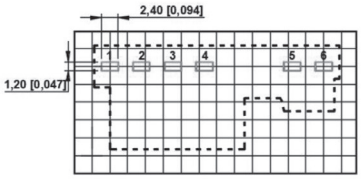


EMC Recommended Circuit Device Selection Reference Table

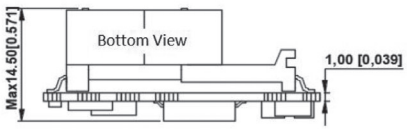
Components	Recommended circuit 1	Recommended circuit 2	Recommended circuit 3	Recommended circuit 4
FUSE (Must be connected)	1A/300V, Slow melting		2A/300V, Slow melting	
R1	6.8Ω/3W (Winding resistance, Must be connected.)			
MOV	14D561			
LDM1	2.2mH/Max: 4Ω/Min:0.24A			
LCM1	200uH 0.8A			
LCM2	12.6mH/MIN 0.5A			
Cx1,Cx2	0.1uF/310VAC			
CY1, CY2, CY3	1nF/400VAC			

Mechanical dimensions and recommended layout





Grid size：2.54 x 2.54 mm



Pin Function Table

Pin	Function
1	AC (L)
2	AC (N)
3	+V (CAP)
4	-V (CAP)
5	-Vo
6	+Vo

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