



10ACFE1W_4 series

10W - AC-DC converter

AC-DC Converter

10 Watt

- ⊕ Wide input voltage range: 85-528VAC/100-745VDC
- ⊕ No-load power: $\leq 0.3W$ (230VAC)
- ⊕ Transfer efficiency up to 82% (230VAC)
- ⊕ Switching frequency: 65kHz (typ.)
- ⊕ Protections: short circuit, over current
- ⊕ Isolation voltage: 4000VAC
- ⊕ PCB mounting

Introducing our latest 10ACFE1W_4 series, designed to deliver exceptional performance and reliability with a wide input voltage range of 85-528VAC/100-745VDC, ensuring compatibility with diverse power systems. It features low no-load power consumption, optimized for efficiency with a no-load power of $\leq 0.3W$ at 230VAC. The unit achieves a transfer efficiency of up to 82% at 230VAC and operates at a switching frequency of 65kHz (typical). It includes robust protections against short circuits and overcurrent, and offers an isolation voltage of 4000VAC. Designed for convenience and versatility, this power supply unit is suitable for PCB mounting.



Common specifications	
Short circuit protection	Input full voltage range - Long-term short-circuit, self-recovery - Hiccup
Over current protection	Enter the full range - $\geq 110\%$ Io self-recovery - Hiccup
Switching frequency	60 kHz (min.); 65 kHz (typ.); 70 kHz (max.)
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-40°C - +105°C
Soldering temperature	Wave soldering 260°C ($\pm 4^\circ\text{C}$), time 5-10S Manual soldering 360°C ($\pm 8^\circ\text{C}$), time 4-7S
Relative humidity	10-90% RH
Hot plug	Not support
Remote control terminal	No remote control
Vibration	10-55Hz, 10G, 30Min, along X, Y, Z
MTBF (MIL-HDBK-217F 25°C)	>300,000 Hours

Output specifications						
Item	Operating condition	Min	Typ	Max	Units	
Voltage accuracy	Input full voltage range any load		± 2.0	± 3.0	%	
Line Regulation	Nominal load			± 0.5	%	
Load regulation	Input nominal voltage 20%-100% load			± 1.0	%	
Minimum load	Single Output	0			%	
Start delay time	Input 230VAC (Full Load)		500		mS	
Power-off holding time	Input 400VAC (Full load)		200		mS	
Dynamic response	Overshoot range 25% ~ 50% ~ 25%	-5.0		+5.0	%	
	Recovery time 50% ~ 75% ~ 50%			5.0	mS	
Output overshoot	Input full voltage range		$\leq 10\%V_o$		%	
Drift coefficient			$\pm 0.03\%$		%/°C	

Input specifications						
Item	Operating condition	Min	Typ	Max	Units	
Input voltage range	AC input	85	230	528	VAC	
	DC input	127	325	746	VDC	
Input frequency range		47	50	63	Hz	
Input current	115VAC			0.30	A	
	230VAC			0.20	A	
Surge current	115VAC			10	A	
	230VAC			17	A	
No-load power consumption	Input 230VAC			0.3	W	
	Output 528VAC			0.5	W	
External fuse	2.0A/500VAC, Slow fuse (required)					
Leakage current	0.25mA typ. / 230VAC/50HZ					

Isolation specifications						
Item	Operating Conditions	Min	Typ	Max	Units	
Isolation voltage	Test for 1 minute, leakage current $\leq 5\text{mA}$	4000			VAC	
Insulation resistance	Input-Output @ DC500V	100			M Ω	

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. The input end of the product must be connected to insurance;
3. If the product works below the minimum required load, the product performance cannot be guaranteed to meet all the performance indicators in this manual;
4. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
5. Unless otherwise specified, the above data are all measured at $T_a = 25^\circ\text{C}$,
6. humidity <75%, input nominal voltage and output rated load (pure resistive load);
7. All the above index test methods are based on the company's standards;
8. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements.
9. Product specifications are subject to change without notice.

Example:

10ACFE1W_05S4

10 = 10Watt; AC = AC-DC; F = Open Frame; ; E1 = Series;

W = Wide input (2:1); 05 = 5Vout; S = Single output; 4 = 4 kVAC isolation

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EMC specifications					
EMC	EMI	CE	CISPR22/EN55022	CLASS B (Recommended circuit is shown in Figure 2)	
EMC	EMI	RE	CISPR22/EN55022	CLASS B (Recommended circuit is shown in Figure2)	
EMC	EMS	ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV	Perf.Criteria B (Recommended circuit is shown in Figure2)
EMC	EMS	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria B (Recommended circuit is shown in Figure2)
EMC	EMS	EFT	IEC/EN 61000-4-4	±2KV	perf. Criteria B (Recommended circuit is shown in Figure2)
			IEC/EN 61000-4-4	±4KV	perf. Criteria B (Recommended circuit is shown in Figure2)
EMC	EMS	Surge	IEC/EN 61000-4-5	line to line ±2kV/line to ground ±4KV (Recommended circuit is shown in Figure2)	
EMC	EMS	CS	IEC/EN 61000-4-6	10 Vr.m.s	perf. Criteria B (Recommended circuit is shown in Figure2)

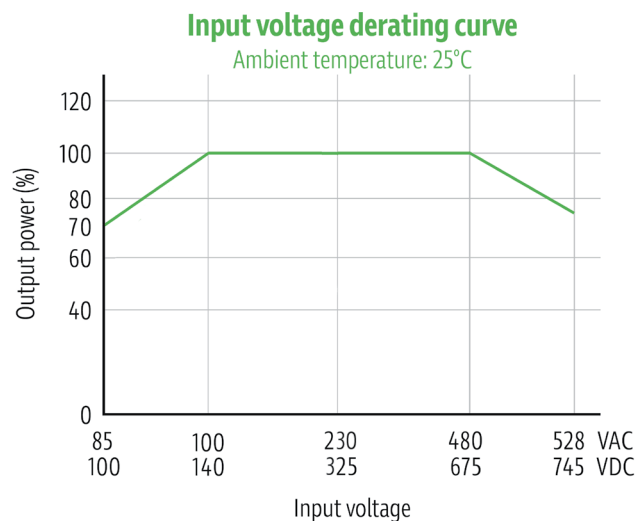
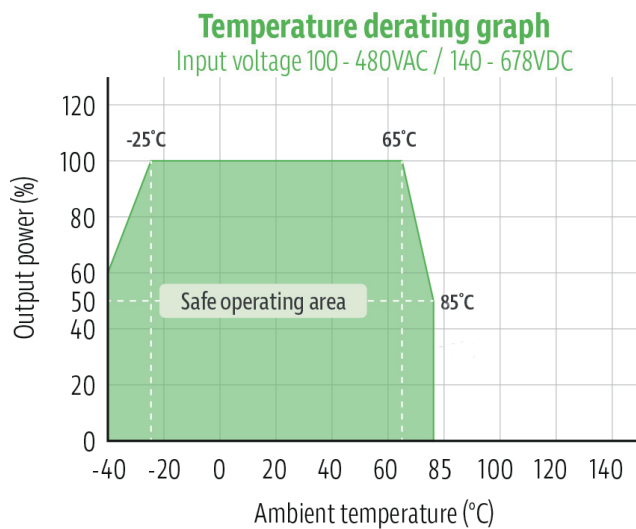
Product Selection Guide

Approval	Model	Output Power (W)	Output Voltage Vout(V)	Output Current Iout(mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (Max) mVp-p	Efficiency Full Load, 220VAC Typ. (%)
	10ACFE1W_05S4	10	5	2000	2000	80	77
	10ACFE1W_12S4	10	12	833	1000	100	82
	10ACFE1W_24S4	10	24	416	800	200	83

Note

1. The ripple test needs to be tested under the condition of adding peripherals;
2. The typical value of output efficiency is based on the product aging for 30mins under full load;
3. The minimum efficiency is defined as -2% of the typical value due to the instrumental error of the test equipment;

Product characteristic curve



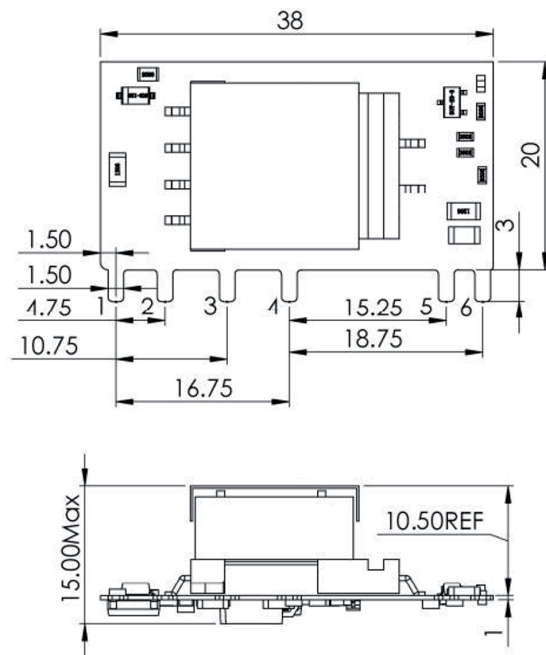
Note

1. The input voltage is 85-100VAC/480-528VAC/100-140VDC/678-745VDC, which needs to be derated based on the input voltage derating curve.
2. This product is suitable for use in a natural wind cooling environment, if it is used in a closed environment, please contact our company.

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Dimensions

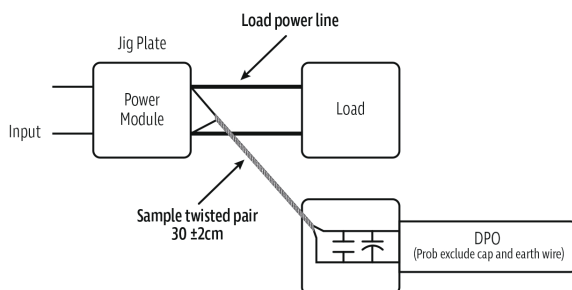


Note:
 Unit: mm
 Unmarked tolerance ± 1.00
 Layout of the device is for reference only, the actual product shall prevail.

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

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 application circuit

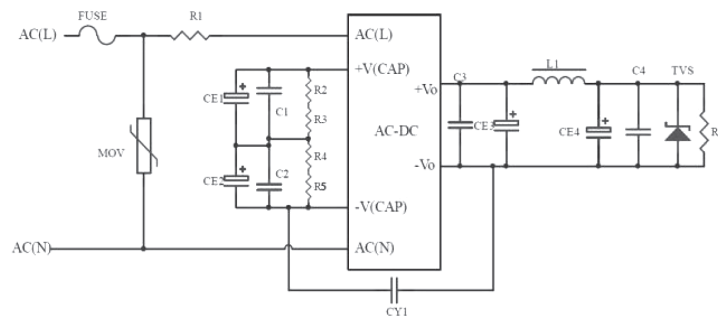


Figure 1

Products Number	CE1, CE2 (Required)	CE3 (Solid state capacitor must be connected)	L1 (Required)	CE4 (Must be connected with electrolytic capacitor)	C1, C2	C3, C4	TVS1
10ACFE1W_05S4	47uF/450V	820uF/16V	2.2uF/5A	330uF/25V	0.1uF/630V	0.1uF/50V	SMBJ7.0A
10ACFE1W_12S4	47uF/450V	470uF/16V	2.2uF/5A	330uF/25V	0.1uF/630V	0.1uF/50V	SMBJ20A
10ACFE1W_24S4	47uF/450V	470uF/35V	2.2uF/5A	100uF/35V	0.1uF/630V	0.1uF/50V	SMBJ30A

Note:

1. FUSE is a safety tube, the recommended specification is 2A/500VAC, slow break (must be connected)
2. MOV is a varistor, 14D102K (required)
3. R1 is the winding resistance, 6.8 Ω/3W (required)
4. CE1 and CE2 are electrolytic capacitors, 47uF/450V (required)
5. R2, R3, R4 and R5 are voltage equalizing resistors, 1M/1206. (required)
6. CY1 is Y capacitance, 1nF/400V (required)

EMC recommended circuit (basic application)

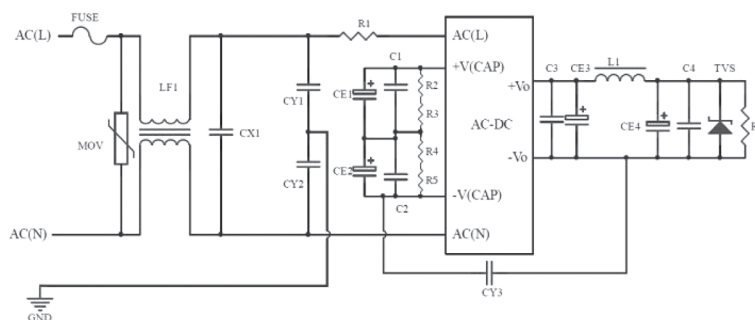


Figure 2

Recommended parameters:

1. FUSE is a fuse, the recommended specification is 2A/500VAC, slow break (must be connected)
2. MOV is a varistor, 14D102K (required)
3. R1 is the winding resistance, 6.8 Ω/3W (required)
4. CY1, CY2 and CY3 are Y capacitors, 1nF/400VAC (required)
5. CX1 is X capacitance, 0.33uF/530VAC (required)
6. LF1 is common-mode inductance, 30mH/0.5A (required)

Note: The recommended values of other components refer to the typical application circuit according to the actual application