

## 15ACB1E\_4 series

15W - AC-DC converter



### AC-DC Converter

15 Watt

- Wide input voltage range: 85-265VAC/120-380VDC
- No-load power consumption  $\leq 0.35W$
- Transfer efficiency (typ. 86%)
- Switching frequency: 65KHz
- Protection: short circuit, over current
- Isolation voltage: 4000VAC
- Pass CE, RoHS certificate
- Meets IEC62368/UL62368/EN62368 test standard
- Plastic case, conform to UL94 V-0
- PCB mounting, chassis mounting, din-rail mounting available

Our 15ACB1E\_4 series features a wide input voltage range of 85-265VAC/120-380VDC, ensuring versatility for various applications. With no-load power consumption  $\leq 0.35W$  and a typical transfer efficiency of 86%, it offers both energy efficiency and performance. Operating at a switching frequency of 65KHz, it provides reliable operation. Protection mechanisms include short circuit and over current protection. The isolation voltage is rated at 4000VAC, ensuring high safety standards. It is certified to pass CE and RoHS requirements and meets the IEC62368/UL62368/EN62368 test standards."



#### Common specifications

Short circuit protection	Full input voltage range - Continuous, Self-recovery Hiccup
Over current protection	Full input voltage range - $\geq 120\%$ Io, Self-recovery Hiccup
Switching frequency	65 KHz (typ.)
Operating temperature	-40°C - +75°C
Storage temperature	-40°C - +85°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 class	CLASS II
MTBF (MIL-HDBK-217F@25°C)	>300,000 Hours
Case material	UL94 V-0

#### Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage range	AC input	85	220	265	VAC
	DC input	120	310	380	VDC
Input frequency range		47	50	63	Hz
Input current	115VAC 220VAC			0.35 0.25	A
Surge current	115VAC 220VAC			10 20	A
External fuse	1A-2A/250VAC slow-fusing				
Leakage current	0.5mA TYP/230VAC/50Hz				

#### Example:

**15ACB1E\_05S4**

15 = 15Watt; AC = AC-DC; B1 = Series; E = Cost effective;  
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		$\pm 2.0$	$\pm 3.0$	%
Line Regulation	Nominal Load			$\pm 0.5$	%
Load regulation	Nominal input Voltage, 20%-100% load			$\pm 1.0$	%
No load power consumption	Input 115VAC Input 220VAC			0.35	W
Minimum load	Single Output	0			%
Turn-on delay time	Nominal input voltage, full load		1000		mS
Power-off holding time	Input 220VAC (full load)		200		mS
Dynamic response	Overshoot range 25%-50%-25%	-10.0		+10.0	%
	Recovery time 50%-75%-50%	-5.0		+5.0	mS
Output overshoot	Full input voltage range		$\leq 10\%V_o$		%
Drift coefficient		-	$\pm 0.03\%$	-	%/°C
Ripple noise*			50	100	mV

Note: \*Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.

#### Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage	Input-Output, Test 1min, leakage current - $\leq 5mA$	4000			VAC
Insulation resistance	Input-Output@DC500V	100			MΩ

- The product should be used under the specification range, otherwise it will cause permanent damage to it.
- Product's input terminal should connect to fuse;
- If the product is not worked under the load range (below the minimum load or beyond the load range), we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
- Unless otherwise specified, data in this datasheet are tested under conditions of Ta = 25°C, humidity <75% when inputting nominal voltage and outputting rated 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 customized product service;
- The product specification may be changed at any time without prior notice.

15ACB1E\_4 series

15W - AC-DC converter

EMC specifications					
EMC	EMI	CE	CISPR22/EN55032	CLASS B	
EMC	EMI	RE	CISPR22/EN55032	CLASS B	
EMC	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (see recommended circuit Photo 1)
EMC	EMS	CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (see recommended circuit Photo 1)
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV	Perf.Criteria B
EMC	EMS	Surge	IEC/EN61000-4-5	±1KV	Perf.Criteria B
EMC	EMS	EFT	IEC/EN61000-4-4	±2KV	Perf.Criteria B
EMC	EMS	Voltage dips and interruptions	IEC/EN61000-4-11	0%~70%	Perf.Criteria B

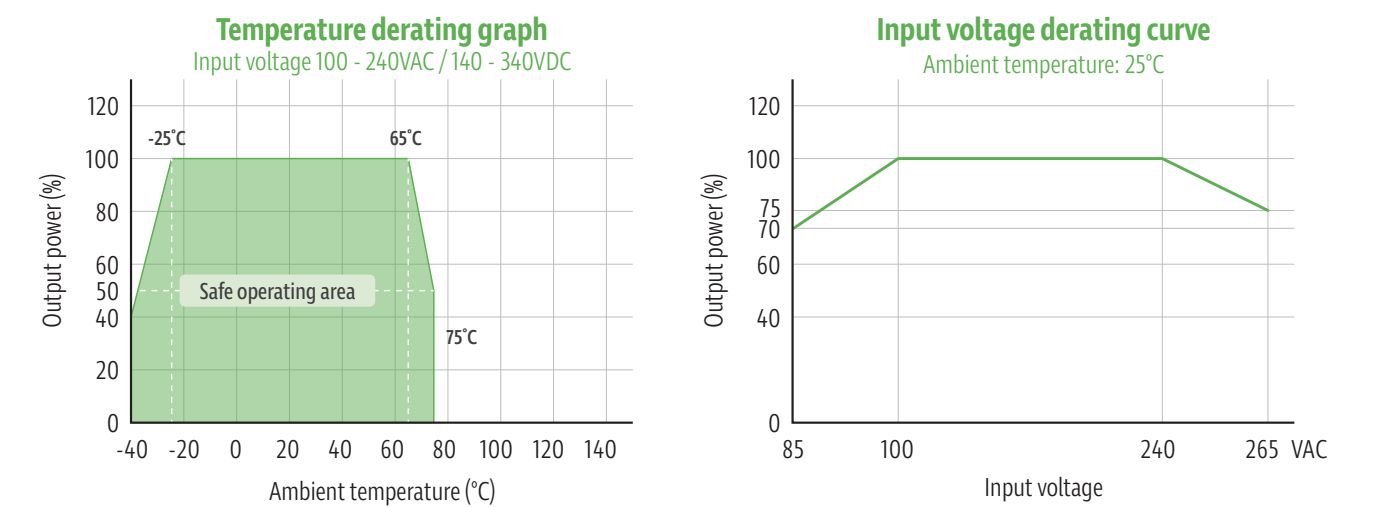
Product Selection Guide

Approval	Model	Output Power (W)	Output Voltage Vo1(V)	Output Current Io1(mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (Max) mVp-p	Efficiency Full Load, 220VAC Typ. (%)
	15ACB1E_03S4	10	3.3	3000	2000	80	70
	15ACB1E_05S4	15	5	3000	1000	80	74
	15ACB1E_09S4	15	9	1667	1000	80	82
	15ACB1E_12S4	15	12	1250	800	80	84
	15ACB1E_15S4	15	15	1000	800	100	85
	15ACB1E_20S4	15	20	750	800	100	85
	15ACB1E_24S4	15	24	625	500	100	86

Note:

- 1: Please add suffix /CMfor chassis mounting, and suffix /DRfor DIN-Rail mounting, DIN-Rail width is 35mm (15ACB1E\_24S4/CM/DR)  
2:The typical output efficiency is based on that product is full loaded and burned-in after half an hour.  
3: The fluctuation range of full load efficiency(%,TYP) is ±2%, full load output efficiency = total output power/module's input power.

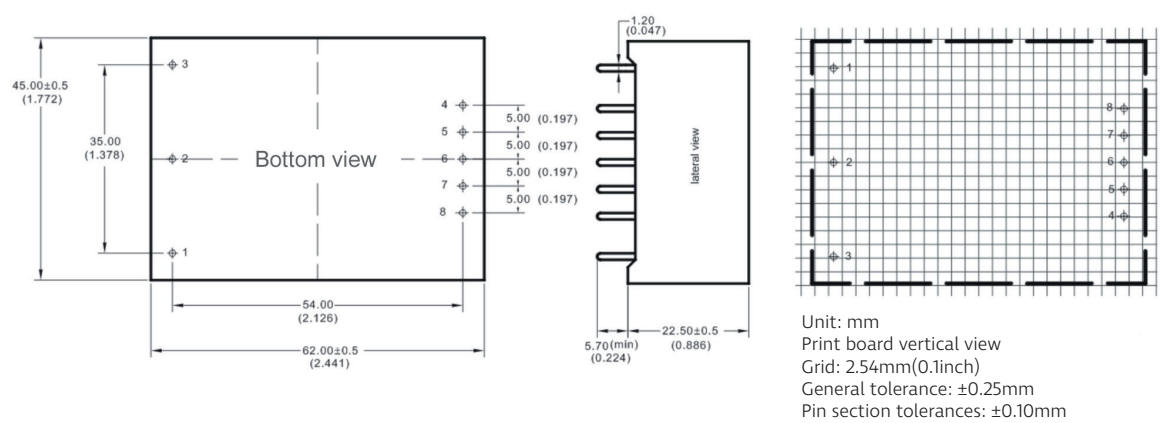
Product characteristic curve



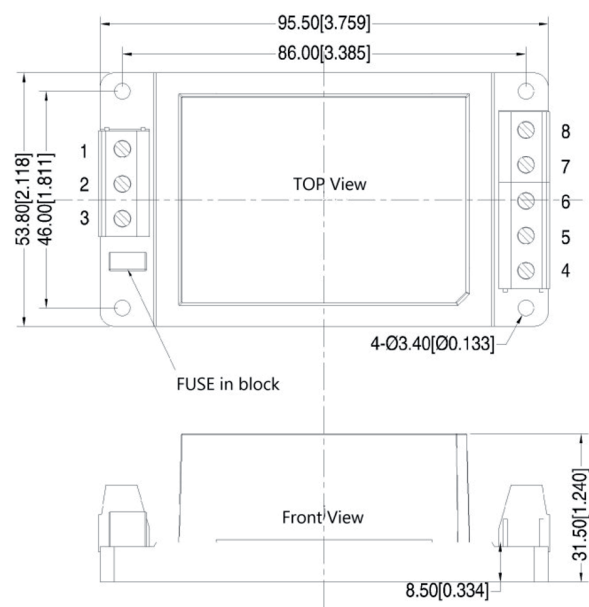
Note

- 1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 85~100VAC/240~265VAC/120~140VDC/ 340~380VDC.  
2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

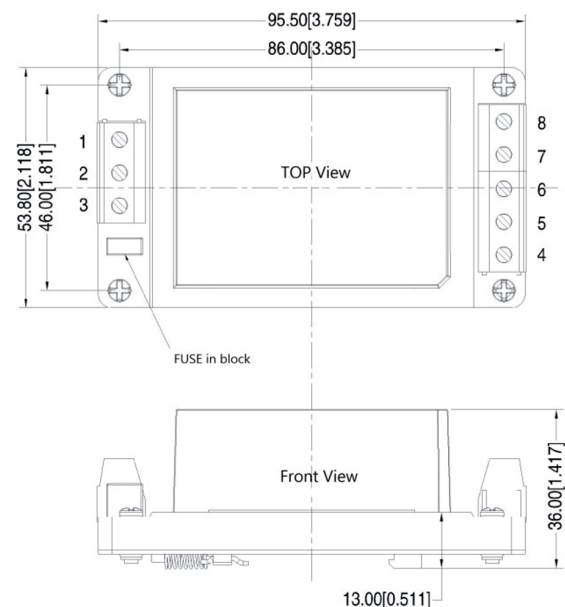
Standard packing dimensions and pin table



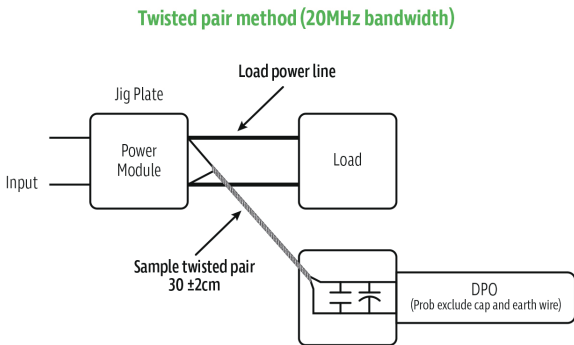
Chassis mounting dimensions



DIN rail mounting dimension

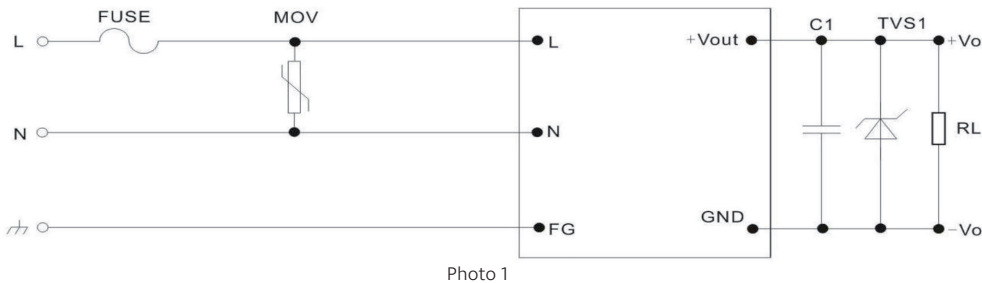


Ripple & noise test: (twisted pair method 20MHz bandwidth)



- 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.

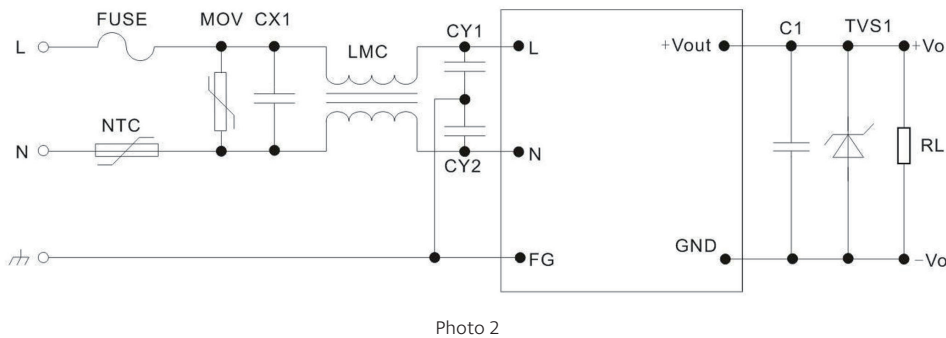
Typical Application Circuit



Output voltage	5V	9V	12V	15V	24V	48V
TVS tube recommended value	SMBJ7.0A	SMBJ12A	SMBJ20A	SMBJ20A	SMBJ30A	SMBJ64A

Note: Output capacitor C1 is ceramic capacitor, to filter high frequency noise. TVS tube is a recommend component to protect post-circuit if converter fails. Recommend to external FUSE, Model:2A/250V, slow fusing. Recommend to connect with external MOV voltage dependent resistor, model:14D511K.

EMC solution recommended circuit



Component	Recommended Value	Component	Recommended Value
MOV	14D511K	NTC	5D-9
CX1	0.1uF/275VAC	LMC 1	15mH, recommended to use our common mode inductor
FUSE	2A/250V, slow-fusing, necessary		
CY1, CY2	1000pF/400VAC		