

15ACB1EW_4 series

15W - AC-DC converter



AC-DC Converter

15 Watt

- Wide input voltage range: 85-305VAC/120-430VDC
- No-load power consumption $\leq 0.35W$
- Transfer efficiency (typ. 86%)
- Switching frequency: 65kHz
- Protection: short circuit, over current
- Isolation voltage: 4000VAC
- Meets IEC62368/UL62368/EN62368 test standard
- Plastic case, conform to UL94 V-0
- PCB mounting, chassis mounting, DIN rail mounting available

Our 15ACB1EW_4 series features a wide input voltage range of 85-305VAC/120-430VDC, making it highly versatile. It offers low no-load power consumption $\leq 0.35W$ and a typical transfer efficiency of 86%. Operating at a switching frequency of 65kHz, it includes robust protection against short circuits and over current.

With an isolation voltage of 4000VAC, it ensures safety and reliability. Additionally, it 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 - $\geq 130\%$ 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	305	VAC
	DC input	120	310	430	VDC
Input frequency range		47	50	63	Hz
Input current	115VAC			0.3	A
	220VAC			0.2	A
Surge current	115VAC			10	A
	220VAC			20	A
External fuse	1A-2A/250VAC slow-fusing				
Leakage current	0.5mA TYP/230VAC/50Hz				

Example:

15ACB1EW_05S4

15 = 15Watt; AC = AC-DC; B1 = Series; E = 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		± 2.0	± 4.0	%
Line Regulation	Nominal Load			± 0.5	%
Load regulation	Nominal input Voltage, 20%~100% load			± 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%	Overshoot amplitude (%): $\leq \pm 10$			
	Recovery time 50%~75%~50%	Recovery time (mS): ≤ 5.0			
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 $T_a = 25^\circ C$, 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.

15ACB1EW_4 series

15W - AC-DC converter

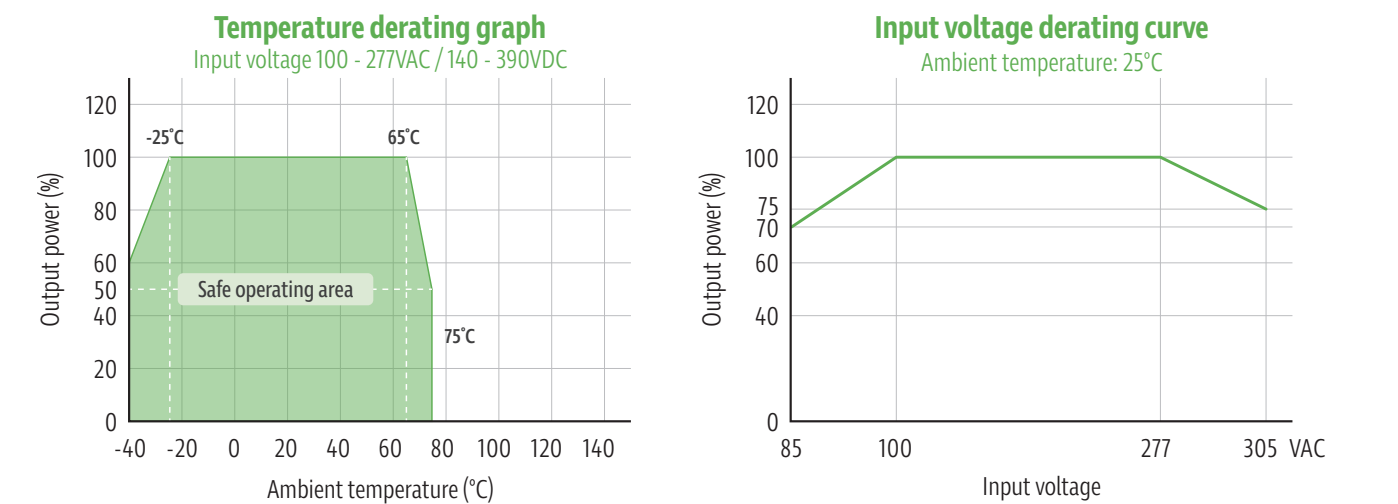
EMC specifications					
EMC	EMI	CE	CISPR22/EN55032	CLASS B	
EMC	EMI	RE	CISPR22/EN55032	CLASS B	
EMC	EMS	RS	IEC/EN61000-4-3	10V/m	Perf.Criteria B (see recommended circuit Photo 1)
EMC	EMS	CS	IEC/EN61000-4-6	3Vr.m.s	Perf.Criteria B (see recommended circuit Photo 1)
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / 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. (%)
	15ACB1EW_03S4	10	3.3	3000	3000	80	71
	15ACB1EW_05S4	15	5	3000	1000	80	74
	15ACB1EW_09S4	15	9	1667	1000	80	82
	15ACB1EW_12S4	15	12	1250	800	80	84
	15ACB1EW_15S4	15	15	1000	800	100	85
	15ACB1EW_24S4	15	24	625	500	100	86

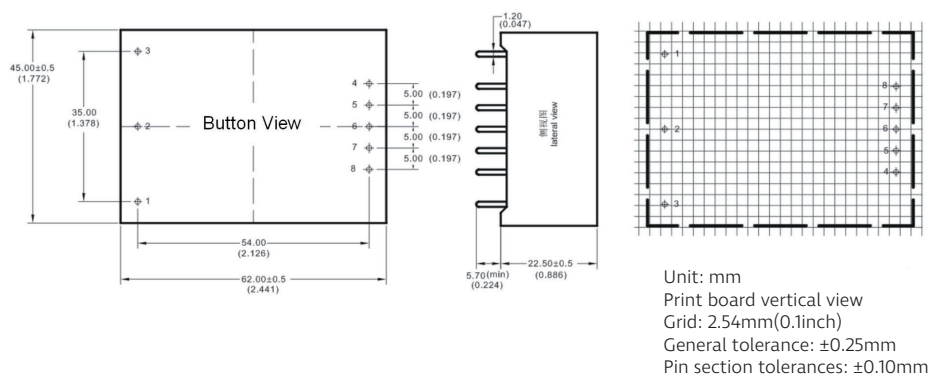
Note:
1: Please add suffix /CMfor chassis mounting, and suffix /DRfor DIN-Rail mounting, DIN-Rail width is 35mm (15ACB1EW_24S4/CM/DR)
2:The typical output efficiency is based on that product is full loaded and burned-in after half an hour.
3: The fluctuation range of full load efficiency (%typ) is ±2%, full load output efficiency = total output power/module’s input power.

Product characteristic curve



Note
1. The input voltage is 85~100VAC/277~305VAC/120~140VDC/390~430VDC, which needs to be derated based on the input voltage derating curve.
2. This product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

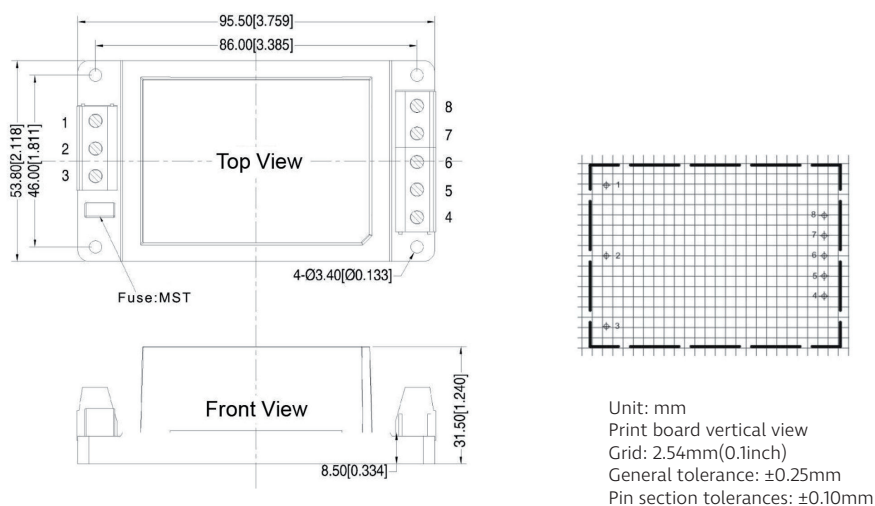
Standard packing dimensions



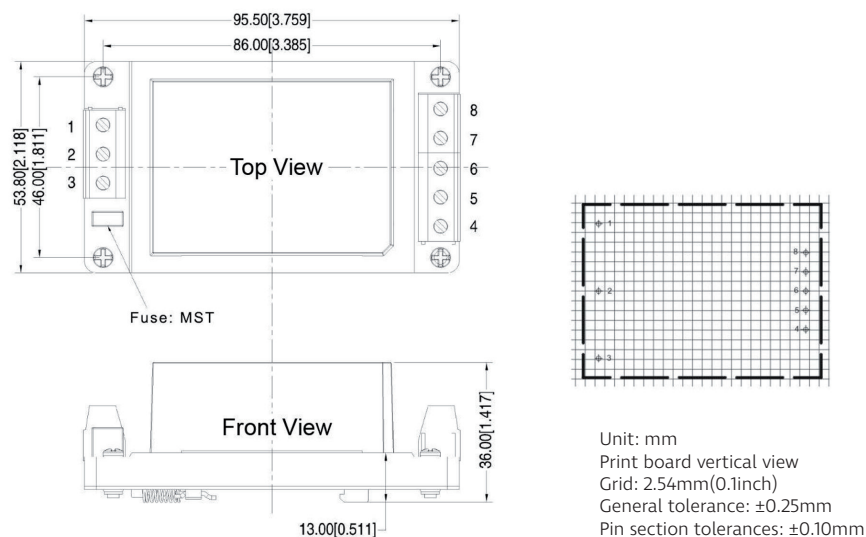
Pin-out	1	2	3	4	8
Single (S)	FG	AC (N)	AC (L)	+Vo	-Vo
Function	No PIN	Neutral input	Firewire input	output positive	output negative

Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Chassis mounting dimensions

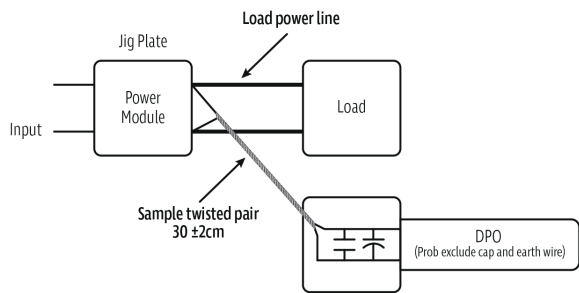


DIN rail mounting dimensions



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

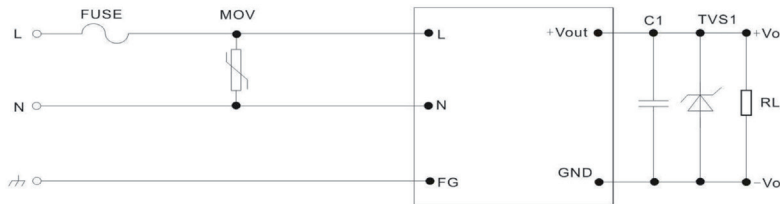


Photo 1

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

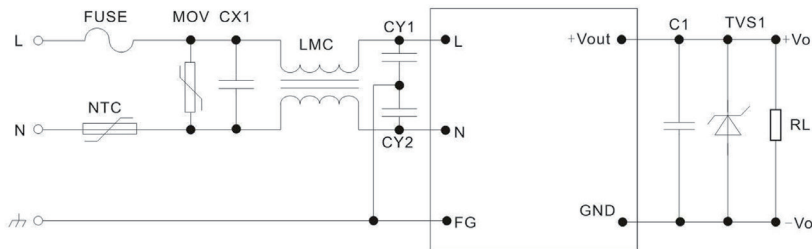


Photo 2

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		