

## 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<br>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   |                                        | $\pm 2.0$      | $\pm 4.0$ | %     |
| Line Regulation           | Nominal Load                         |                                        |                | $\pm 0.5$ | %     |
| Load regulation           | Nominal input Voltage, 20%~100% load |                                        |                | $\pm 1.0$ | %     |
| No load power consumption | Input 115VAC<br>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): $\leq 5.0$         |                |           |       |
| 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

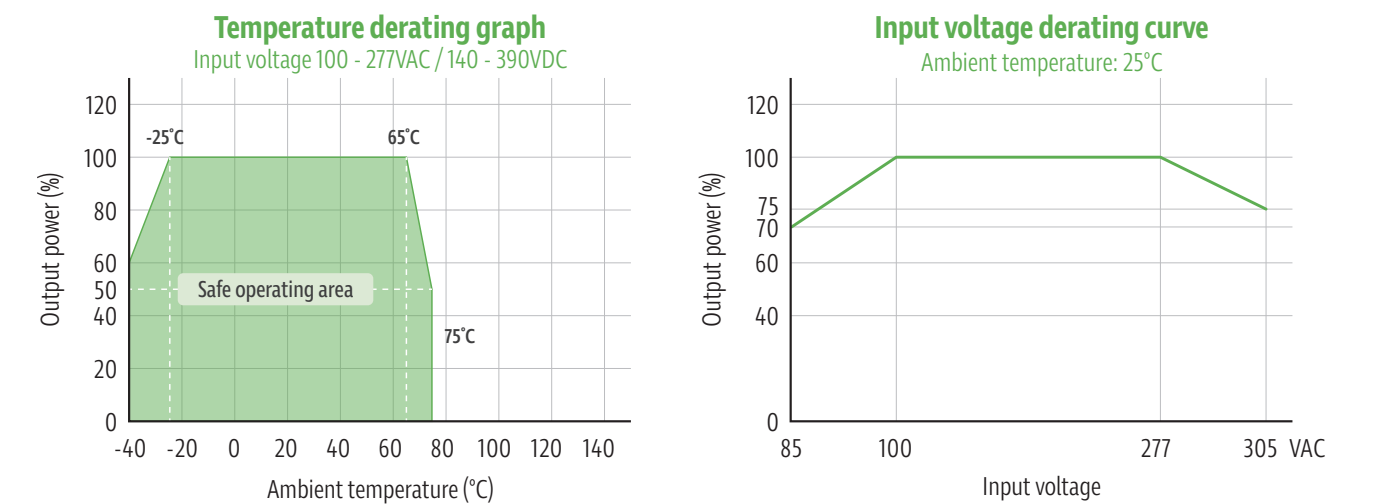
| EMC specifications |     |                                |                  |                         |                                                   |
|--------------------|-----|--------------------------------|------------------|-------------------------|---------------------------------------------------|
| 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                                    |

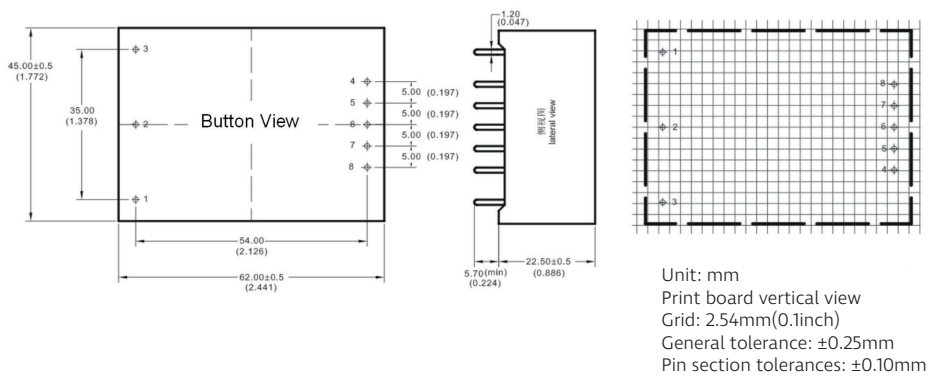
Note:  
1: Please add suffix /CMfor chassis mounting, and suffix /DRfor DIN-Rail mounting, DIN-Rail width is 35mm (15ACB1EW\_24S4/CM/DR)  
2:The typical output efficiency is based on that product is full loaded and burned-in after half an hour.  
3: The fluctuation range of full load efficiency (%typ) 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.

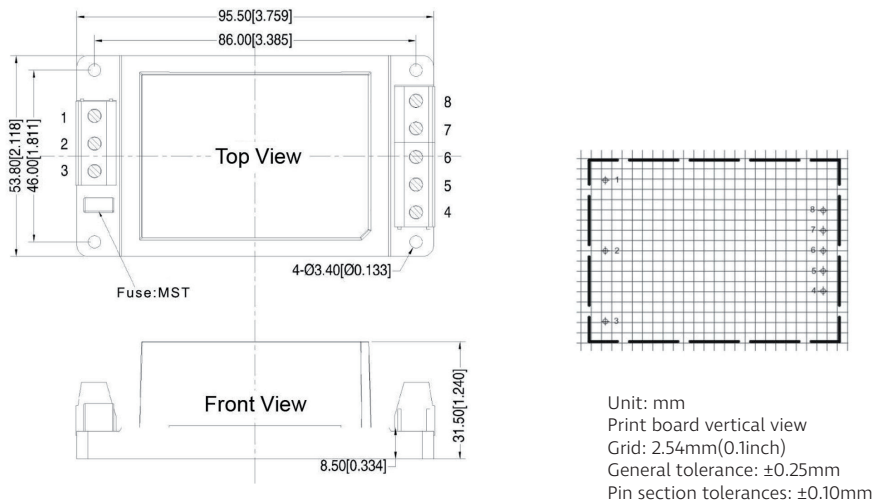
Standard packing dimensions



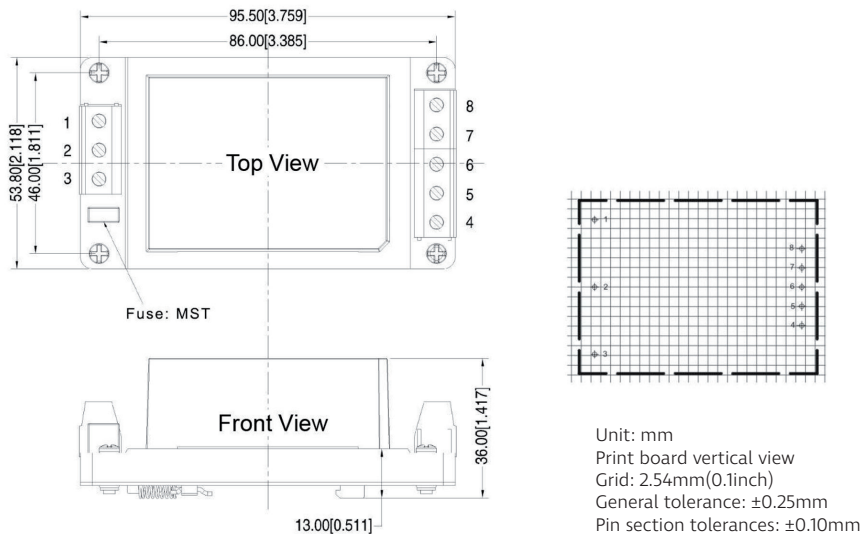
|            |        |               |                |                 |                 |
|------------|--------|---------------|----------------|-----------------|-----------------|
| Pin-out    | 1      | 2             | 3              | 4               | 8               |
| Single (S) | FG     | 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.

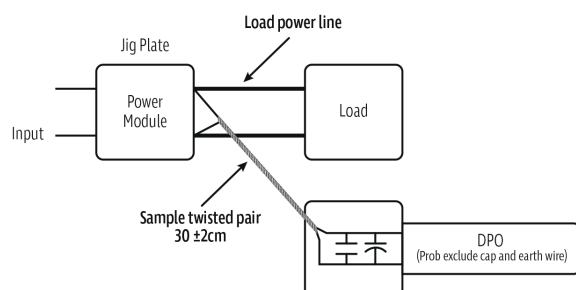
Chassis mounting dimensions



DIN rail mounting dimensions



Twisted pair method (20MHz bandwidth)



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 ( $\pm 2$  cm) sampling line, and select the power line from appropriately insulated wires of the corresponding diameter according to the output current flow.

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.

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                   |           |                                                   |