## Typical Features

- ◆ Wide input voltage range: 85-265VAC/120-380VDC
- ◆ No load power consumption≤0.3W
- ◆ Transfer efficiency (typ. 78%)
- ◆ Switching Frequency: 65KHz
- ◆ Protections: Short Circuit, over current, over temperature
- ◆ Isolation Voltage 4000Vac
- ◆ 6 side shield plastic case, meet UL94 V-0
- ◆ PCB mounting


## Application Field

**FA15-220E05XXF2D4** Series----- a compact size, high efficient, power converter offered by Aipu.
It features universal input voltage, DC and AC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation. It widely used in power, industrial, instrument and smart home applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

## Typical Product List

| Certificate | Model | Output Specification | | | | | Max. Capacitive Load | Ripple& Noise 20MHz (TYP.) | Efficiency@ Full Load, 220Vac (TYP.) |
|---|---|---|---|---|---|---|---|---|---|
| | | Power | Voltage 1 | Current 1 | Voltage 2 | Current 2 | | | |
| | | (W) | Vo1(V) | Io1(m A) | Vo2(V) | Io2(m A) | u F | mVp-p | % |
| / | FA15-220E0512F2D4 | 15 | 5 | 2000 | 12 | 400 | 1000/680 | 80/100 | 77 |
| | FA15-220E0524F2D4 | 15 | 5 | 2000 | 24 | 200 | 1000/470 | 80/100 | 78 |

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.

Note 2:."*" is model under developing.

Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

Note 4: The fluctuation range of full load efficiency(%,TYP) is ±2%, full load output efficiency= total output power/module's input power.

Note 5: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back.

## Input Specification

| Item | Operating Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| 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 | / | / | 0.30 | A |
| | 220VAC | / | / | 0.15 | |
| Surge Current | 115VAC | / | / | 10 | |
| | 220VAC | / | / | 20 | |

| | | |
|---|---|---|
| Leakage Current | - | 0.5mA TYP/230VAC/50Hz |
| External fuse recommended value | - | 1A-2A/250VAC slow-fusing |
| Hot plug | - | Unavailable |
| Remote control terminal | - | Unavailable |

## Output Specification

| Item | Operating Condition | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Voltage Accuracy | Full input voltage range Any load | Vo1 | - | ±2.0 | ±3.0 | % |
| | | Vo2 | - | ±5.0 | ±8.0 | % |
| Line Regulation | Nominal Load | Vo1 | - | - | ±0.5 | % |
| | | Vo2 | - | - | ±1.5 | % |
| Load Regulation | Nominal input voltage 20%~100% load | Vo1 | - | - | ±1.0 | % |
| | | Vo2 | - | - | ±5.0 | % |
| No load power consumption | Input 115VAC | | - | - | 0.3 | W |
| | Input 220VAC | | - | - | | |
| Minimum load | Single Output | | 0 | - | - | % |
| | Dual output common grounded | | - | - | 10 | % |
| | Dual output isolated | | - | - | 10 | |
| Turn-on Delay Time | Nominal input voltage (full load) | | - | 1000 | - | mS |
| Power-off Holding Time | Input 115VAC (full load) | | | 80 | | mS |
| | Input 220VAC (full load) | | -- | 100 | - | |
| Output Dynamic Characteristics | 25%~50%~25% 50%~75%~50% | | Overshoot range(%):≤±5.0 | | | % |
| | | | Recovery time(mS):≤5.0 | | | mS |
| Output Overshooting | Full input voltage range | | ≤10%Vo | | | % |
| Short Circuit Protection | | | Continuous, Self-recovery | | | Hiccup |
| Drift Coefficient | - | | - | ±0.03% | - | %/℃ |
| Over Current Protection | Input 220VAC | | ≥130% Io, Self-recovery | | | Hiccup |
| Ripple & Noise | - | | - | ±0.03% | - | %/℃ |
| | - | | - | 50 | 100 | mV |
| | Note: it is tested by Twist Pair Method, for details please check datasheet at back. | | | | | |

## General Specifications

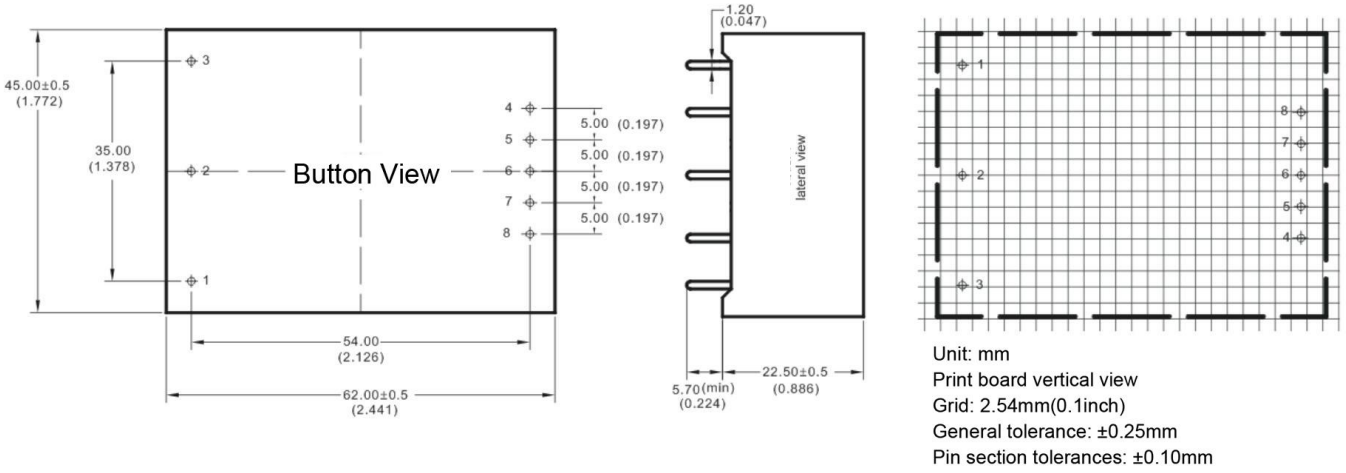
| Item | Operating Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Switching Frequency | - | - | 65 | - | KHz |
| Operating Temperature | - | -30 | - | +75 | ℃ |
| Storage Temperature | - | -30 | - | +85 | |
| Soldering Temperature | Wave-soldering | 260±4℃, timing 5-10S | | | |
| | Manual-soldering | 360±8℃, timing 4-7S | | | |
| Relative Humidity | - | 10 | - | 90 | %RH |
| Isolation Voltage | Input-Output Test 1min, leakage current≤5mA | 4000 | - | - | VAC |
| Insulation Resistance | Input-Output @DC500V | 100 | - | - | MΩ |
| Safety Standard | - | EN60950、IEC60950 | | | |
| Vibration | - | 10-55Hz,10G,30Min,alongX,Y,Z | | | |
| Safety Class | - | CLASSⅡ | | | |
| Class of Case Material | - | UL94 V-0 | | | |
| MTBF | - | MIL-HDBK-217F@25℃＞300,000H | | | |

## EMC Characteristics

| Total Item | | Sub Item | Test Standard | Class |
|---|---|---|---|---|
| EMC | EMI | CE | CISPR22/EN55032 | CLASS B (see recommended circuit Photo 1） |
| | | RE | CISPR22/EN55032 | CLASS B (see recommended circuit Photo 1） |
| | EMS | ESD | IEC/EN61000-4-2 | Contact ±6KV / Air ±8KV Perf.Criteria B |
| | | Surge | IEC/EN61000-4-5 | ±1KV Perf.Criteria B |
| | | EFT | IEC/EN61000-4-4 | ±2KV Perf.Criteria B |
| | | Voltage dips, short interruptions and voltage variations immunity | IEC/EN61000-4-11 | 0%~70% Perf.Criteria B |

/

## Packing Dimension




Unit: mm
Print board vertical view
Grid: 2.54mm(0.1inch)
General tolerance: ±0.25mm
Pin section tolerances: ±0.10mm

| Packing Code | L x W x H | |
|---|---|---|
| F2 | 62.0 x 45.0 x 22.5 mm | 2.441 × 1.772 × 0.885inch |

## Pin Definition

| **Pin-out** | 1 | 2 | 3 | 4 | 5 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| **Single(S)** | FG | AC(N) | AC(L) | +Vo2 | -Vo2 | +Vo1 | -Vo1 |

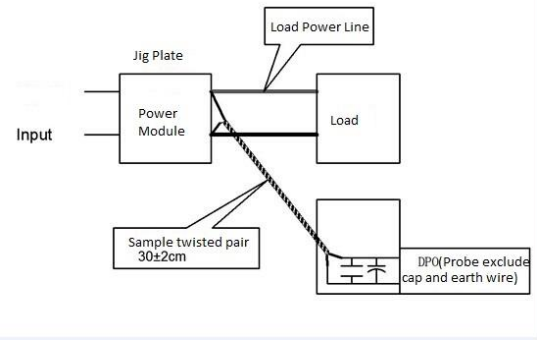
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

## Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

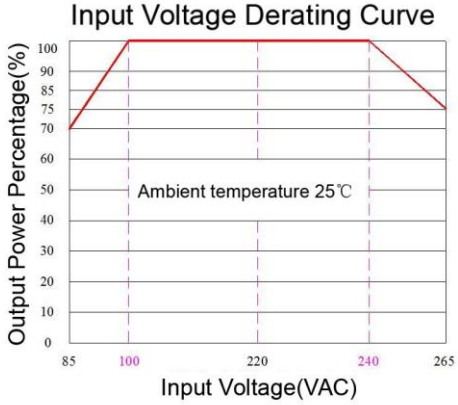
Test Method:

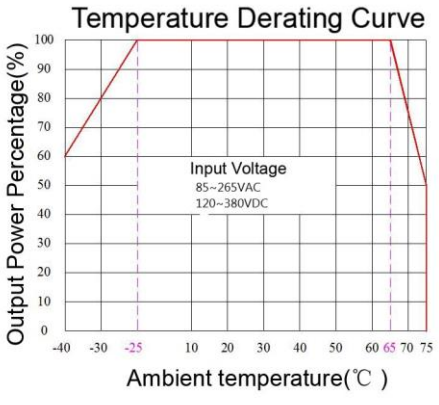
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.




## 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.

## Typical EMC Circuit and Recommended Specification

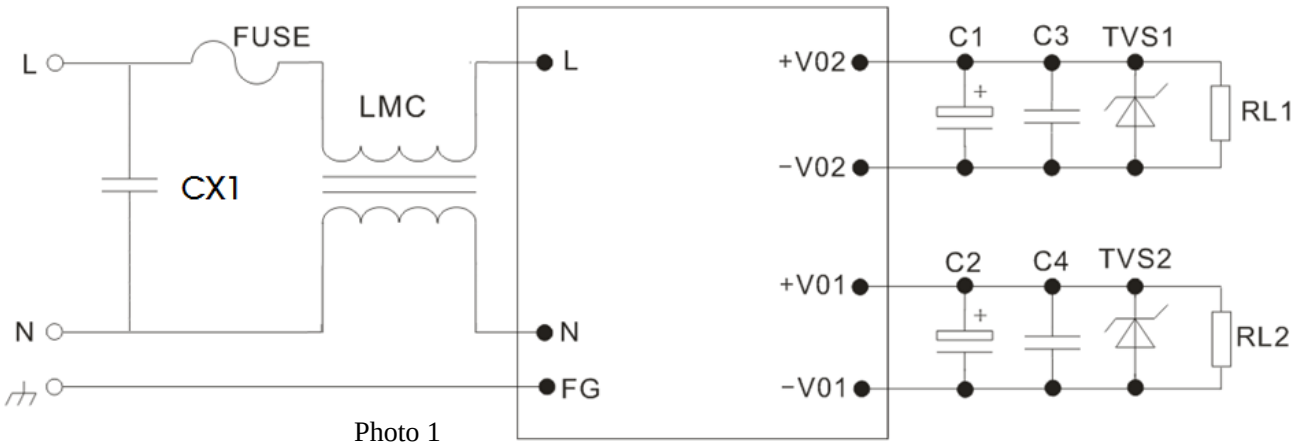



Photo 1

Note 1:

1) FUSE, recommended to use 2A~250Vac, slow fusing, block form;

2) LMC is Common mode inductor, recommended to above 30mH;

3) CX1 is X capacitor, recommend 0.22uF/275V;

4) C1, C2 choose high frequency low impedance electrolytic capacitor, the capacitance lower than capacitive load, withstand voltage value is above 1.5 times more than output voltage;

5) C3, C4 choose 0.1uF ceramic chip capacitor, withstand voltage value is above 1.5 times more than output voltage;

6) TVS1, TVS2 is TVS tube: 5V output recommended: SMBJ7.0A, 9V output recommended: SMBJ12.0A, 12V output recommended: SMBJ20A, 15V output recommended: SMBJ20.0A, 24V output recommended: SMBJ30.0A, 48V output recommended: SMBJ64A.

Note :

1.The product should be used under the specification range, otherwise it will cause permanent damage to it.

2.Product's input terminal should connect to fuse;

3.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;

4.Unless otherwise specified, data in this datasheet are tested under conditions of **Ta=25℃**, **humidity<75%** when inputting nominal voltage and outputting rated load(pure resistance load);

5.All index testing methods in this datasheet are based on our Company's corporate standards

6.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;

7.We can provide customized product service;

8.The product specification may be changed at any time without prior notice.