## Typical Features

- ◆Wide Input Voltage Range: 90-265VAC/127-375VDC
- ◆No load power consumption≤0.3W
- ◆Transfer Efficiency: 82% (typ.)
- ◆Switching Frequency: 65KHz
- ◆Protections: Short-circuit, Over-current, Over-temperature
- ◆Isolation voltage: 4000Vac
- ◆Meet IEC62368/UL62368/EN62368 test standard
- ◆Conform to CE, RoHS
- ◆Plastic Case , meet UL94 V-0
- ◆PCB Mounting


## Application Field

**FA5-220SXXY2D4** *Series-----a compact size, high efficient, meet CE standard power converter offered by Aipu. It features universal input voltage range, AC and DC dual-use, low ripple, low temperature rise, low power consumption, high efficiency, high reliability, safer isolation, with good EMC performance, meet EN55032, IEC/EN61000 standard. The series widely used for power, industry, instrument, smart home application, ect. The application circuit in the datasheet is strongly recommended for harsh EMC environment.*

## Typical Product List

| Certificate | Part No | Output Specification | | | Max. Capacitive Load | Ripple& Noise 20MHz (MAX) | Efficiency@ Full Load, 220Vac (Typical) |
|---|---|---|---|---|---|---|---|
| | | Power | Voltage 1 | Current 1 | | | |
| | | (W) | Vo1 (V) | Io1 (m A) | uF | mVp-p | % |
| - | FA5-220S3V3Y2D4 | 4.1 | 3.3 | 1250 | 2000 | 80 | 69 |
| | FA5-220S05Y2D4 | 5 | 5 | 1000 | 1000 | 80 | 71 |
| | FA5-220S09Y2D4 | 5 | 9 | 556 | 470 | 120 | 74 |
| | FA5-220S12Y2D4 | 5 | 12 | 416 | 100 | 120 | 78 |
| | FA5-220S15Y2D4 | 5 | 15 | 333 | 100 | 120 | 78 |
| | FA5-220S24Y2D4 | 5 | 24 | 208 | 100 | 120 | 82 |

Note 1: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.

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

Note 3: -T is chassis mounting(with heatsink), -TS is din-rail mounting(with heatsink), din-rail width 35mm.

## Input Specifications

| Item | Operating Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Input Voltage Range | AC Input | 90 | 220 | 265 | VAC |
| | DC Input | 127 | 310 | 375 | VDC |

| | | | | | |
|---|---|---|---|---|---|
| Input Frequency Range | - | 47 | 50 | 63 | Hz |
| Input Current | 115VAC | / | / | 0.10 | A |
| | 220VAC | / | / | 0.06 | |
| Surge Current | 115VAC | - | - | 10 | |
| | 220VAC | - | / | 20 | |
| Leakage Current | - | 0.5mA TYP/230VAC/50Hz | | | |
| External Fuse Recommend Value | - | 1A-3A/250VAC slow-fusing | | | |
| Hot Plug | - | Unavailable | | | |
| Remote Control Terminal | - | Unavailable | | | |

## Output Specifications

| Item | | Operating Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Voltage Accuracy | | Full input voltage range, 10%-100% load | - | ±2.0 | ±5.0 | % |
| Line Regulation | | Nominal Load | - | ±1.0 | ±3.0 | % |
| Load Regulation | | Nominal input voltage,20%~100% load | - | ±1.0 | ±3.0 | % |
| No Load Power Consumption | | Input 115VAC | - | - | 0.3 | W |
| | | Input 220VAC | - | - | | |
| Minimum Load | | Single Output | 10 | - | - | % |
| Turn-on Delay Time | | Nominal input voltage (full load) | - | 600 | - | mS |
| Power-off Holding Time | | Input 115VAC (full load) | - | 100 | - | mS |
| | | Input 220VAC (full load) | - | 80 | - | |
| Dynamic Response | Overshoot range | 25%~50%~25%<br>50%~75%~50% | -5.0 | - | +5.0 | % |
| | Recovery time | | -5.0 | - | +5.0 | mS |
| Output Over-shoot | | Full input voltage range | ≤10%Vo | | | % |
| Short circuit protection | | | Continuous, Self-recovery | | | Hiccup |
| Drift Coefficient | | - | - | ±0.03% | - | %/℃ |
| Over Current Protection | | Input 220VAC | ≥120% Io Self-recovery | | | Hiccup |
| Ripple & Noise | | Output Vo≤5VDC | - | 40 | 80 | mV |
| | | Output Vo＞5VDC | - | 60 | 120 | |
| | | Note: Ripple& Noise is tested by Twisted Pair Method, details please see Ripple& Noise Test at back. | | | | |

## General Specifications

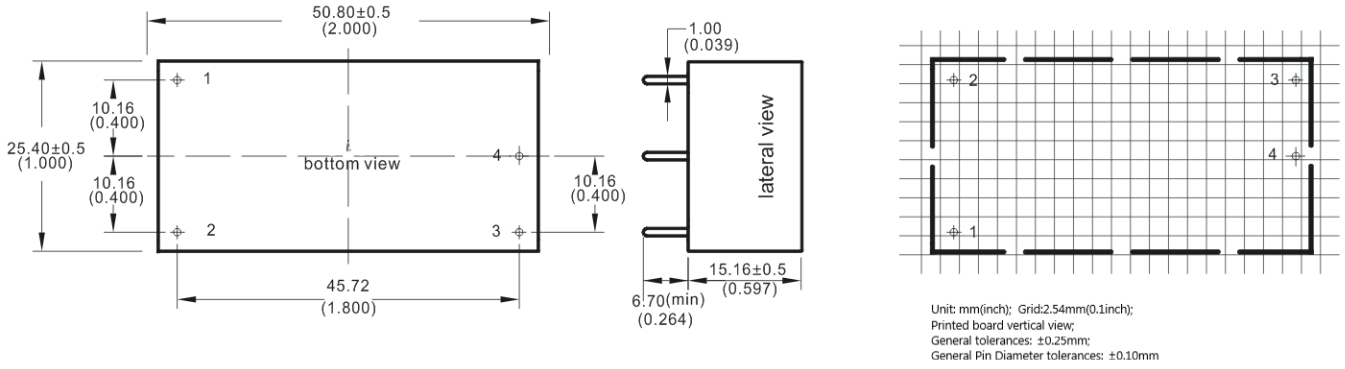
| Items | Operating Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Switching Frequency | - | - | 65 | - | KHz |

| | | | | | | |
|---|---|---|---|---|---|---|
| Operating Temperature | | - | -40 | - | +75 | ℃ |
| Storage Temperature | | - | -40 | - | +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 | | - | CLASS Ⅱ | | | |
| 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 |
| | | RE | CISPR22/EN55032 | CLASS B |
| | EMS | RS | IEC/EN61000-4-3 | 10V/m Perf.Criteria B (see recommended circuit Photo 1) |
| | | CS | IEC/EN61000-4-6 | 3Vr.m.s Perf.Criteria B (see recommended circuit Photo 1) |
| | | ESD | IEC/EN61000-4-2 | Contact ±6KV / Air ±8KV Perf.Criteria B |
| | | Surge | IEC/EN61000-4-5 | line to line ±2KV / line to ground ±4KV Perf.Criteria B (see recommend circuit Photo 1) |
| | | EFT | IEC/EN61000-4-4 | ±2KV Perf.Criteria B |
| | | Voltage dips and interruptions | IEC/EN61000-4-11 | 0%~70% Perf.Criteria B |

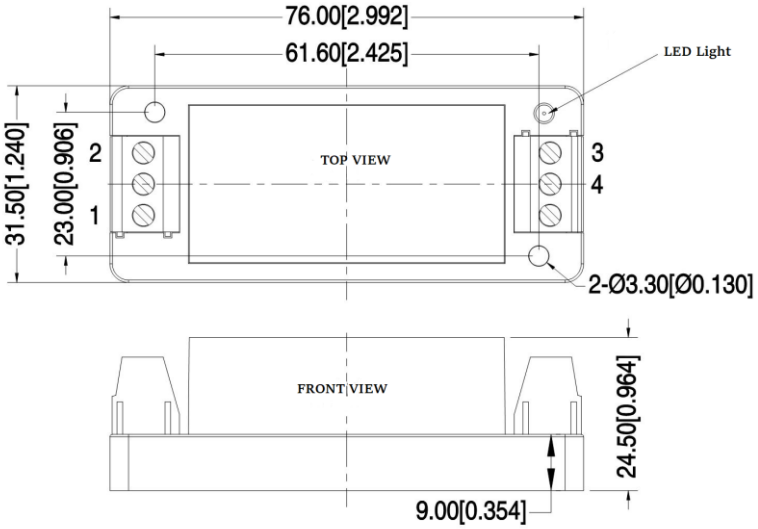
## Y2 Packing Dimension



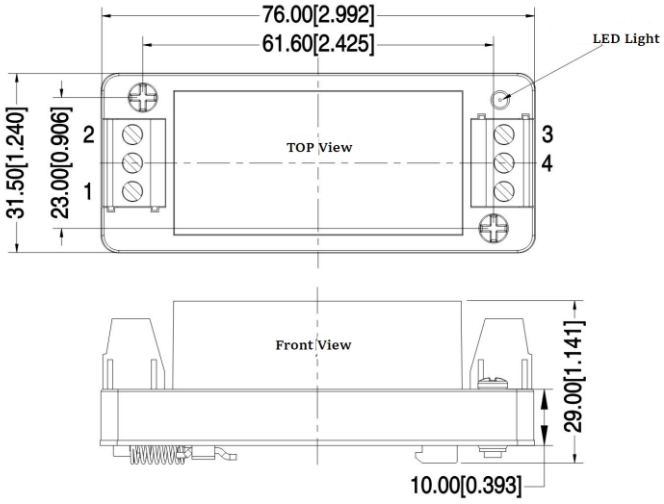

## Pin Definition

| Pin-out | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Single(S) | AC(L) | AC(N) | +Vo | -Vo |

## Y2-T Packing Dimension




## Y2-TS Packing Dimension




| Packing Code | L x W x H | |
|---|---|---|
| Y2 | 50.8X25.4X15.16 mm | 2.000X1.000X0.597inch |
| Y2-T | 76.0X31.5X24.5mm | 2.992X1.240X0.964inch |
| Y2-TS | 76.0X31.5X29.0mm | 2.992X1.240X1.141inch |

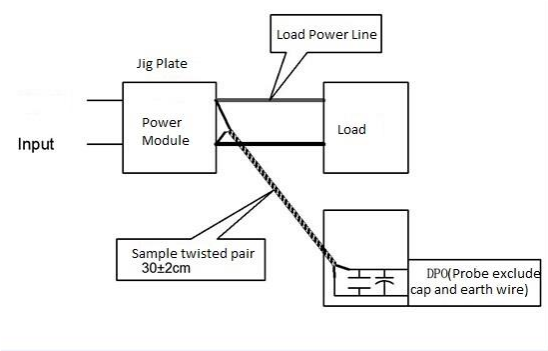
## Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

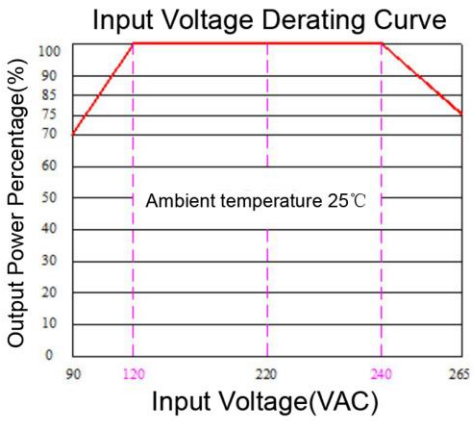
Test Method:

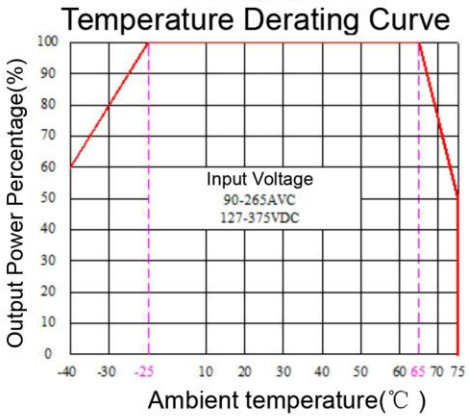
(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(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




Note1: Input Voltage should be derated base on Input Voltage Derating Curve when it is 90~120VAC/240~265VAC/ 127~170VDC/340~380VDC

Note 2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

## Typical EMC Recommended Application Circuit

1. Recommended Circuit:

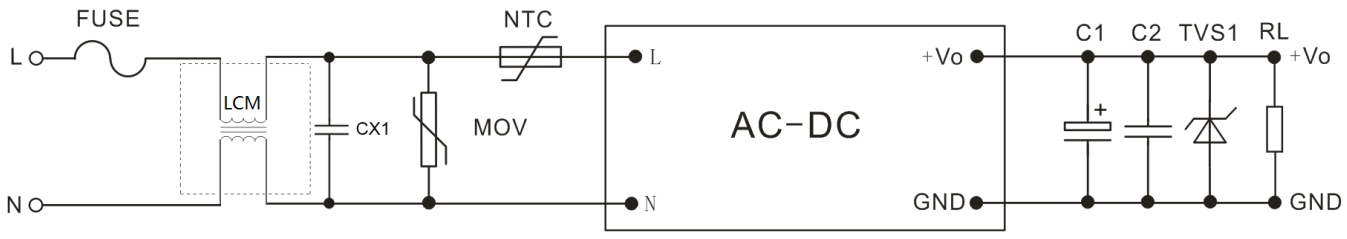



Photo 1

Note:

1. FUSE: necessary, suggest 2A~250Vac, slow fusing, block form;
2. MOV is voltage dependent resistor, suggest model: 10D561K;
3. LCM is common mode inductance, recommended value above 30mH; CX1 is X Capacitor, recommended value: 0.22uF/275V;
4. NTC1 is thermistors, suggest model:5D-11, to prevent the module from damage when lighting surge.
5. C1 is high frequency low impedance electrolytic capacitor whose capacitance value less than capacitive load, withstand voltage is above 1.5 times or more of output voltage.
6. C2 is 0.1uF ceramic chip capacitors, withstand voltage is 1.5 times more than output voltage.

7. TVS1 is TVS tube:

5V output recommend: SMBJ7.0A，9V output recommend:SMBJ12.0A, 12V output recommend:SMBJ20A, 15V output recommend :SMBJ20.0A, 24V output recommend:SMBJ30.0A, 48V output recommend: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.