



**DESCRIPTION: 3W 3KVAC Isolation Wide Input AC/DC Converters**

The rated output power of TP03AA series is 3W with wide input voltage range, for both AC input and DC input application. High reliability, precision, large power density, ultra-small size, no external heat sink required, stable output voltage and etc, with over current protection, EMI filter circuit, the rectifier filter circuit, 3000V isolation voltage, short circuit, overload, internal thermal protection, Widely used in telecommunications, industrial control, instrument, data acquisition, signal control and other electronic systems.

**FEATURES**

|                               |                                  |                                     |
|-------------------------------|----------------------------------|-------------------------------------|
| Universal input voltage range | Both for AC and DC input voltage | Wide input voltage:2:1 and 4:1      |
| Fixed switching frequency     | Overheat protection              | Over current protection             |
| Short circuit protection      | RoHS compliant                   | Operating temperature : -40℃ to 70℃ |

**SELECTION GUIDE**

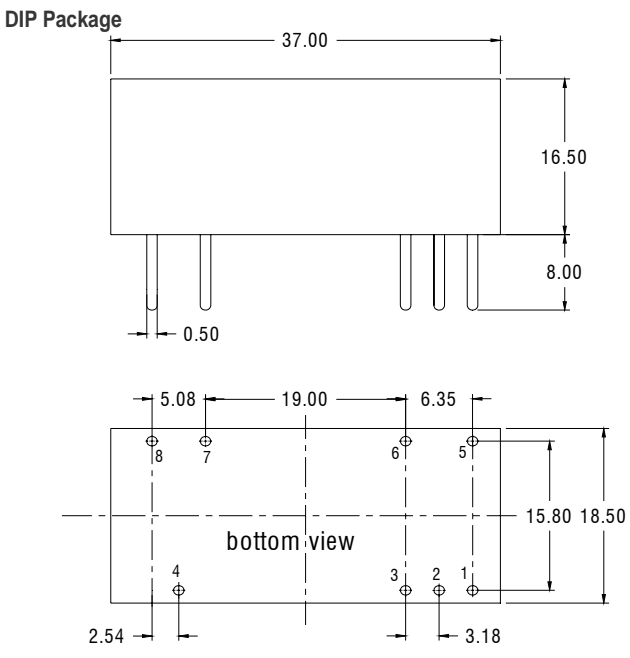
| Part Number      | Input Voltage |                    | Output        |             | Efficiency (Typ.) % | Recommend output external capacitor |                     |           |
|------------------|---------------|--------------------|---------------|-------------|---------------------|-------------------------------------|---------------------|-----------|
|                  | Rated         | Range values (VAC) | Voltage (VDC) | Current (A) |                     | C1、C2、C3                            | C4                  | C5、C6     |
|                  |               |                    |               |             |                     |                                     |                     |           |
| TP03AA220S05     | 220(2:1)      | 165-265            | 5             | 0.5         | 71                  | 0.1uF/25V                           | 330uF/16V           | /         |
| TP03AA220S12     | 220(2:1)      | 165-265            | 12            | 0.22        | 76                  | 0.1uF/25V                           | 220uF/25V           | /         |
| TP03AA220S15     | 220(2:1)      | 165-265            | 15            | 0.17        | 77                  | 0.1uF/25V                           | 220uF/25V           | /         |
| TP03AA220S24     | 220(2:1)      | 165-265            | 24            | 0.11        | 77                  | 0.1uF/25V                           | 100uF/35V           | /         |
| TP03AA220D05     | 220(2:1)      | 165-265            | ±5            | ±0.25       | 71                  | 0.1uF/25V                           | 220uF/16V           | 220uF/16V |
| TP03AA220D12     | 220(2:1)      | 165-265            | ±12           | ±0.11       | 76                  | 0.1uF/25V                           | 100uF/25V           | 100uF/25V |
| TP03AA220D15     | 220(2:1)      | 165-265            | ±15           | ±0.09       | 78                  | 0.1uF/25V                           | 100uF/25V           | 100uF/25V |
| TP03AA220D05P05  | 220(2:1)      | 165-265            | +5/+5         | 0.4/0.1     | 71                  | 0.1uF/25V                           | 330uF/16V           | 220uF/16V |
| TP03AA220D05P12  | 220(2:1)      | 165-265            | +5/+12        | 0.3/0.1     | 73                  | 0.1uF/25V                           | 330uF/16V           | 100uF/25V |
| TP03AA220D05P15  | 220(2:1)      | 165-265            | +5/+15        | 0.3/0.08    | 73                  | 0.1uF/25V                           | 330uF/16V           | 100uF/25V |
| TP03AA220D05P24  | 220(2:1)      | 165-265            | +5/+24        | 0.25/0.06   | 73                  | 0.1uF/25V                           | 330uF/16V/330uF/16V | 47uF/35V  |
| TP03AA220S05W    | 220(4:1)      | 85-265             | 5             | 0.5         | 71                  | 0.1uF/25V                           | 330uF/16V           | /         |
| TP03AA220S12W    | 220(4:1)      | 85-265             | 12            | 0.22        | 76                  | 0.1uF/25V                           | 220uF/25V           | /         |
| TP03AA220S15W    | 220(4:1)      | 85-265             | 15            | 0.17        | 77                  | 0.1uF/25V                           | 220uF/25V           | /         |
| TP03AA220S24W    | 220(4:1)      | 85-265             | 24            | 0.11        | 77                  | 0.1uF/25V                           | 100uF/35V           | /         |
| TP03AA220D05W    | 220(4:1)      | 85-265             | ±5            | ±0.25       | 71                  | 0.1uF/25V                           | 220uF/16V           | 220uF/16V |
| TP03AA220D12W    | 220(4:1)      | 85-265             | ±12           | ±0.11       | 76                  | 0.1uF/25V                           | 100uF/25V           | 100uF/25V |
| TP03AA220D15W    | 220(4:1)      | 85-265             | ±15           | ±0.09       | 78                  | 0.1uF/25V                           | 100uF/25V           | 100uF/25V |
| TP03AA220D05P03W | 220(4:1)      | 85-265             | +5/+3.3       | 0.4/0.1     | 70                  | 0.1uF/25V                           | 0.1uF/25V           | 220uF/16V |
| TP03AA220D05P05W | 220(4:1)      | 85-265             | +5/+5         | 0.4/0.1     | 71                  | 0.1uF/25V                           | 330uF/16V           | 220uF/16V |
| TP03AA220D05P12W | 220(4:1)      | 85-265             | +5/+12        | 0.3/0.1     | 73                  | 0.1uF/25V                           | 330uF/16V           | 100uF/25V |
| TP03AA220D05P15W | 220(4:1)      | 85-265             | +5/+15        | 0.3/0.08    | 73                  | 0.1uF/25V                           | 330uF/16V           | 100uF/25V |
| TP03AA220D05P24W | 220(4:1)      | 85-265             | +5/+24        | 0.25/0.06   | 73                  | 0.1uF/25V                           | 330uF/16V           | 47uF/35V  |

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

| GENERAL CHARACTERISTICS     |   |      |               |      |       |
|-----------------------------|---|------|---------------|------|-------|
| Parameter                   | Conditions  | Min. | Typ.          | Max. | Units |
| Isolation voltage           | Input / Output 1 minute, leakage current 2mA  |      | 3000          |      | VAC   |
| Seismic                     | 10~55Hz   | 5    | 5             |      | G     |
| Over current protection     | Full input range  |      | Auto recovery |      |       |
| Cooling                     | Free air convection   |      |               |      |       |
| Case material               | Flame-retardant plastic   |      |               |      |       |
| INPUT CHARACTERISTICS       |   |      |               |      |       |
| Parameter                   | Conditions  | Min. | Typ.          | Max. | Units |
| Startup voltage             | 220VAC In module(165V-265V)   | 165  | 220           | 265  | VAC   |
| Startup voltage             | 220VAC In module(85V-265V)  | 85   | 220           | 265  | VAC   |
| Start rising time           | Non-capacitive load   | 20   |               |      | ms    |
| OUTPUT CHARACTERISTICS      |   |      |               |      |       |
| Parameter                   | Conditions  | Min. | Typ.          | Max. | Units |
| Voltage accuracy            | $I_o=0.1\cdots 1.0 \times I_{onom}$ $V_i=V_i$ rated   |      |               | ±3   | %     |
|                             |   |      |               | ±5   | %     |
| Line regulation             | $V_{imin} \leq V_i \leq V_{imax}$   |      | ±0.5          |      | %     |
| Load regulation             | $I_o=0.1\cdots 1.0 \times I_{onom}$ $V_{imin} \leq V_i \leq V_{imax}$                       |      | ±1            |      | %     |
| Auxiliary voltage accuracy  | Main Load and auxiliary load differ 25%,the auxiliary circuit of the load with at least 25% |      |               | ±3   | %     |
| Ripple and noise            | 20MHz bandwidth   |      |               | ±1   | %     |
| Over-current protection     | $V_{imin} \leq V_i \leq V_{imax}$   | 120  |               |      | %     |
| Switch frequency            | $V_{imin} \leq V_i \leq V_{imax}$   |      | 100K          |      | Hz    |
| ENVIRONMENT CHARACTERISTICS |   |      |               |      |       |
| Parameter                   | Conditions  | Min. | Typ.          | Max. | Units |
| Operating temperature       | industrial-class  | -40  |               | +70  | °C    |
| Maximum case temperature    | industrial-class  |      |               | +95  | °C    |
| Storage temperature         | Industry-class  | -30  |               | +105 | °C    |
| Relative humidity           | No condensation   | 25   |               | 90   | RH(%) |
| Temperature coefficient     |   |      | ±0.02         |      | %/°C  |

- Case temperature shall not exceed the maximum case temperature.

**MECHANICAL DIMENSIONS** **PIN CONNECTIONS**



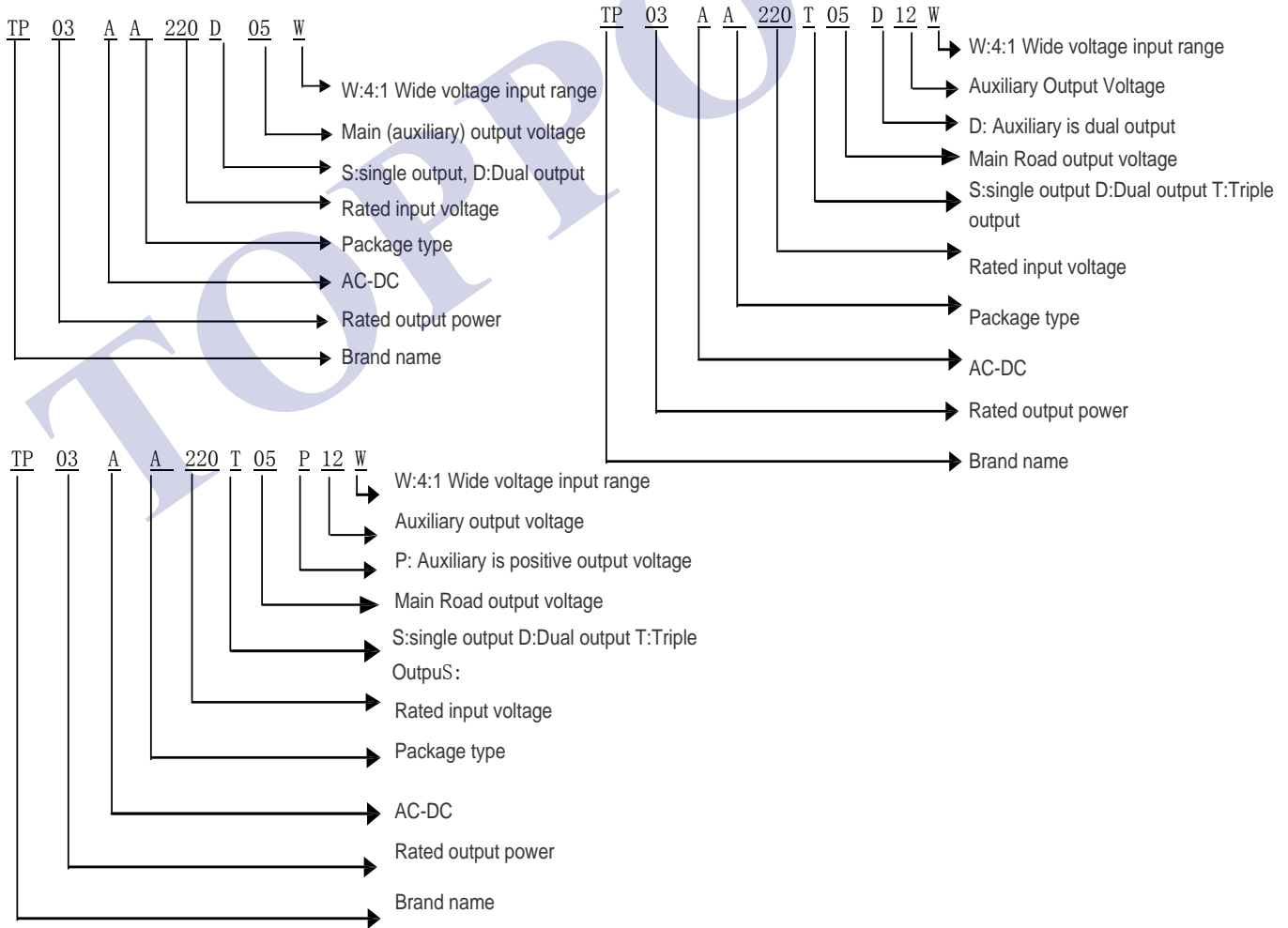
| Pin | Single output | Dual output (Com) | Dual output (NC) |
|-----|---------------|-------------------|------------------|
| 1   | Vo            | Vo1               | +Vo1             |
| 2   | NC            | NC                | NC               |
| 3   | GND           | GND               | -Vo1             |
| 4   | P             | P                 | P                |
| 5   | NC            | Vo2               | +Vo2             |
| 6   | GND           | GND               | -Vo2             |
| 7   | N             | N                 | N                |
| 8   | L             | L                 | L                |

\* Pin not fitted on single output variants

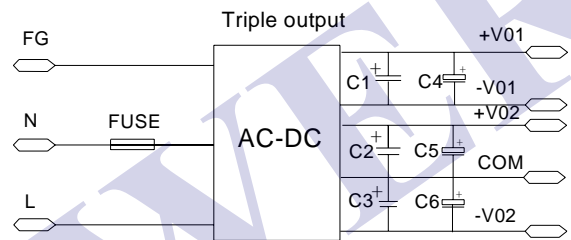
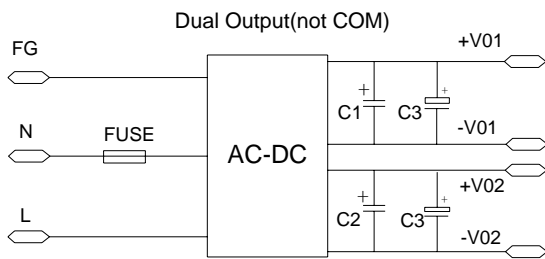
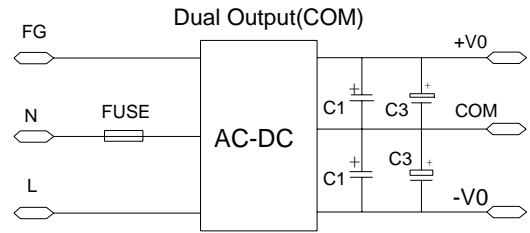
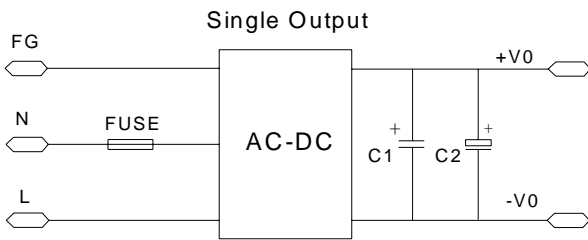
Units:mm

Tolerance:±0.2mm

**MODEL SELECTION**



**RECOMMEND CIRCUIT**



C1, C2, C3, C4, C5, C6 capacitor values refer to parameter table

**USING ATTENTIONS**

- Module will cause irreversible damage when it in the long-term overload state.
- Module will cause irreversible damage when it out of the state maximum input voltage range