



DESCRIPTION: 20W 3KVAC Isolation Wide Input AC/DC Converters

The rated output power of TP20AU converters is 20W 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°C to 70°C |

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 |
| | | | | | | | | |
| TP20AU220S05 | 220(2:1) | 165-265 | 5 | 4.0 | 75 | 0.1uF/25V | 2200uF/16V | / |
| TP20AU220S12 | 220(2:1) | 165-265 | 12 | 1.67 | 81 | 0.1uF/25V | 680uF/25V | / |
| TP20AU220S15 | 220(2:1) | 165-265 | 15 | 1.33 | 83 | 0.1uF/25V | 680uF/25V | / |
| TP20AU220S24 | 220(2:1) | 165-265 | 24 | 0.85 | 85 | 0.1uF/25V | 470uF/35V | / |
| TP20AU220D05 | 220(2:1) | 165-265 | ±5 | ±2.0 | 75 | 0.1uF/25V | 2200uF/16V | 2200uF/16V |
| TP20AU220D12 | 220(2:1) | 165-265 | ±12 | ±0.83 | 82 | 0.1uF/25V | 680uF/25V | 680uF/25V |
| TP20AU220D15 | 220(2:1) | 165-265 | ±15 | ±0.67 | 83 | 0.1uF/25V | 680uF/25V | 680uF/25V |
| TP20AU220D05P05 | 220(2:1) | 165-265 | +5/+5 | 3.0/1.0 | 73 | 0.1uF/25V | 1000uF/16V | 1000uF/16V |
| TP20AU220D05P12 | 220(2:1) | 165-265 | +5/+12 | 2.1/0.8 | 75 | 0.1uF/25V | 1000uF/16V | 470uF/25V |
| TP20AU220D05P15 | 220(2:1) | 165-265 | +5/+15 | 2.2/0.6 | 76 | 0.1uF/25V | 1000uF/16V | 470uF/25V |
| TP20AU220D05P24 | 220(2:1) | 165-265 | +5/+24 | 2.8/0.25 | 77 | 0.1uF/25V | 1000uF/16V | 220uF/35V |
| TP20AU220T05D05 | 220(2:1) | 165-265 | +5/±5 | 3.6/±0.2 | 73 | 0.1uF/25V | 2200uF/16V | 330uF/16V |
| TP20AU220T05D12 | 220(2:1) | 165-265 | +5/±12 | 3.0/±0.2 | 75 | 0.1uF/25V | 2200uF/16V | 220uF/25V |
| TP20AU220T05D15 | 220(2:1) | 165-265 | +5/±15 | 2.8/±0.2 | 76 | 0.1uF/25V | 2200uF/16V | 220uF/25V |
| TP20AU220T05D24 | 220(2:1) | 165-265 | +5/±24 | 2.1/±0.2 | 77 | 0.1uF/25V | 2200uF/16V | 220uF/35V |
| TP20AU220S05W | 220(4:1) | 85-265 | 5 | 4.0 | 75 | 0.1uF/25V | 2200uF/16V | / |
| TP20AU220S12W | 220(4:1) | 85-265 | 12 | 1.67 | 81 | 0.1uF/25V | 680uF/25V | / |
| TP20AU220S15W | 220(4:1) | 85-265 | 15 | 1.33 | 83 | 0.1uF/25V | 680uF/25V | / |
| TP20AU220S24W | 220(4:1) | 85-265 | 24 | 0.85 | 85 | 0.1uF/25V | 470uF/35V | / |
| TP20AU220D05W | 220(4:1) | 85-265 | ±5 | ±2.0 | 75 | 0.1uF/25V | 2200uF/16V | 2200uF/16V |
| TP20AU220D12W | 220(4:1) | 85-265 | ±12 | ±0.83 | 82 | 0.1uF/25V | 680uF/25V | 680uF/25V |
| TP20AU220D15W | 220(4:1) | 85-265 | ±15 | ±0.67 | 83 | 0.1uF/25V | 680uF/25V | 680uF/25V |
| TP20AU220D05P05W | 220(4:1) | 85-265 | +5/+5 | 3.0/1.0 | 73 | 0.1uF/25V | 1000uF/16V | 1000uF/16V |
| TP20AU220D05P12W | 220(4:1) | 85-265 | +5/+12 | 2.1/0.8 | 75 | 0.1uF/25V | 1000uF/16V | 470uF/25V |
| TP20AU220D05P15W | 220(4:1) | 85-265 | +5/+15 | 2.2/0.6 | 76 | 0.1uF/25V | 1000uF/16V | 470uF/25V |
| TP20AU220D05P24W | 220(4:1) | 85-265 | +5/+24 | 2.8/0.25 | 77 | 0.1uF/25V | 1000uF/16V | 220uF/35V |
| TP20AU220T05D05W | 220(4:1) | 85-265 | +5/±5 | 3.6/±0.2 | 73 | 0.1uF/25V | 2200uF/16V | 330uF/16V |
| TP20AU220T05D12W | 220(4:1) | 85-265 | +5/±12 | 3.0/±0.2 | 75 | 0.1uF/25V | 2200uF/16V | 220uF/25V |
| TP20AU220T05D15W | 220(4:1) | 85-265 | +5/±15 | 2.8/±0.2 | 76 | 0.1uF/25V | 2200uF/16V | 220uF/25V |
| TP20AU220T05D24W | 220(4:1) | 85-265 | +5/±24 | 2.1/±0.2 | 77 | 0.1uF/25V | 2200uF/16V | 200uF/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 | | | G |
| Over-current protection | Full input range | | Burp, Automatic 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 | Io=0.1...1.0 x Ionom Vi=Vi rated | | | ±3 | % |
| | | | | ±5 | % |
| Line regulation | Vimin≤Vi≤Vimax | | ±0.5 | | % |
| Load regulation | Io=0.1...1.0 x Ionom Vimin≤Vi≤Vimax | | ±1 | | % |
| Auxiliary voltage accuracy | Main Load and auxiliary load differ 25%,the auxiliary circuit of the load with at least 25%, the main circuit with the full load | | | ±3 | % |
| Ripple and noise | 20MHz bandwidth | | | ±1 | % |
| Over-current protection | Vimin≤Vi≤Vimax | 120 | | | % |
| Switch frequency | Vimin≤Vi≤Vimax | | 100K | | Hz |

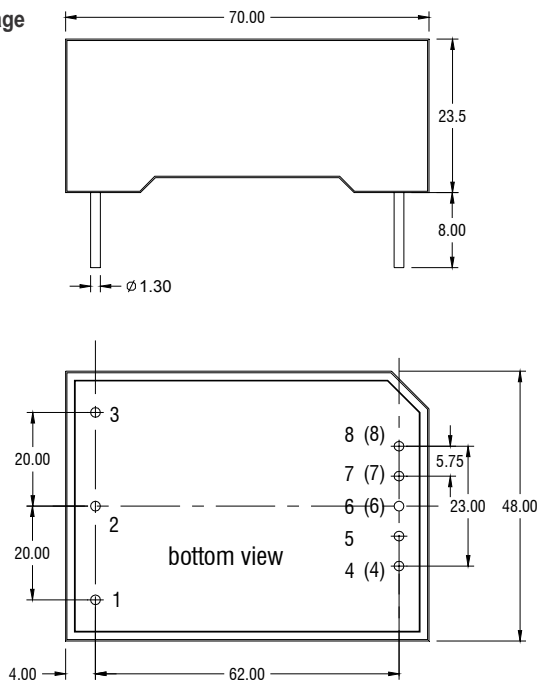
ENVIRONMENT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------|------------------|------|-------|------|-------|
| Operating temperature | industrial-class | -40 | | +70 | °C |
| Maximum case temperature | industrial-class | | | +95 | °C |
| Storage temperature | Industry-class | -40 | | +105 | °C |
| Relative humidity | No condensation | 5 | | 90 | RH(%) |
| Temperature coefficient | | | ±0.02 | | %/°C |

Case temperature shall not exceed the maximum case temperature

MECHANICAL DIMENSIONS **PIN CONNECTIONS**

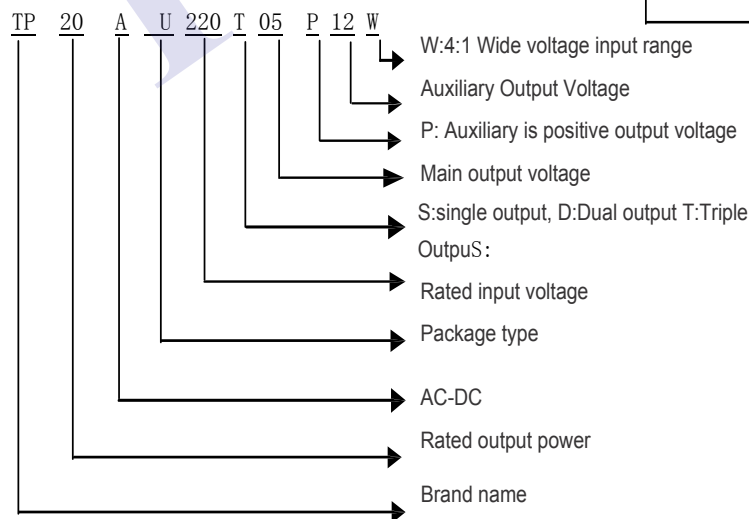
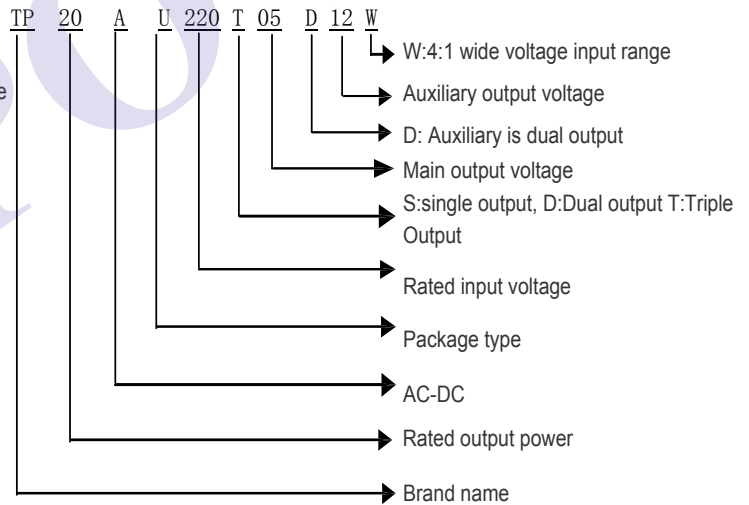
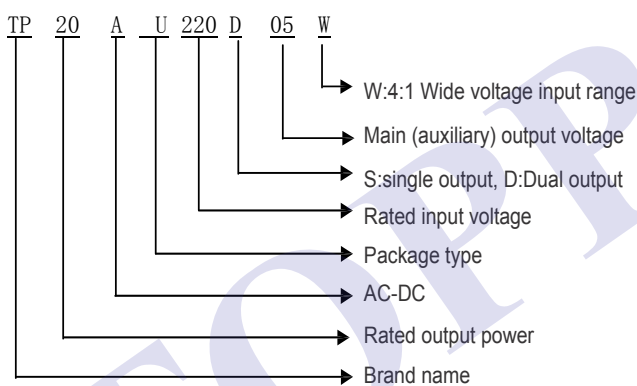
DIP Package



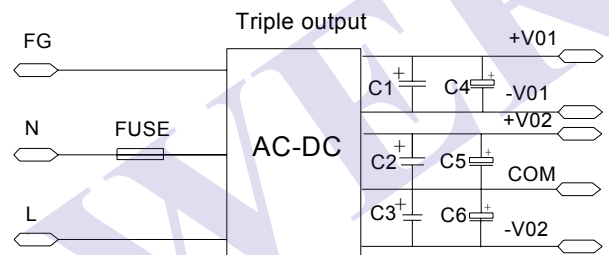
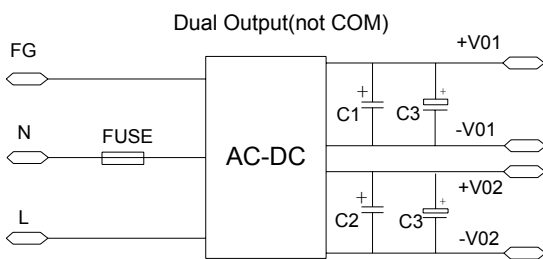
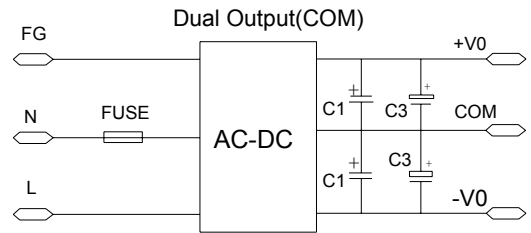
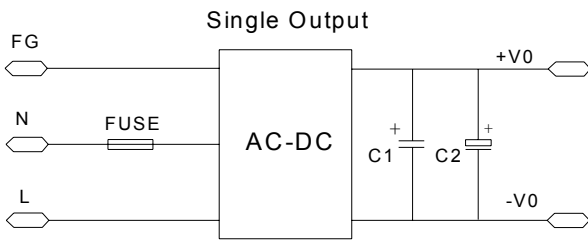
Units:mm Tolerance:±0.2mm

| Pin | Single output | Dual output (Com) | Dual output (NC) | Triple output |
|-----|---------------|-------------------|------------------|---------------|
| 1 | FG | FG | FG | FG |
| 2 | N | N | N | N |
| 3 | L | L | L | L |
| 4 | -V0 | -V0 | / | / |
| (4) | / | / | -V01 | -V01 |
| 5 | / | / | +V01 | +V01 |
| 6 | / | COM | / | / |
| (6) | / | / | / | -V02 |
| 7 | / | / | -V02 | / |
| (7) | / | / | / | COM |
| 8 | +V0 | +V0 | / | / |
| (8) | / | / | +V02 | +V02 |

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