

**DESCRIPTION :** 3W 2.5KV Isolation Wide Input AC/DC Converters

The rated output power of TP03AR 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, 2500V 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: -25°C to 70°C

**SELECTION GUIDE**

Part Number	Input Voltage		Output		Efficiency (Typ.) %	Recommend output external capacitor		
	Rated	Range values	Voltage (VDC)	Current (A)		C1、C2、C3	C4	C5、C6
	(VAC)							
TP03AR220S05	220(2:1)	165-265	5	0.5	71	0.1uF/25V	330uF/16V	/
TP03AR220S12	220(2:1)	165-265	12	0.22	76	0.1uF/25V	220uF/25V	/
TP03AR220S15	220(2:1)	165-265	15	0.17	77	0.1uF/25V	220uF/25V	/
TP03AR220S24	220(2:1)	165-265	24	0.11	77	0.1uF/25V	100uF/35V	/
TP03AR220D05	220(2:1)	165-265	±5	±0.25	71	0.1uF/25V	220uF/16V	220uF/16V
TP03AR220D12	220(2:1)	165-265	±12	±0.11	76	0.1uF/25V	100uF/25V	100uF/25V
TP03AR220D15	220(2:1)	165-265	±15	±0.09	78	0.1uF/25V	100uF/25V	100uF/25V
TP03AR220D05P05	220(2:1)	165-265	+5/+5	0.4/0.1	71	0.1uF/25V	330uF/16V	220uF/16V
TP03AR220D05P12	220(2:1)	165-265	+5/+12	0.3/0.1	73	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220D05P15	220(2:1)	165-265	+5/+15	0.3/0.08	73	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220D05P24	220(2:1)	165-265	+5/+24	0.25/0.06	73	0.1uF/25V	330uF/16V330uF/16V	47uF/35V
TP03AR220T05D05	220(2:1)	165-265	+5/±5	0.3/±0.1	70	0.1uF/25V	330uF/16V	220uF/16V
TP03AR220T05D12	220(2:1)	165-265	+5/±12	0.25/±0.05	71	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220T05D15	220(2:1)	165-265	+5/±15	0.25/±0.05	71	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220T05D24	220(2:1)	165-265	+5/±24	0.25/±0.03	72	0.1uF/25V	330uF/16V	47uF/35V
TP03AR220S05W	220(4:1)	85-265	5	0.5	71	0.1uF/25V	330uF/16V	/
TP03AR220S12W	220(4:1)	85-265	12	0.22	76	0.1uF/25V	220uF/25V	/
TP03AR220S15W	220(4:1)	85-265	15	0.17	77	0.1uF/25V	220uF/25V	/
TP03AR220S24W	220(4:1)	85-265	24	0.11	77	0.1uF/25V	100uF/35V	/
TP03AR220D05W	220(4:1)	85-265	±5	±0.25	71	0.1uF/25V	220uF/16V	220uF/16V
TP03AR220D12W	220(4:1)	85-265	±12	±0.11	76	0.1uF/25V	100uF/25V	100uF/25V
TP03AR220D15W	220(4:1)	85-265	±15	±0.09	78	0.1uF/25V	100uF/25V	100uF/25V
TP03AR220D05P05W	220(4:1)	85-265	+5/+5	0.4/0.1	71	0.1uF/25V	330uF/16V	220uF/16V
TP03AR220D05P12W	220(4:1)	85-265	+5/+12	0.3/0.1	73	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220D05P15W	220(4:1)	85-265	+5/+15	0.3/0.08	73	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220D05P24W	220(4:1)	85-265	+5/+24	0.25/0.06	73	0.1uF/25V	330uF/16V	47uF/35V
TP03AR220T05D05W	220(4:1)	85-265	+5/±5	0.3/±0.1	70	0.1uF/25V	330uF/16V	220uF/16V
TP03AR220T05D12W	220(4:1)	85-265	+5/±12	0.25/±0.05	71	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220T05D15W	220(4:1)	85-265	+5/±15	0.25/±0.05	71	0.1uF/25V	330uF/16V	100uF/25V
TP03AR220T05D24W	220(4:1)	85-265	+5/±24	0.25/±0.03	72	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		2500		VAC
Seismic	10~55Hz	5	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**

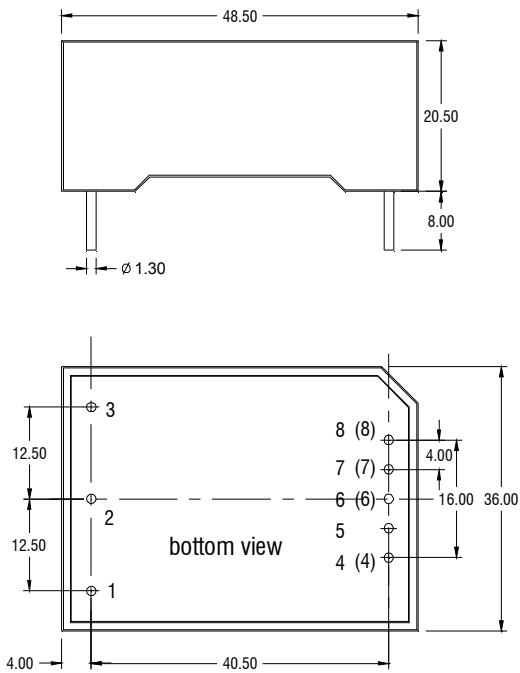
Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage accuracy	$I_o=0.1 \dots 1.0 \times I_{onom}$ $V_i=V_i$ rated			±3	%
				±5	%
Line regulation	$V_{imin} \leq V_i \leq V_{imax}$		±0.5		%
Load regulation	$I_o=0.1 \dots 1.0 \times I_{onom}$ $V_{imin} \leq V_i \leq V_{imax}$		±1		%
Auxiliary voltage accuracy	Main Load and auxiliary load differ 25%,the auxiliary circuit of the load with at least 25%, the main circuit with the full load			±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	-25		+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**

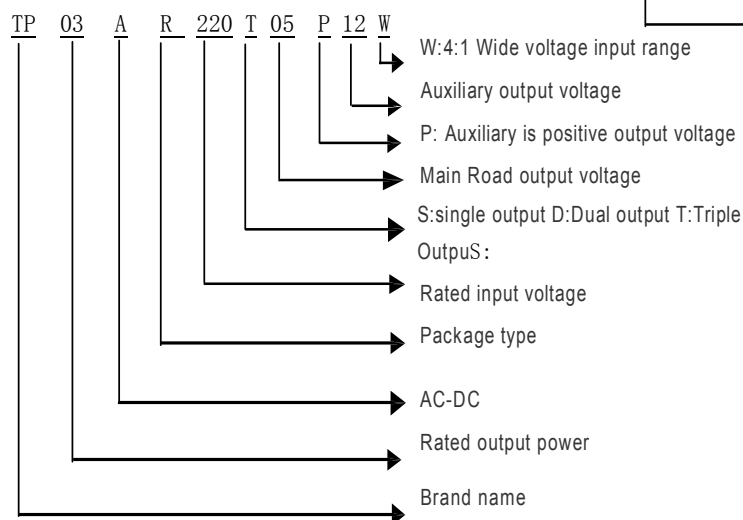
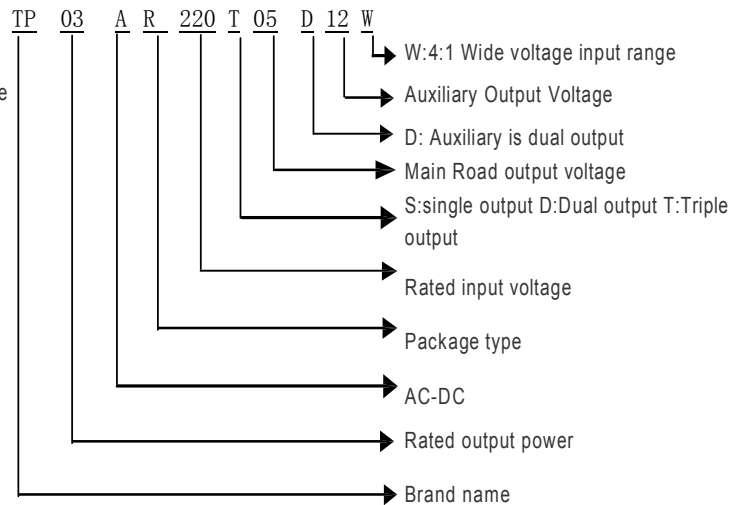
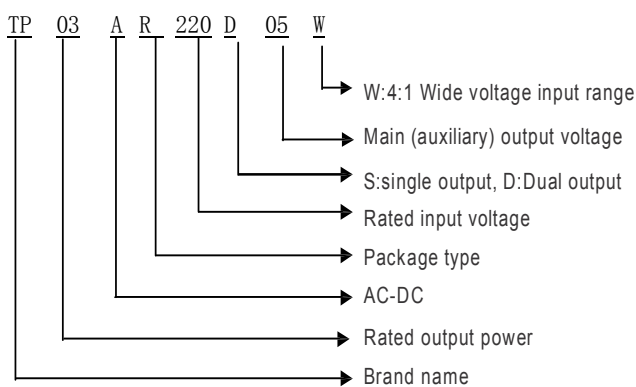


Units:mm

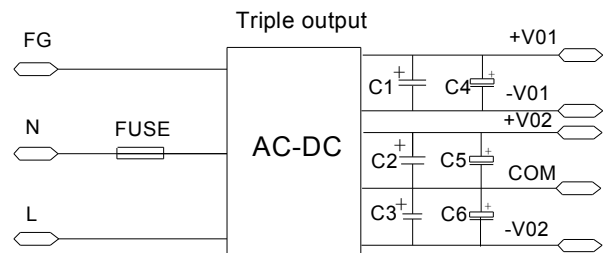
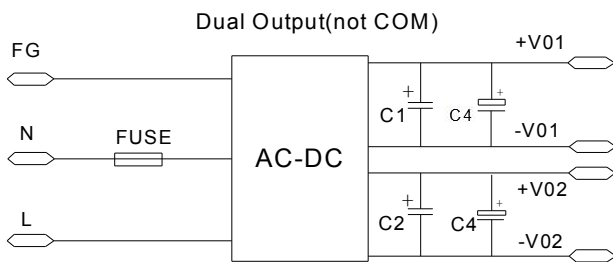
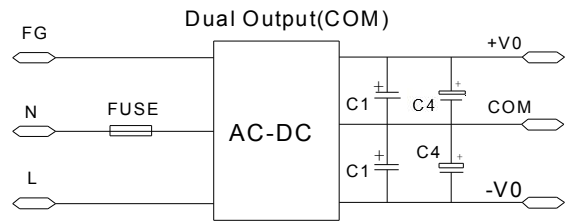
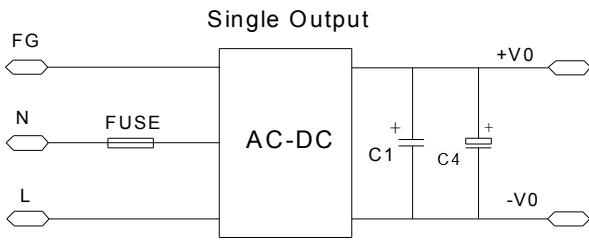
Tolerance:±0.2mm

PIN CONNECTION				
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