

AC/DC 320W Enclosed Switching Power Supply

TGR320F-xx Series



FEATURES

- Universal 85 - 305VAC or 120 - 430VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating temperature range: -30°C to +70°C
- Built-in active PFC function
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to IEC/EN/UL62368, GB4943
- Compact size with a low 1U profile
- LED indicator for power on
- Built-in DC fan
- Emissions meets CISPR32/EN55032 CLASS B

TGR320F-xx series are one of Tiger Power's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, built-in active PFC function, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC62368, UL62368, EN62368, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

Selection Guide

Certification	Part No.*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (µF)
UL/CE/UKCA	TGR320F-5	300	5V/60A	4.5 - 5.5	84	5000
	TGR320F-12	320.4	12V/26.7A	10 - 13.2	86.5	5000
	TGR320F-15	321	15V/21.4A	13.5 - 18	89	5000
	TGR320F-24	321.6	24V/13.4A	20 - 26.4	88.5	5000
	TGR320F-48	321.6	48V/6.7A	41 - 56	89	5000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	305	VAC
	DC input		120	--	430	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	4	4.2	A
	230VAC		--	2	2.1	
Inrush Current	115VAC		--	35	--	A
	230VAC		--	65	--	
Power Factor	115VAC		--	0.98	--	--
	230VAC		--	0.95	--	
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±2	--	%
		12V/15V/24V/48V	--	±1	--	
Line Regulation	Rated load	5V	--	±0.5	--	%
		12V/15V	--	±0.3	--	
		24V/48V	--	±0.2	--	

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Load Regulation	0% - 100% load	5V	--	±1	--	
		12V/15V/24V/48V	--	±0.5	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V/12V/15V/24V	--	60	150	mV
		48V	--	60	200	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load*			0	--	--	%
Hold-up Time	115VAC		--	12	--	ms
	230VAC		--	12	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection*			105% - 150% Io, hiccup, self-recovery			
Over-voltage Protection	5V		≤7V (Hiccup, self-recovery)			
	12V		≤16.2V (Hiccup, self-recovery)			
	15V		≤21.8V (Hiccup, self-recovery)			
	24V		≤32.4V (Hiccup, self-recovery)			
	48V		≤60.0V (Hiccup, self-recovery)			
Over-temperature Protection*			Hiccup, self-recovery			

Note: 1.*The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

2.*Minimum load: When the product is working at a temperature above 50°C, the minimum load is 5% of the rated load, so that the fan could work at high temperature to reduce the temperature rise of the product.

3.*Over-current Protection: Test at rated output voltage, Io is rated output current load. 4.*Over-temperature Protection needs to be tested under rated full load conditions.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation Test	Input - ⊕	2000	--	--	VAC	
	Input - output	4000	--	--		
	Output - ⊕	500	--	--		
Insulation Resistance	Input - ⊕	500VDC,	100	--	MΩ	
	Input - output	25±5°C,	100	--		
	Output - ⊕	Humidity < 95%RH, non-condensing	100	--		
Operating Temperature		-30	--	+70	°C	
Storage Temperature		-40	--	+85		
Storage Humidity	Non-condensing	10	--	95	%RH	
Operating Humidity		20	--	90		
Switching Frequency		--	--	--	kHz	
Power Derating	Operating temperature derating	-30°C to 50°C	0	--	--	% / °C
		+50°C to +70°C	2.5	--	--	
	Input voltage derating	85VAC - 100VAC@50Hz	2.0	--	--	% / VAC
		85VAC - 100VAC@60Hz	1.33	--	--	
		120VDC - 140VDC	1.25	--	--	
Safety Standard		Meet IEC/EN/UL62368/GB4943				
Safety Certification		IEC/EN/UL62368/GB4943				
Safety Class		CLASS I				
MTBF	MIL-HDBK-217F@25°C	>250,000 h				

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	215.00 x 115.00 x 30.00 mm
Weight	750g (Typ.)
Cooling Method	Forced air cooling

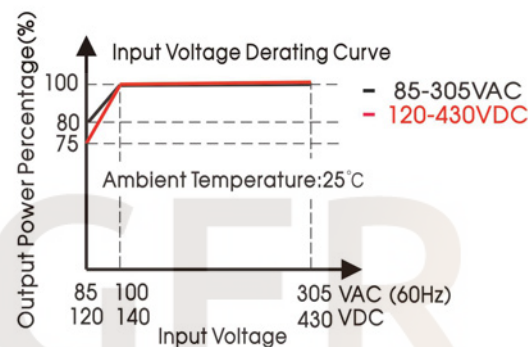
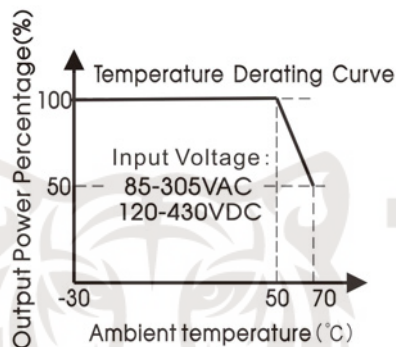
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A	
	Voltage flicker	IEC/EN61000-3-3		
Immunity	ESD	IEC/EN 61000-4-2	Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$	perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	$\pm 2\text{KV}$	perf. Criteria A
	Surge	IEC/EN 61000-4-5	$\pm 1\text{KV}/\pm 2\text{KV}$	perf. Criteria A
	CS	IEC/EN 61000-4-6	10 Vr.m.s	perf. Criteria A
	DIP	IEC/EN 61000-4-11	0%, 70%	perf. Criteria B

Note: 1. One magnetic bead (nickel-zinc ferrite) should be coupled with the output load line during CE/RE testing.

2. The power supply is considered a component as part of system, all EMC items are tested on a metal plate (L x W x H, 450mm x 450mm x 3mm). Power supply should be combined with final equipment for EMC confirmation.

Product Characteristic Curve



Note: 1. With an AC input voltage between 85-100VAC and a DC input between 120-140VDC the output power must be derated as per the temperature derating curves;

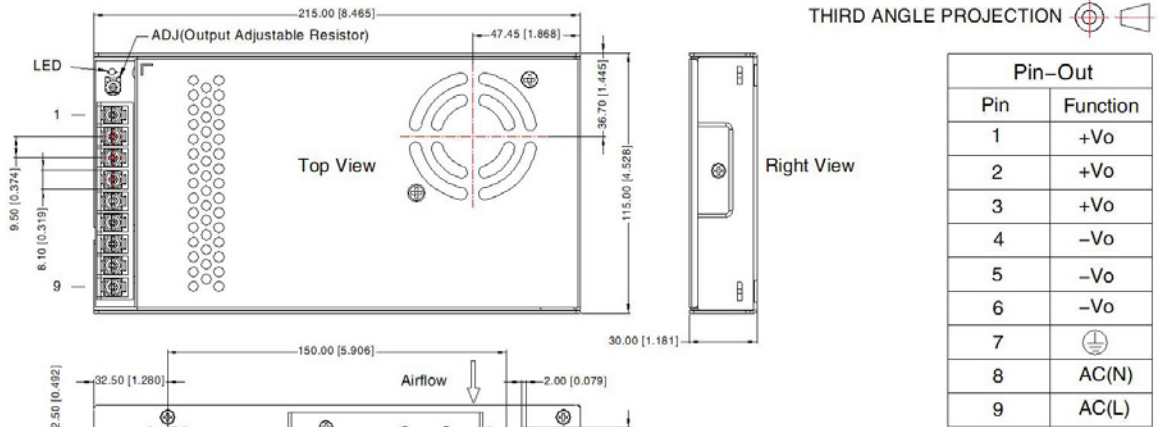
2. This product is suitable for applications using forced air cooling; for applications in closed environment please consult Tiger Power Supplies

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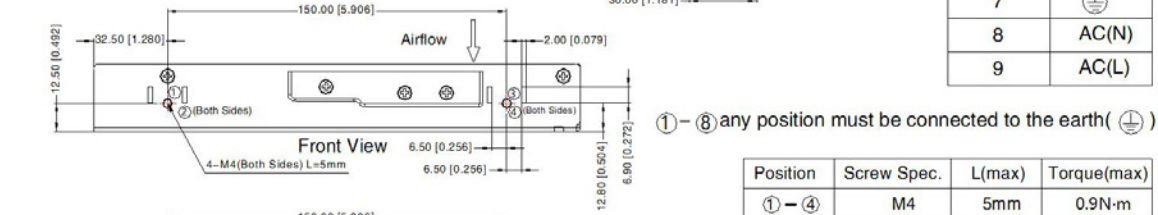
TGR320F-xx Series



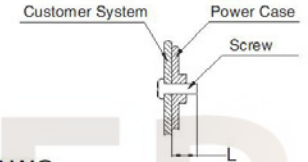
Dimensions and Recommended Layout



Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	+Vo
4	-Vo
5	-Vo
6	-Vo
7	⊥
8	AC(N)
9	AC(L)

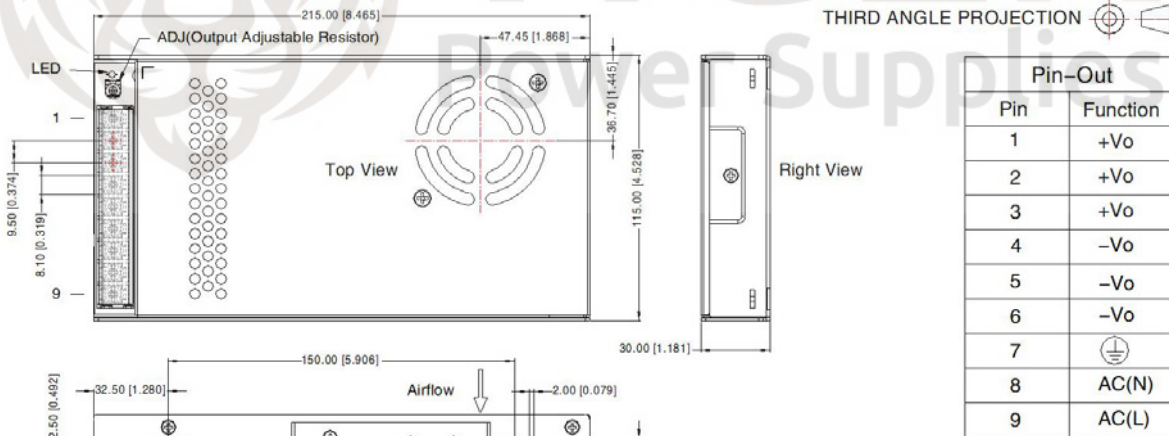


Position	Screw Spec.	L(max)	Torque(max)
① - ④	M4	5mm	0.9N·m
⑤ - ⑧	M4	3mm	0.9N·m

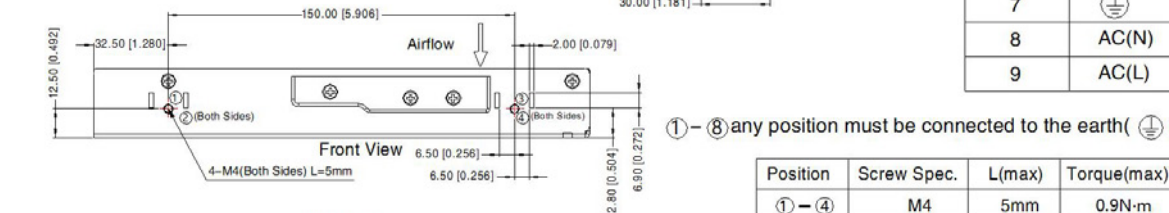


Note:
 Unit: mm[inch]
 Wire range: 22-12AWG
 Connector tightening torque: M3.5, 0.8N·m
 General tolerances: ± 1.00[± 0.039]

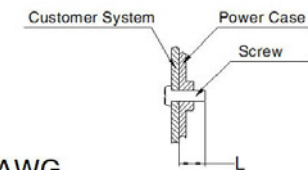
TGR320F-xx Series with terminal cover



Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	+Vo
4	-Vo
5	-Vo
6	-Vo
7	⊥
8	AC(N)
9	AC(L)



Position	Screw Spec.	L(max)	Torque(max)
① - ④	M4	5mm	0.9N·m
⑤ - ⑧	M4	3mm	0.9N·m



Note:
 Unit: mm[inch]
 Wire range: 22-12AWG
 Connector tightening torque: M3.5, 0.8N·m
 General tolerances: ± 1.00[± 0.039]



Note:

1. For additional information on Product Packaging please refer to www.TigerPowerSupplies.com
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% RH with nominal input voltage and rated output load;
3. The ambient temperature derating of $5^{\circ}\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to PE (\oplus) of system when the terminal equipment in operating;
9. The output voltage can be adjusted by the ADJ, clockwise to decrease;
10. Our products shall be classified according to related environmental laws and regulations, and shall be handled by qualified units;
11. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult us for EMC test operation instructions.