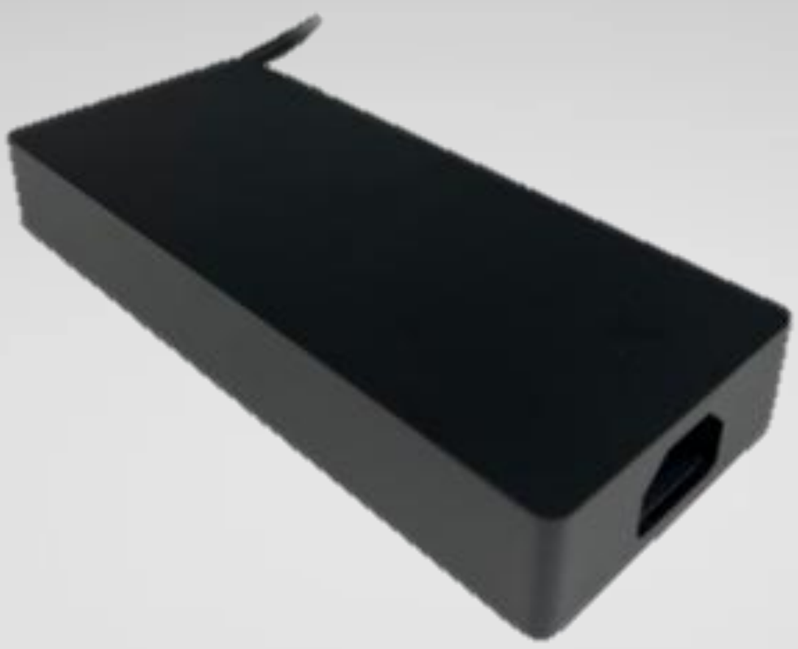
TECHNICAL
DATA SHEET

AA280U-200B-R

PHIHONG

DESCRIPTION

The AA280U-200B-R GaN Series is a high-efficiency desktop power supply designed for multiple applications, delivering a reliable 280W single output with advanced GaN technology for compact performance. Ideal for powering high-demand gaming systems etc with reduced heat and improved energy conversion.



FEATURES

- Power Rated: 280W
- Input Voltage: 90-264V
- Peak Load: 200%-225%
- Input AC Plug: IEC C14 Type
- Dimension: L180 x W82 x H25.4 mm
- Weight: <700 g

AA280U-200B-R
280-watt GaN Series Desktop Adapter Adapter

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Input

AC input voltage range	90Vrms to 264Vrms
AC input nominal rating	100Vrms ~ 240Vrms
AC input nominal frequency	50Hz - 60 Hz
AC input frequency	47Hz - 63 Hz
AC input current	3.2A Max at 100Vac with full load
Leakage current	< 250uA. at 240Vac / 50Hz
Inrush current	The I^2t shall less than 22% of the fuse, surge limiting device and bridge diode rating. *The inrush current of the power supply shall be less than the rating of its critical components (include bridge diode, surge limiting device) for all condition of line voltage of [AC input voltage range]*
Power factor	0.9 min @ full load at input AC power 230Vac. *With active PFC function to meet EN61000-3-2 harmonic current requirement.*
Primary Aluminum Capacitor	450Vdc (min.)

Ta = 25°C (Unless Otherwise Specified)

Output

Output voltage	20Vdc
Output Voltage Regulation	± 5%
Minimum load current	0A
Maximum load current	14A
Ripple and noise	< 200mV (pk-pk) at max load @25℃ *Note* *1) Measurements shall be made with an oscilloscope with 20MHz Bandwidth* *2) Outputs should be bypassed at a connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor (Low ESR)* *3) After 30 minutes of warm up*

Overall Performance

Output Power	280 Watt Max
Efficiency	115Vac/230Vac > 89% Average efficiency 230Vac > 79%; 10% Load *Test at 115Vac/60Hz & 230Vac/50Hz, and the power supply shall meet DOE VI / COC V5 Tier 2 spec measuring at the cable end.*
AC Turn on Delay Time	< 3 sec (Test at 100-240Vac & Full Load)

Dynamic Load

Output voltage	*Input voltage*	*Slew rate*	*Test load*	*Spec*
20	100Vac/240Vac	2.5A/us	On /off =100Hz~10KHz, 50% duty Dynamic Load.1 : 0.05A ~ 7 A Dynamic Load.2 : 7A ~ 14 A	18.5 V~21V

Note
1) Measurements shall be made with an oscilloscope with 20MHz Bandwidth.
2) Outputs should be bypassed at a connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor (Low ESR)

Capacitive Load	The system load capacitance is 1000uF. Input = 100Vac to 240Vac. shall not trigger any protections or cause the adapter to shut down
Rise Time	< 40ms, measure 10%-90% of output voltage (Test at 90Vac & Full Load).
Hold up time	> 16ms (Test at 100Vac & Full Load).

Peak Load

	Current	*Duration*	*Requirement*
Peak-1	Rated 200% / 90%	2 m / 18mS	V out > 18V
Peak-2	Rated 225% / 87%	1.5 mS /13.5mS	V out > 17.8V

Test at 100-240Vac/50Hz, Continuous work in room temp.S/R=1A/us; with loading distribution in below.

Protection

Protection	*OCP*	*SCP*	*OVP*	*OTP*
Requirement	>16.8A	Yes	< 27V	Case < 105℃
Protection mode		Latch off		

Note.
1) Test at 90-264Vac.
2) No Damaged when PSU auto recover occurs.

No Load Power Consumption	Maximum no load power consumption is less than 0.15W at 115Vac/60Hz and 230Vac/50Hz *(The UUT shall be operated for at least 30 minutes before conducting no-load measurements)*
Hot Plugging	Plugging a live AC adapter into the system with 1000uF capacitance shall not trigger any protections or cause the adapter to shut down.

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Other Specifications

Environmental Requirements	Operation Temperature	0℃ to 35℃
	Storage Temperature	-30℃ to 80℃
	Operating Relative Humidity	5% - 90% RH
	Storage Relative Humidity	5% - 95% RH
	Note for Humidity: The condition is non-condensing Operation Altitude:5000 M	
Reliabilities	MTBF (MIL-HDBK-217F)	>100K hrs @ 115VAC, max. load @40℃
E-Cap lifetime	Min: 3 years (26280hours) ,Measurement at 100Vac Full load /Amb 35℃	
Burn In	Burn-in shall be at 80% load, nominal input voltage. and burn-in for 4 hours with 35℃.	
Acoustic Noise	Max.:25dB (50cm) *1. Input Condition: Vin: 90Vac~264Vac ; Frequency : 47Hz to 63 Hz* *2. Load Condition: Dynamic Load : Follow Phihong Transient Load Current Spec ;* *Static Load: From 0A to Full Load , 0.5A per step*	

Safety and EMC

Safety	All requirements under IEC/EN 62368-1 3rd, UL/cUL,CE NRCAN Mark	
EMC	EMI :FCC part 15, Class B. EN55032, Class B. CISPR32, Class B EMS: EN55035 ESD: IEC61000-4-2; Contact discharges: +-8KV Criterion A; Air discharges: +-15KV Criterion A Radiated Immunity: IEC 61000-4-3 (RS); 80-1000MHz, 3V/m, 80% AM(1KHz), Criterion A Electrical Fast Transients: IEC 61000-4-4 (EFT);1KV, 5/50Tr/Th ns, 100 kHz, Criterion A Surge: IEC 61000-4-5 (Surge); Differential Mode：±1K Criterion A; Common Mode: ±2KV Criterion A Conducted Disturbances: IEC 61000-4-6 (CS) Criterion A Power Frequency Magnetic Field Immunity: IEC 61000-4-8 (PFMF) Criterion A Voltage Dips and interruptions: IEC 61000-4-11 (DIP) Criterion B	
Harmonic	EN61000-3-2, Class D.	
Voltage Fluctuations and Flicker	EN61000-3-3	
HI-POT test	*Parameters*	*Setting*
	Condition.1 (Pri. -> Sec.)	4000 Vdc Minimum
	Condition.2 (Pri. -> FG.)	2500 Vac Minimum
	DWELL Time	1 minute Minimum
	Test condition: 100% test in product line	
Insulation Resistance	Pri. to Sec. > 30 M ohm 500Vdc. (Between primary Live, Neutral and secondary.)	

Mechanical

Dimensions	Length =180mm; Width = 82mm; Height = 25.4mm
AC Inlet	IEC C14
DC output cord	1.2M with Barrel Plug /OD:5.5mm/ID:1.7mm/L:11mm (Will be referred to Phihong ID design, EMI Core would be preferred)
Mechanical Requirements	Bending test: 200g weight,90° angle to each side (Total angle 120°),1000 cycles of arbitrary direction 40 cycles/min. Disconnection rate <= 10% between case to S/R Disconnection rate <= 30% between plug to coil Without damage to the insulations
	Drop test: Test condition: 1. Height: 76cm; 2. Material: Concrete; 3. Orientation: Drop the unit one time for each face (6 faces), 1 cycle Acceptance criteria: 1. Hi-Pot pass;2. Allow small crack needed pass by test finger

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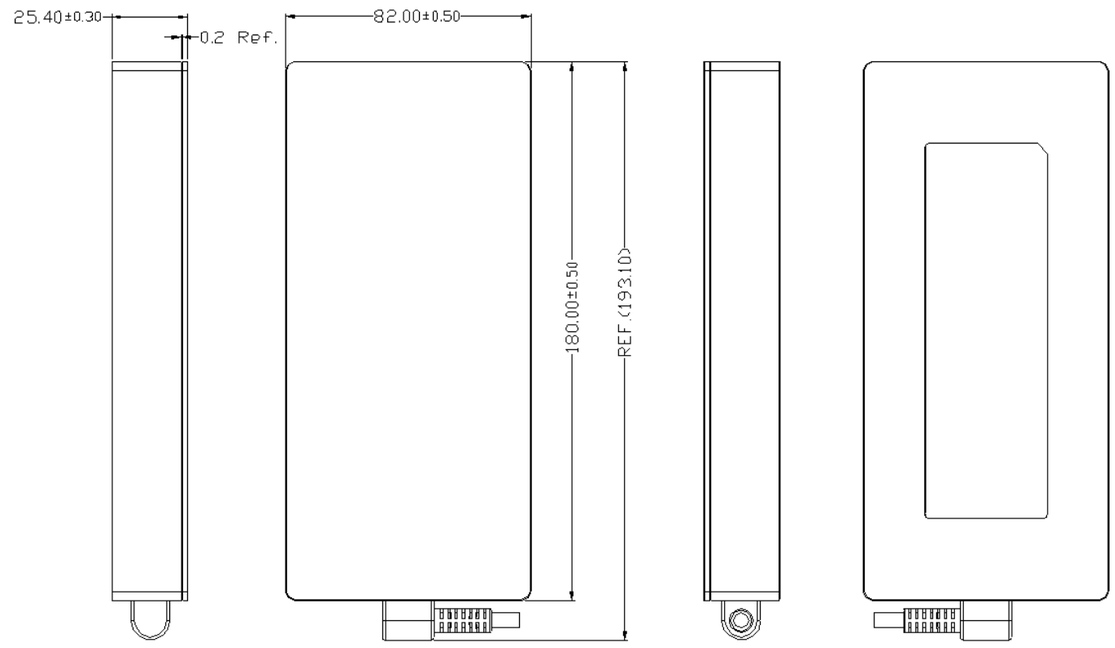
Ball Impact Test: (without precondition)
Height: 130cm; Ball Weight : 500 g; Ball Diameter : 50 mm;
Direction : Four face as below figure.(drop on main body center)



Weight:
Total weight : <626g ±10%
Unit: 532g +/-10% + cable: 94g +/- 5%

Outline: 180 x 82 x 25.4mm

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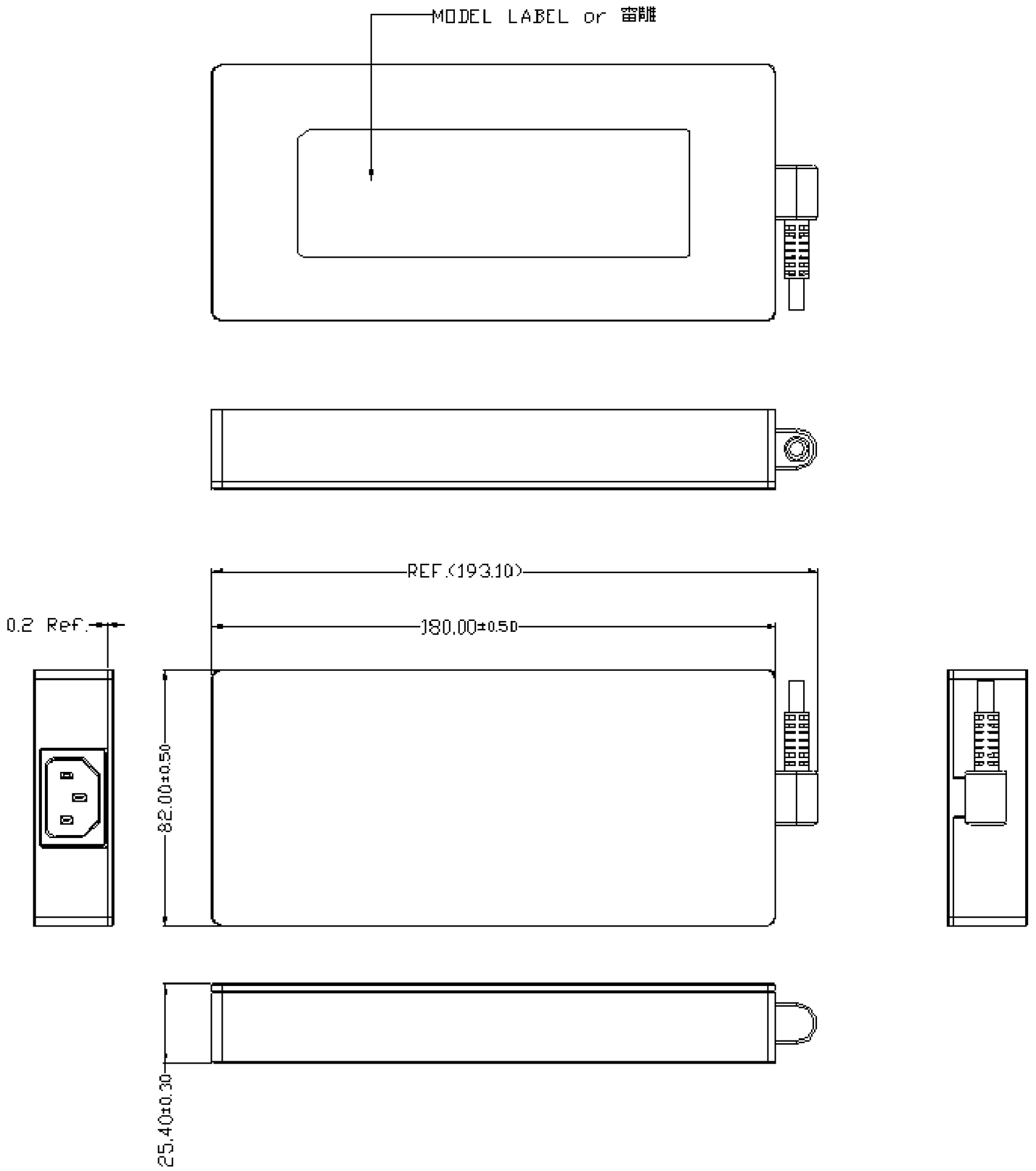
Outline Drawing



PHIHONG 50 YEARS OF HISTORY IN THE POWER SUPPLIES INDUSTRY

Since its founding in 1972, Phihong has emerged as a prominent power supply company, serving as a key supplier of solutions for consumer, mobile/portable, enterprise, telecom, datacom, and industrial applications.