High Accuracy Current Sensor

CTA Series

- CTA20 20A/DC~1MHz
- CTA60 60A /DC ～800kHz
- CTA200 200A/DC ～500kHz
- CTA400 400A/DC ～500kHz
- CTA700 700A/DC ～100kHz
- CTA1000 1000A/DC～500kHz
- CTA1000B 1000A/DC～400kHz
- CTA2000 2000A/DC～140kHz（Aperture 70mm）
- CTA2000B 2000A/DC～140kHz（Aperture 80mm）

Shenzhen Zhiyong Electronics Co., Ltd

Preface

First of all, thank you for purchasing our products, this instruction manual is the description about the function, usage, operation attention points, etc. Before use, please read the instructions carefully and use correctly.

Manual annotation will use the following symbols to distinguish.

This symbol means it is harmful to the machine and human body; you must strictly follow the instruction manual to operate.

Warn **In the case of wrong operation, the user risk injury. The content under this mark records the relevant matters needing attention to avoid such dangers.**

Notice **The user may suffer minor injuries and material damage with the wrong operation. To avoid such situation, the matters under this mark need attention.**

Note **This symbolizes important note about how to use the machine.**

To the safely use the machine, you must abide by the following safety precautions strictly. The violation against the manual is likely to damage the protective function of the machine. In addition, the company is not responsible for any safety problem caused by the violation of matters needing attention in operation.

Warning

- Please do not continue testing if the machine or the user is wet, there could result in a deadly electric shock.
- Please be careful to get an electric shock, pay attention to the highest input voltage.

Note

- During transporting and operating, please avoid vibration and impact, especially the impact caused by fall.
- Please avoid storing and operating under bad condition such as, direct sunlight, high temperature, damp or frost environment, which will cause deformation and worsen insulation, thus cannot meet the requirement.
- Before using, please check if there are malfunctions caused by the bad storing condition and transportation. When malfunction is confirmed, please contact the commercial agent or operator nearby.
- Please do not use the machine in dusty and wet environment since it is neither waterproof nor dustproof.

CTA Series Brief Summary

Type	Max current		Bandwidth	Current transfer ratio
	DC	RMS		
CTA20	20A	20A	1MHz	1:200
CTA60	60A	42A	800kHz	1:600
CTA200	200A	141A	500kHz	1:1000
CTA400	400A	282A	500kHz	1:2000
CTA700	700A	495A	100kHz	1:1750
CTA1000	1000A	707A	500kHz	1:1000
CTA1000B	1000A	707A	400kHz	1:1500
CTA2000 CTA2000B	2000A	2000A	140kHz	1:2000

1. Summary

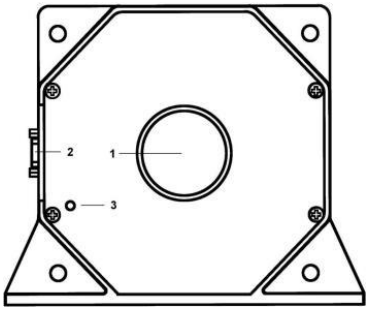
CTA series is the ultra-accuracy sensor that can measure both DC and AC. Its current range covers from 60A to 2000A with precision of 50 ppm and 1MHz bandwidth. By using Flux-gate technic, the CTA series realized high accurate measurement, excellent linearity, low DC offset, lower temperature drift, low insertion loss, high immunity to external field and low noise.

2. Application

- ✧ High accuracy and highly stable current feedback unit.
- ✧ Current calibration unit.
- ✧ Energy measurement.
- ✧ Medical Equipment.
- ✧ New energy vehicle electronics.

3. Instruction about the product and accessories

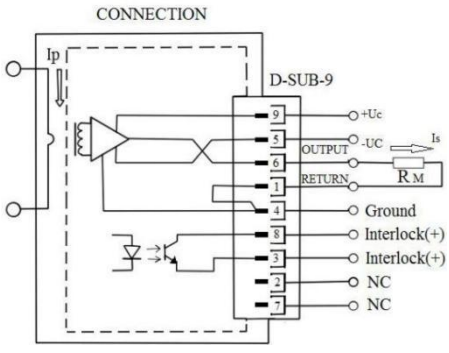
Take CTA200 as example:



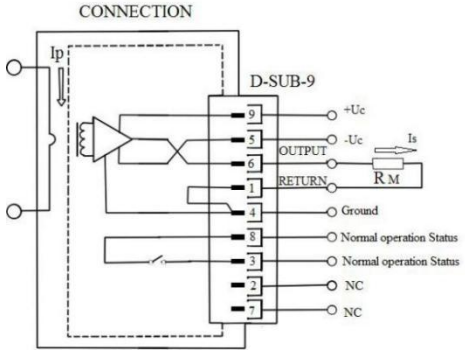
✧ **Sensor PTH (Primary Through Hole)：**

The input interface of the conductor under test, measuring the current under test. CTA20,CTA60, CTA200, CTA400PTH Diameter: 26mm； CTA700, CTA1000(B) PTH Diameter: 30mm; CTA2000 PTH Diameter: 70mm; CTA2000B PTH Diameter: 80mm;

✧ **Communication Port: including current output, power supply interface,** and status indicator function. The diagram below represents the pin configuration.



CTA20,CTA60, CTA200,CTA400,CTA1000B, CTA2000,CTA2000B Interface Diagram



CTA700,CTA1000Interface Diagram

✧ **Status Indicator:** When the machine is working properly, the green light will on; when there's any situation, the light will be off.

Accessories

Power supply (PS200 Series（without cable）)

Cable (CK-330): Connecting sensor, power supply and current output port

Note

✧ **Cable CK-330:** Standard Length is 2 meter, customization accepted. Accessories are sold separately.

✧ **Power Supply PS200 Series: PS201: one channels;PS202: two channels; PS204: four Channels; PS208: eight Channels;** every channel with ±15/1.5A of Voltage Output. Accessories are sold separately.

4. Specification

Test temperature: 25℃; Voltage Supplied: ±Uc =±15V

Type		CTA20	CTA60	CTA200	CTA400
Primary nominal continuous Direct current (IPN DC)		20A	60A	200A	400A
Primary nominal rms current (IPN)		20A	42A	141A	282A
Primary current, measuring range (IPM)		±20A	±60A	±200A	±400A
Conversion ratio KN		1:200	1:600	1:1000	1:2000
Secondary current (IS)		±100mA	±100mA	±200mA	±200mA
Accuracy (DC)*		100ppm*±5uA			
Bandwidth(±3dB)		1MHz	800kHz	500kHz	500kHz
Measuring resistance over operating current temperature and supply voltage range		RM min / RM max	RM min / RM max	RM min / RM max	RM min / RM max
		0 / 60Ω	0 / 60Ω	0 / 30Ω	0 / 2.5Ω
		FIG.1	FIG.2	FIG.3	FIG.4
Overload capability @ pulse of 100ms		±100A	±300A	±1000A	±2000A
Supply voltage		±15V(±5%)			
Supply current		≤80mA+IS			
Rated operational voltage RMS（IEC61010-1）	Basic insulation	2000V	2000V	2000V	2000V
	Reinforced insulation	600V	600V	600V	600V
Max measurement aperture		26mm			
Second interface		D-Sub-9Pin			
Fastening screws and tightening torque		M4 steel screw *4；2.8Nm; M5 steel screw *2；3.7Nm			

Type		CTA700	CTA1000	CTA1000B	CTA2000	CTA2000B
Primary nominal continuous Direct current (IPN DC)		700A	1000A	1000A	2000A	2000A
Primary nominal rms current (IPN)		495A	707A	707A	2000A	2000A
Primary current, measuring range (IPM)		±700A	±1000A	±1000A	±2000A	±2000A
Conversion ratio KN		1:1750	1:1000	1:1500	1:2000	1:2000
Secondary current (IS)		±400mA	±1000mA	±666.666mA	±1000mA	±1000mA
Accuracy (DC)*		50ppm±3uA				
Bandwidth(±3dB)		100kHz	500kHz	400kHz	140kHz	140kHz
Measuring resistance over operating current temperature and supply voltage range		RM min / RM max	RM min / RM max	RM min / RM max	RM min / RM max	RM min / RM max
		0 / 2.5Ω	0 / 3Ω	0 / 2Ω	0 / 1Ω	0 / 1Ω
		FIG.5	FIG.6	FIG.7	FIG.8	
Overload capability @ pulse of 100ms		±3500A	±4000A	±5000A	±10kA	
Supply voltage		±15V(±5%)				
Supply current		≤80mA+IS			≤150mA+IS	
Rated operational voltage RMS（IEC61010-1）	Basic insulation	1600V	300V	300V	1000V	
	Reinforced insulation	300V	150V	150V	300V	
Max measurement aperture		30mm	30mm	30mm	70mm	80mm
Second interface		D-Sub-9Pin				
Fastening screws and tightening torque		M5 steel screw *4；3.7Nm M6 steel screw *2；4.4Nm			M5 steel screw *4；3.7Nm	

* All ppm figures refer to full-scale which corresponds to a secondary nominal RMS current.

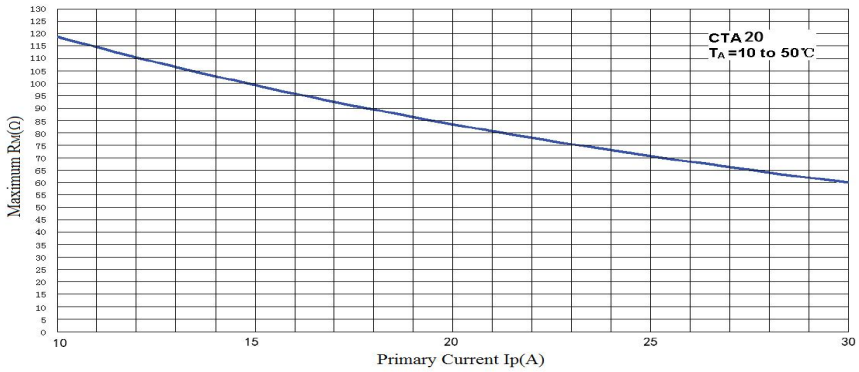


Figure1: CTA20 Maximum measuring resistor versus primary current

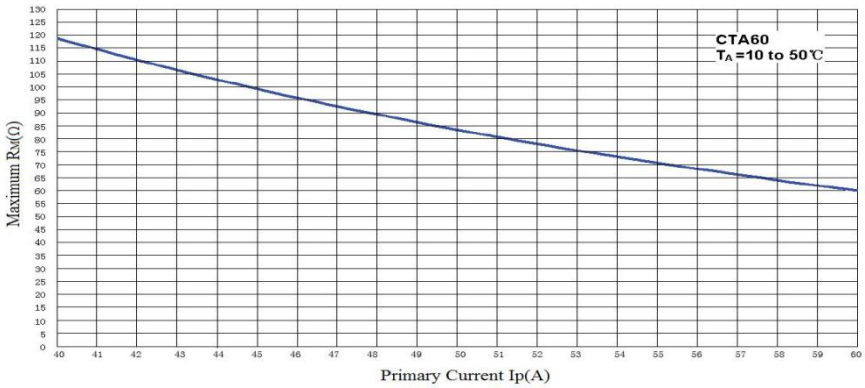


Figure 2: CTA60 Maximum measuring resistor versus primary current

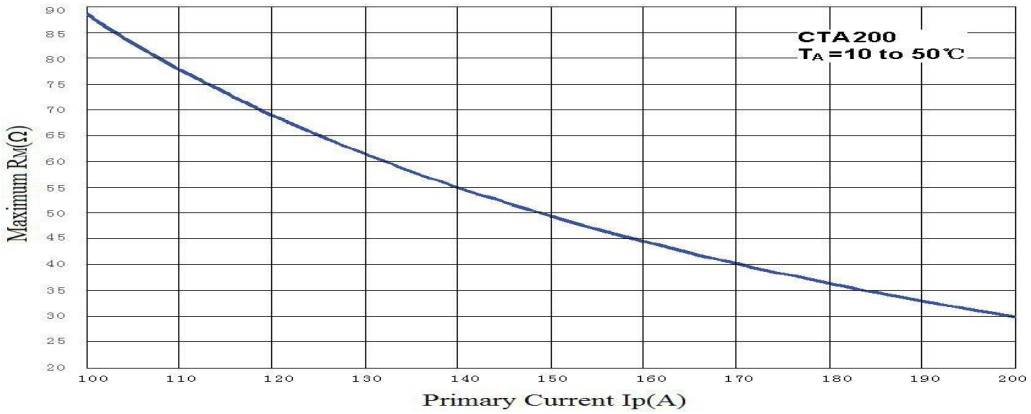


Figure 3: CTA200 Maximum measuring resistor versus primary current

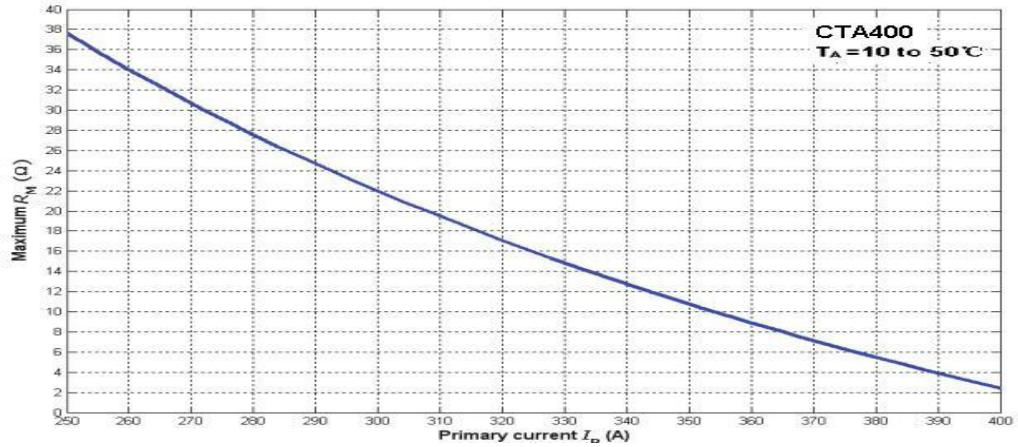


Figure 4: CTA400 Maximum measuring resistor versus primary current

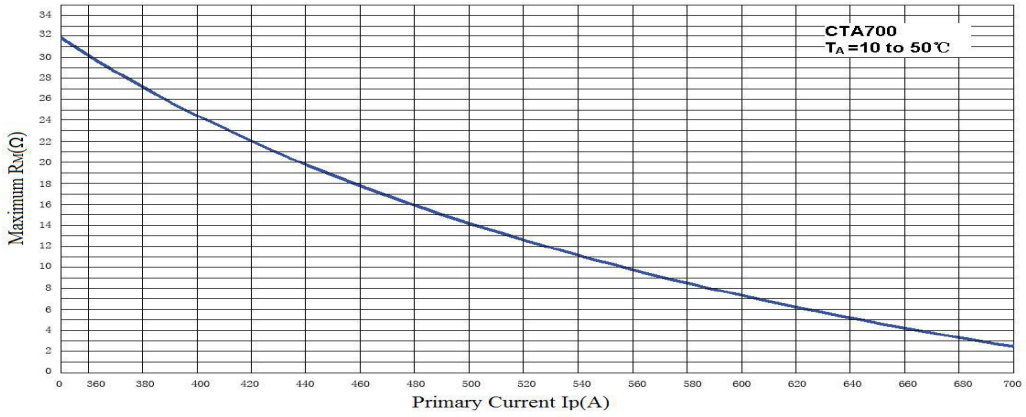


Figure 5: CTA700 Maximum measuring resistor versus primary current

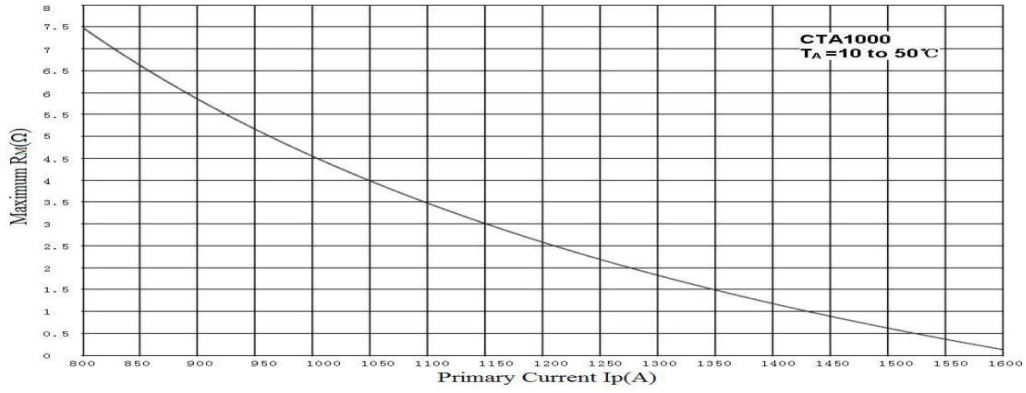


Figure 6: CTA1000 Maximum measuring resistor versus primary current

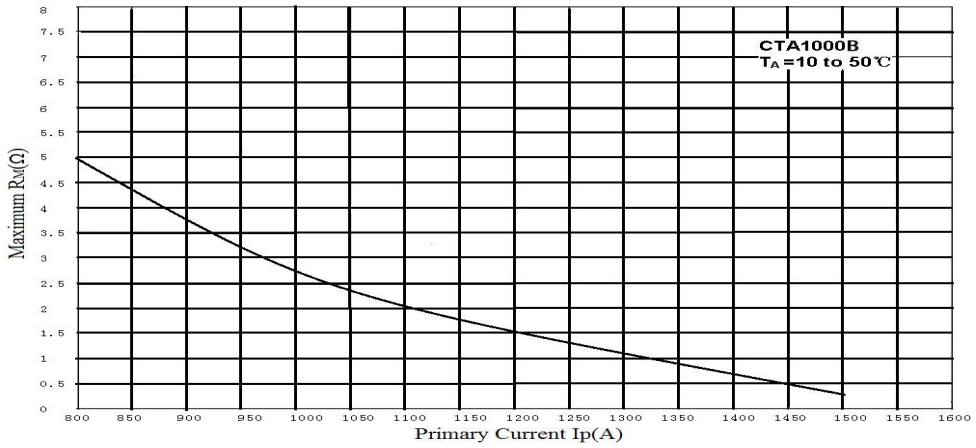


Figure 7: CTA1000B Maximum measuring resistor versus primary current

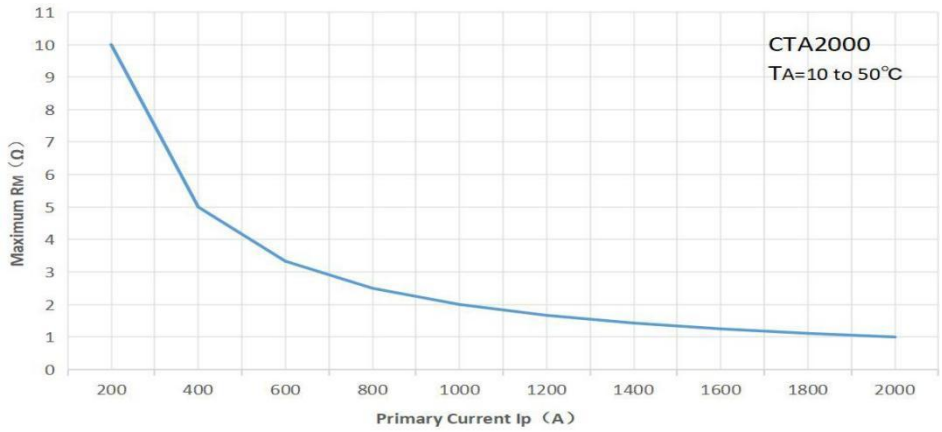


Figure 8: CTA2000/CTA2000B Maximum measuring resistor versus primary current

5. Operation Instruction

5.1 Overload Protection

When Primary Current surpassed the overload trigger point, the core flux-gate will be fully saturated, and then, the sensor will switch from the normal mode to overload mode.

The overload trigger point should be at least 1.1 times of Primary Nominal Continuous Direct Current. The actual overload point is related to overload resistor and working condition.

After the overload, the sensor will enter park mode. The sensor will automatically recover to normal status, when the primary current reduces into normal range (±Primary DC),

(Probably need to take a few seconds) In the overload mode:

- Secondary Current output will be low frequency triangular wave, the output range of CTA20,CTA60 will be ±100mA, the output range of CTA200 and CTA400 will be ±200mA, the output range of CTA700 will be ±400mA,the output range of CTA1000B will be ±666.666mA, the output range of CTA1000 and CTA2000(B) will be ±1000mA.
- Output port pin 3 and 8 disconnected
- Status Indicator will be off.

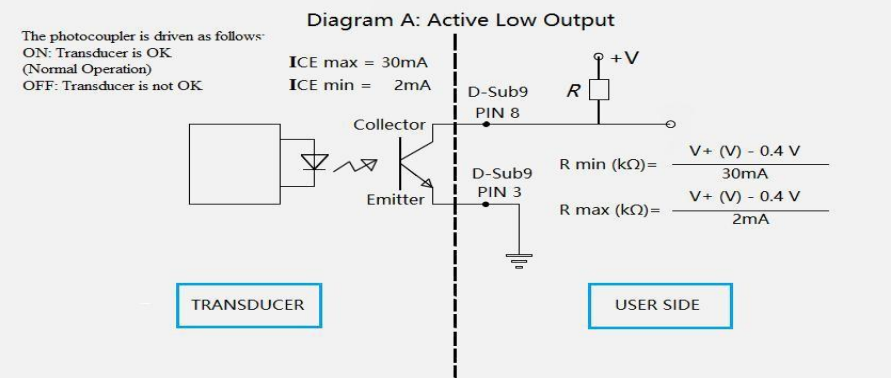
Note To make sure recover from saturation state to normal state, the overload resistance must not surpass the value below: CTA20/CTA60:60Ω; CTA200:30Ω; CTA400:2.5Ω;CTA700:2.5Ω;CTA1000:3Ω;CTA1000B:2Ω;

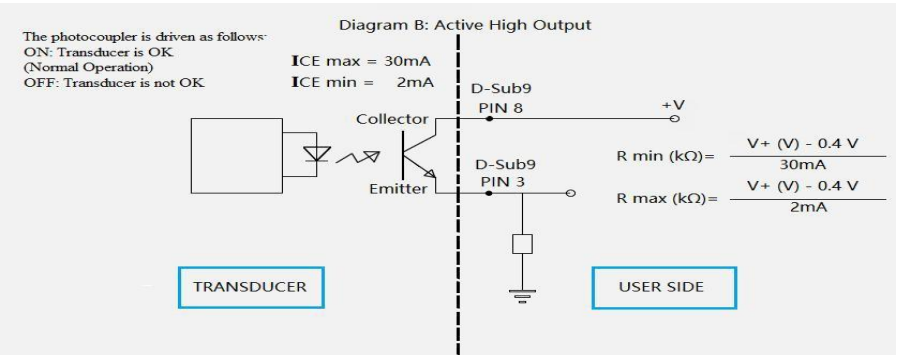
CTA2000/CTA2000B:1Ω

5.2 Status/Interlock Interface summary

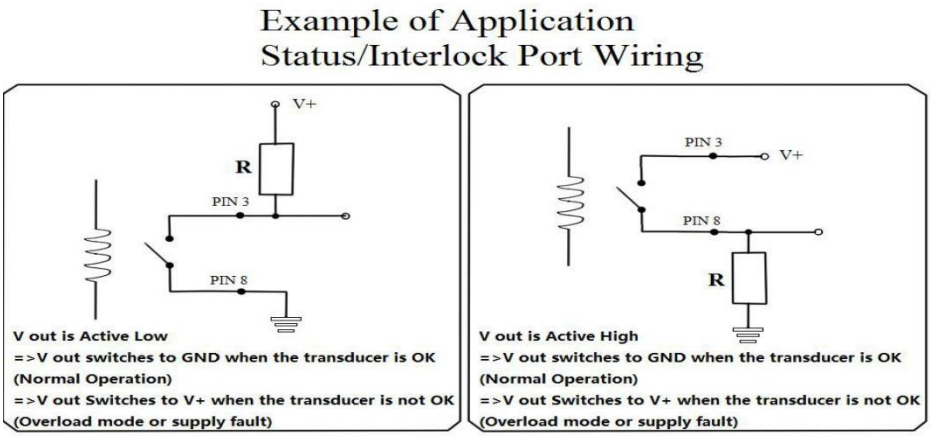
① CTA20, CTA60,CTA200,CTA400,CTA1000B,CTA2000,CTA2000B

Operating instruction





② CTA700， CTA1000 Operating instruction：

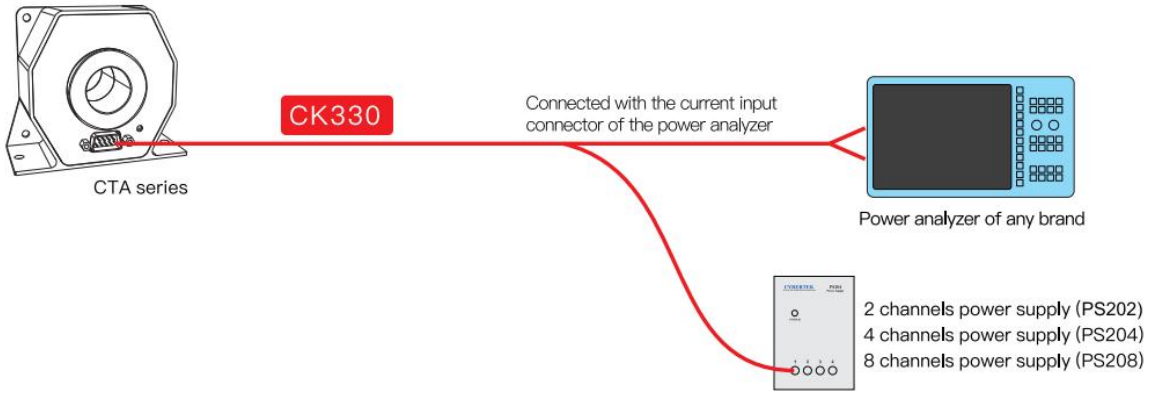


5.3 Operating Method

- ✧ Connect sensor and Power Supply
- ✧ Connect sensor and Measurement Device
- ✧ Turn on sensor, power it up
- ✧ Connect the cable under test and measure it.

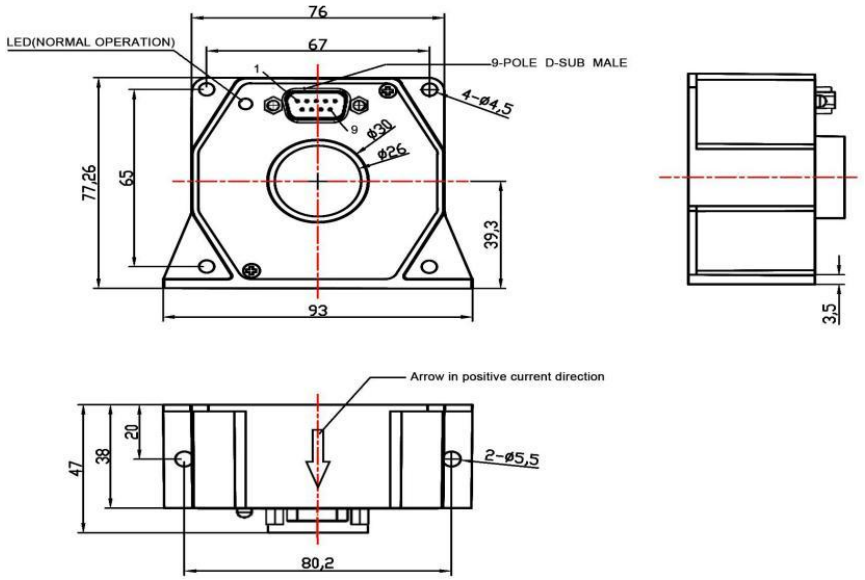
Attention While measuring, to make the measurement result right, please turn on the power of the sensor and then connect the current under test and measure it.

5.4 The sensor wiring sample diagram of the CTA series is shown below:

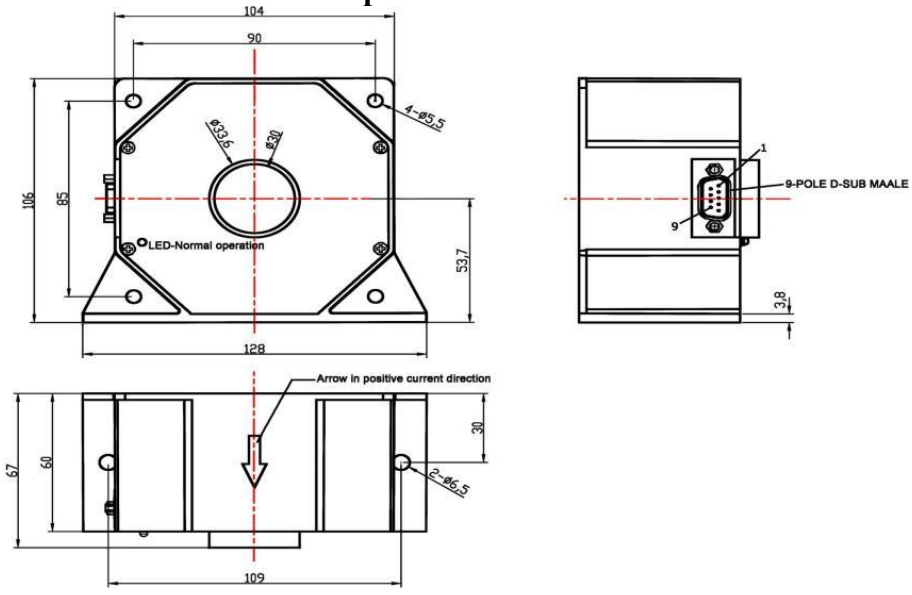


6. Mechanic Specification

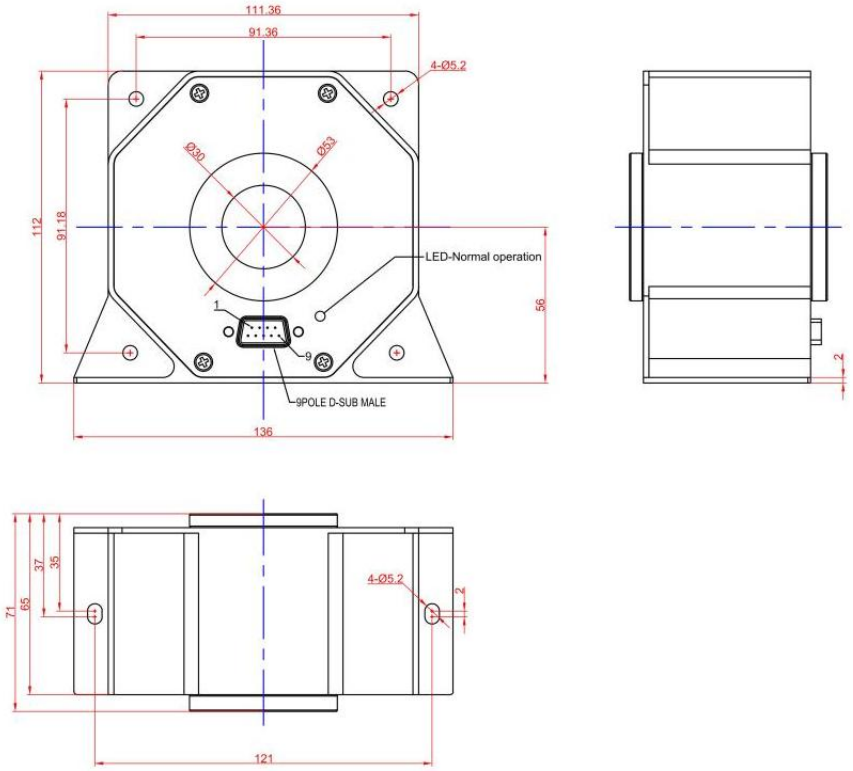
CTA20,CTA60, CTA200,CTA400 Mechanic Specification



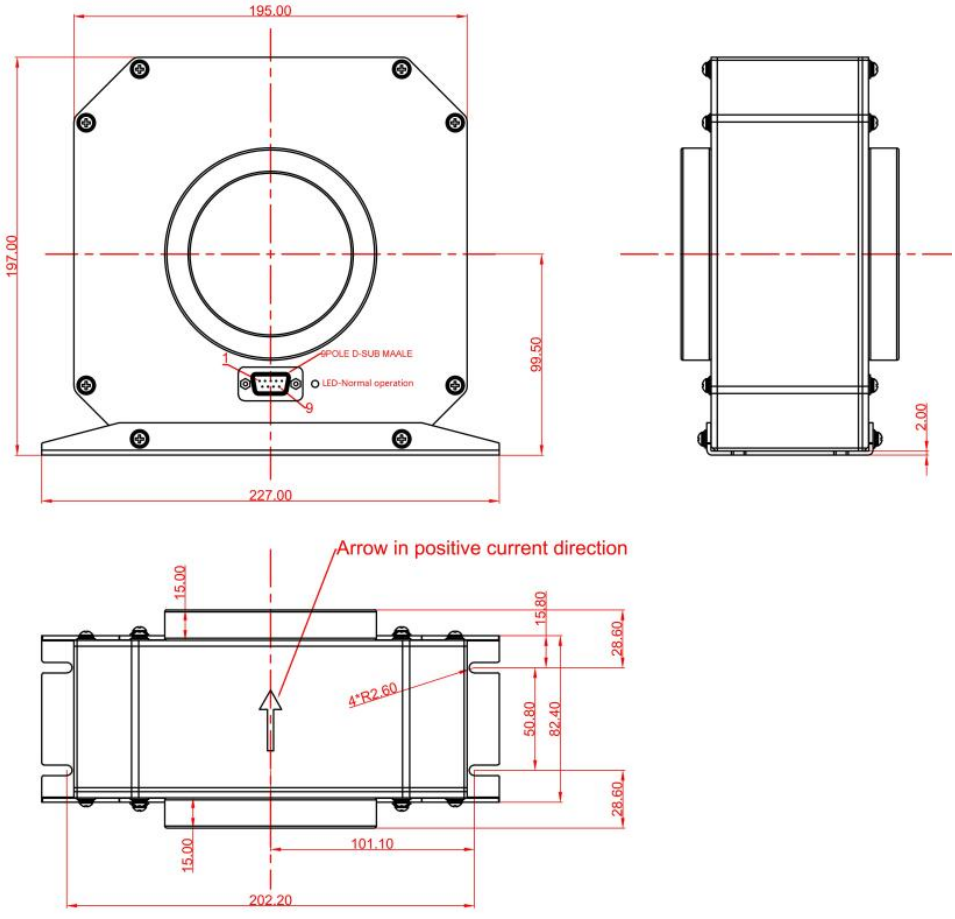
CTA700 CTA1000 Mechanic Specification



CTA1000B Mechanic Specification



CTA2000,CTA2000B Mechanic Specification



7. Environmental Characteristics

Operating Temperature & Humidity	-40～85℃，20～80%RH
Storing Temperature & Humidity	-40～85℃，20～80%RH

8. Pa

cking List

Packing List	
Name	**Quantity**
Current Sensor	1
Instruction Book	1
Warranty Card	1
Test Report	1

CYBERTEK

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