HONGFA

CURRENT TRANSFORMER PRODUCT

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INTRODUCTION

Hongfa (Shanghai Stock Exchange: 600885) is one of the leading relay manufacturers in the world. Founded in 1984, Hongfa is currentlya top relay R&D and production center globally. Our products include relays, high and low voltage devices, precision parts, and automatic production. Relays are our main business; we produce more than 160 different series and more than 40,000 part numbers, withan annual production capacity of 1.5 billion pieces. Hongfa products are widely used in a range of applications, including industrial, energy, transportation, telecommunication, home appliance, medical, and defense. The establishment of local marketing and service centers has allowedus to conduct business and provide technical support to our customers in over 120 countries and regions.

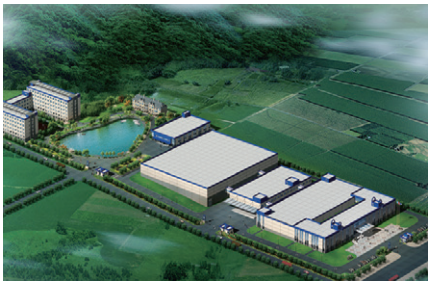
Hongfa Europe

Hongfa's test center has the largest relay test and analysis laboratory in China. Our fully-equipped facility maintains the most advanced technology, which has allowed us to obtain certifications from VDE, UL, and CNAS. Our products bear the agency markings of UL, CUL, VDE, TÜV, and CQC. Our engineers and scientists continuously drive the relay industry and influence professional and national standards.

Hongfa believes that the key to sustainability and success is the pursuit of exceptional and consistent quality. Through the continuous improvement of the Hongfa quality management system, Hongfa has won global acknowledgements from our customers.

Donglin Industrial Park

Haicang Industrial Park



Zhongjiang Industrial Park

Zhangzhou Industrial Park

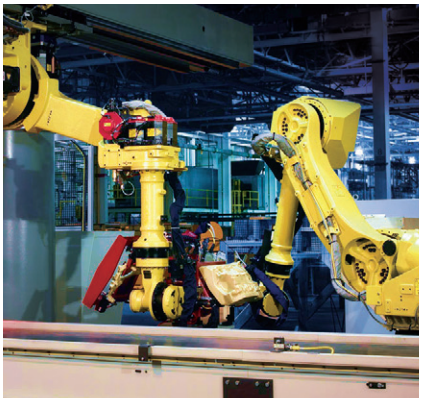
Zhoushan Industrial Park

Xi'an Factory

Since 1995, Hongfa has been ranked among China's Top 100 Electronic Components Enterprises. Hongfa was awarded the Advanced Hi-Tech Enterprise of Torch Program by the Ministry of Science and Technology. Hongfa was the only relay company to be listed among the first batch of National Export-Oriented Enterprises of Automotive Components by the Ministry of Commerce and the National Development and Reform Commission.

Hongfa's vision is to grow along with all of our customers worldwide. It is our wish that our customers will continuously benefit from our advancements in technology.

APPLICATIONS



Industrial Control

Intelligent Building

Smart Grid

Energy Management

CONTENT

Content List

Product overview

NOTE:
The contents and data in this catalogue are not binding. We reserve the right to modify the contents of this document on the basis of technical development of the products, without prior notice. The real order requirements and technical agreements shall prevail.

Product Overview

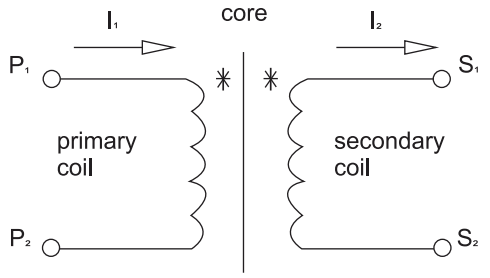
The wide-measuring-range micro Current Transformers (CTs), PTs and current/voltage transformers, grade S CTs, high-saturation-high-linearity DC immune CTs are specially designed for wide measuring-range electricity meters (such as the wide-measuring-range three-phase-three wire, three-phase-four wire electricity meters, anti-tampering electricity meters). Hongfa designs and produces CTs according to JB/T10665 standard for micro current transformer, JB/T10667 standard for micro voltage transformer. All CTs conform to IEC60044, JJG 313-1994 and GB/T 20840.2-2014 standards.

Operating conditions

- Ambient temperature: -25°C ~ + 75°C
- Relative Humidity: < 90% at 25°C
- Altitude: 1000m
- Rated voltage: 500Vac with harmonic <5%
- There should be no gases, steam, chemical sediments, dust and any other harmful elements that might affect the insulation of the CTs
- No severe shock and vibration
- No strong external electromagnetic field

Key performances

- Dielectric strength at 50Hz: 3kV 1min between primary coil and secondary coil, and also the earth
- Dielectric strength between turns: open circuit at the secondary coil, there's no damage when the primary coil is applied with rated voltage during 1 minute
- Insulation resistance: the insulation resistance of the primary coil to the secondary coil and to the earth should be higher than 500MΩ
- Polarity: primary and secondary coil has the same polarity



- Errors: a CT has two different errors, current error (ratio error) and phase shift error, which can be measured with CTs testing equipment
- Accuracy Class:

$$\text{Transformation Ratio} = \frac{\text{nominal primary current}}{\text{nominal secondary current}}$$

Error limits

Accuracy Class	ratio error at different primary current (Ipr)±%				Phase shift error at different primary current (Ipr)±%			
	5Ipr	20Ipr	100Ipr	120Ipr	5Ipr	20Ipr	100Ipr	Imax
0.1	0.1	0.1	0.1	0.1	11	8	8	5
0.2	0.2	0.2	0.2	0.2	20	15	15	10
0.5	0.5	0.5	0.5	0.5	60	45	45	30
1.0	1.0	1.0	1.0	1.0	120	90	90	60

Accuracy Class	ratio error at different primary current (Ipr) ±%					Phase shift error at different primary current(Ipr)±%				
	1 Ipr	5Ipr	20Ipr	100Ipr	120Ipr	I Ipr	5Ipr	20Ipr	100Ipr	120Ipr
0.2s	0.75	0.35	0.2	0.2	0.2	30	15	10	10	10
0.5s	1.5	0.75	0.5	0.5	0.5	90	45	30	30	30

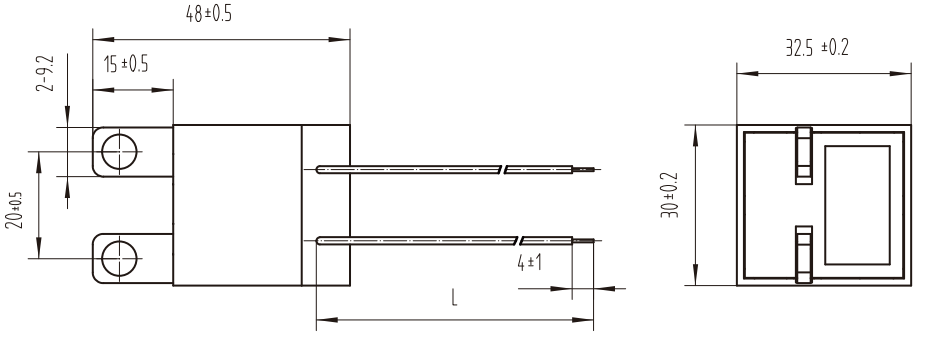
Mini Current Transformer

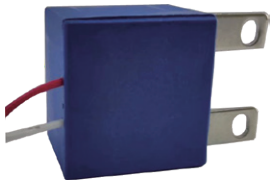
Loading type current transformer

- Suitable for a wide range of current (1.5A~120A)
- The holes on the primary lead bus-bar are standardized, can be fixed to the terminals of the electricity meters with standard bolts
- A variety of litz wire for choice, can be customized for special requirements
- Encapsulated with epoxy resin to ensure high dielectric strength
- Linear output current, high precision
- PBT flame retardant plastic casing

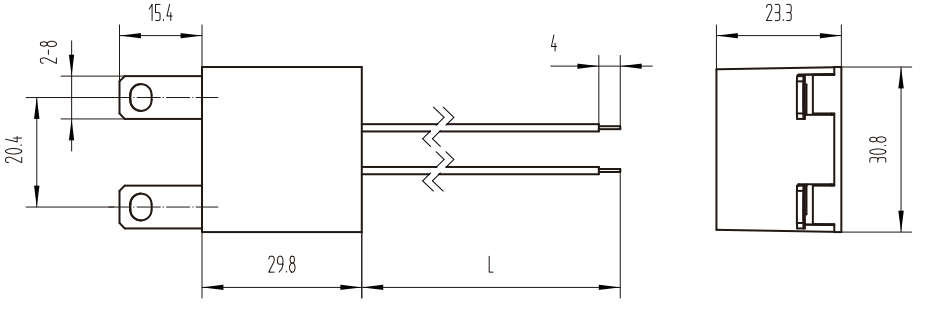
Product and Outline dimensions

HMCT-102

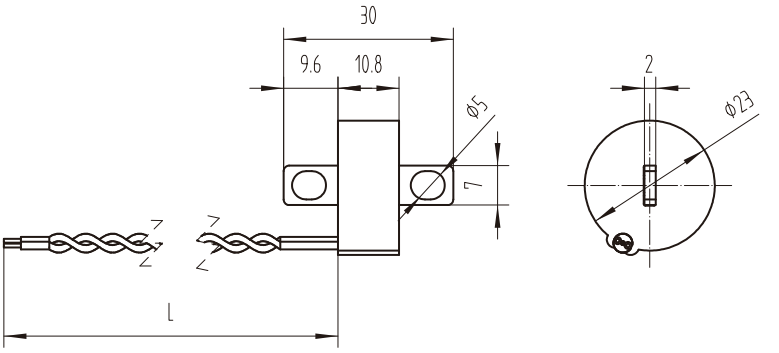




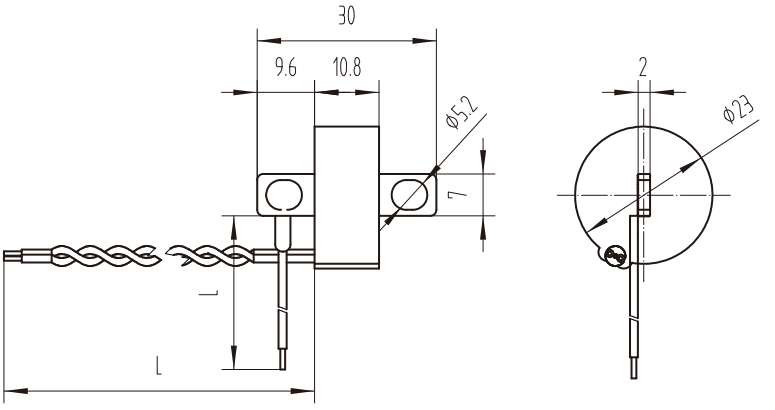
HMCT-103



HMCT-116



HMCT-116-1



Characteristics

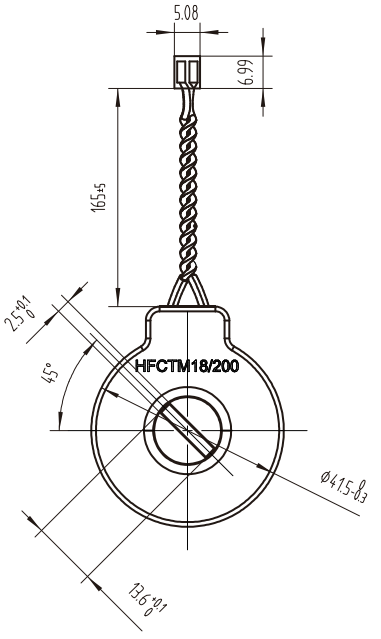
Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance(Ω)	Accuracy Class
HMCT-102	5-30A/5mA	5A	30A	5.0mA	100mV	20Ω	0.1
	10-60A/10mA	10A	60A	10mA	100mV	10Ω	0.1
	20-100A/20mA	20A	100A	20mA	100mV	5Ω	0.1
	20-120A/10mA	20A	120A	10mA	100mV	10Ω	0.1
HMCT-103	1.5-6A/5mA	1.5A	6A	5.0mA	100mV	20Ω	0.1
	1.5-6A/7.5mA	1.5A	6A	7.5mA	75mV	10Ω	0.1
HMCT-116	1.5-6A/0.75mA	1.5A	6A	0.75mA	7.5mV	10Ω	0.2
	5-60A/2.5mA	5.0A	60A	2.5mA	25mV	10Ω	0.1/0.2
HMCT-116-1	1.5-6A/0.75mA	1.5A	6A	0.75mA	7.5mV	10Ω	0.2
	5-60A/2.5mA	5.0A	60A	2.5mA	25mV	10Ω	0.1/0.2

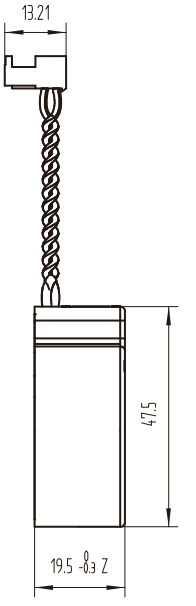
Bus-bar type Current Transformer

- Various mechanical dimensions and different forms available
- Linear output current, high precision
- Compact size, light weight, easy for installation
- PBT flame retardant plastic casing
- Encapsulated with epoxy resin to ensure high dielectric streng

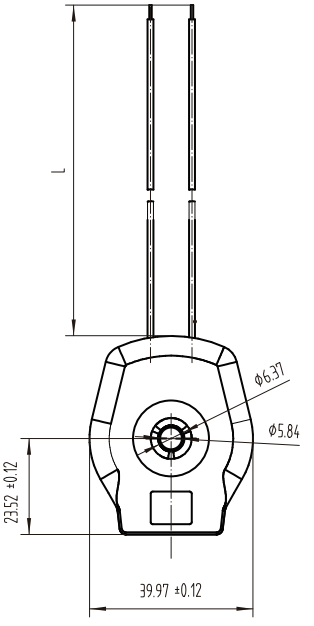
Product and Outline dimensions

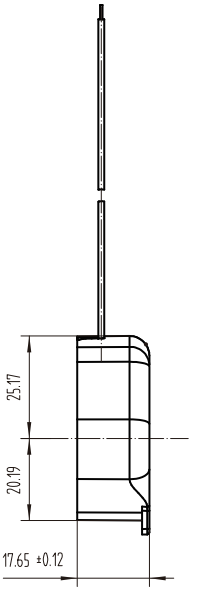
HMCT2



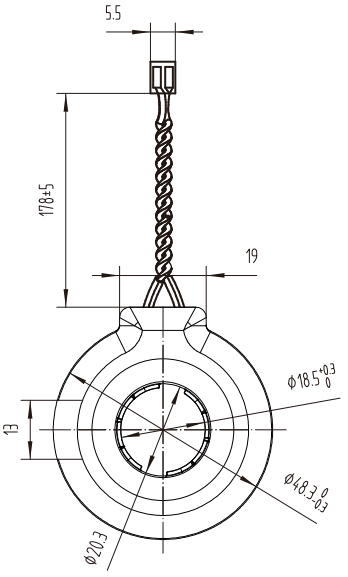


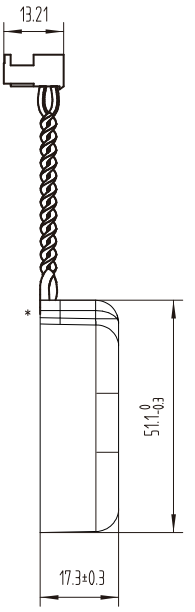
HMCT3





HMCT-061



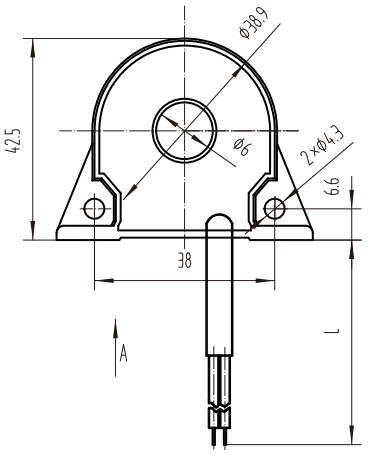


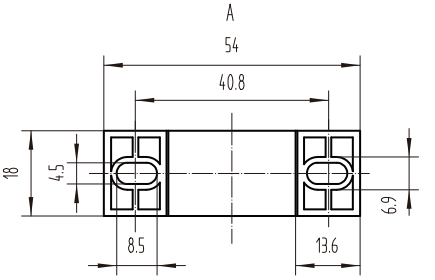
Characteristics

Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance (Ω)	Accuracy Class
HMCT2	30-120A/15mA	30A	120A	15mA	75mV	5Ω	0.1
	30-200A/15mA	30A	200A	15mA	75mV	5Ω	0.1
HMCT3	50-200A/16.7mA	50A	200A	25.0mA	37.5mV	1.5Ω	0.1
	50-320A/16.7mA	50A	320A	16.7mA	25.0mV	1.5Ω	0.1
HMCT-061	50-200A/25mA	50A	200A	25mA	41mV	1.64Ω	0.1
	60-320A/30mA	60A	320A	30mA	49.2mV	1.64Ω	0.1
	60-400A/30mA	60A	400A	30mA	49.2mV	1.64Ω	0.1

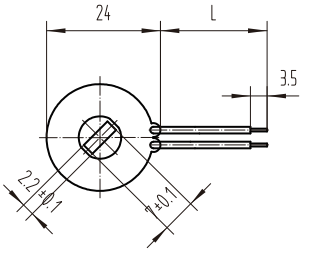
Product and Outline dimensions

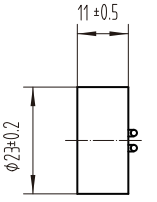
HMCT-009





HMCT-016





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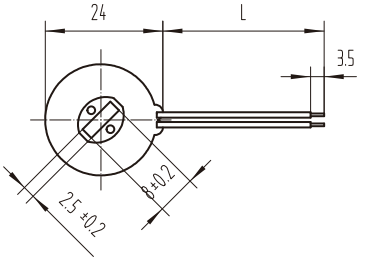
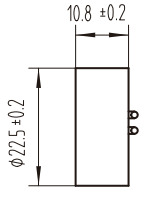
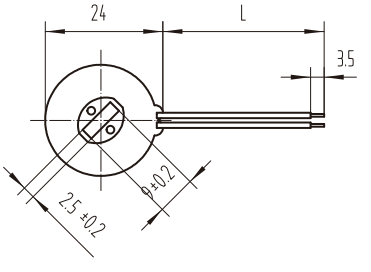
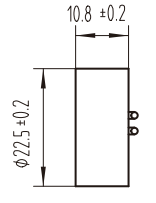




HMCT-018





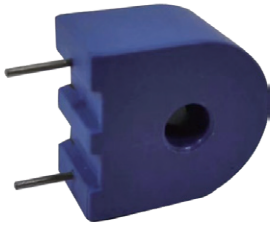
Characteristics

Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance (Ω)	Accuracy Class
HMCT-009	20A/100mA	20A	40A	100mA	500mV	5Ω	0.5
	20-100A/20mA	20A	100A	20mA	200mV	10Ω	0.1
	50-200A/25mA	50A	200A	25mA	250mV	10Ω	0.1
HMCT-016	5-30A/5mA	5A	30A	5mA	100mV	20Ω	0.2
	10-60A/5mA	10A	60A	5mA	100mV	20Ω	0.1/0.2
HMCT-017 HMCT-018	10-100A/5mA	10A	100A	5mA	50mV	10Ω	0.1/0.2

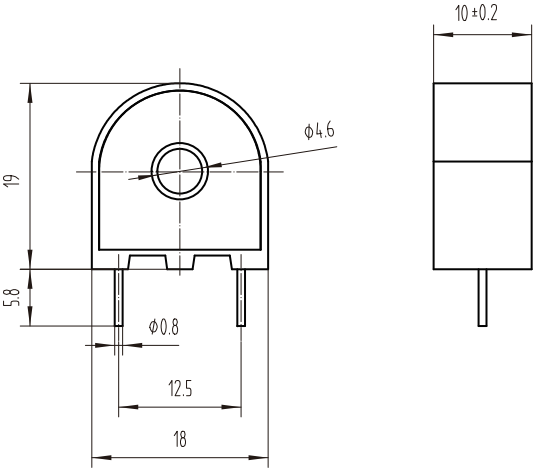
PCB-mount type current transformer

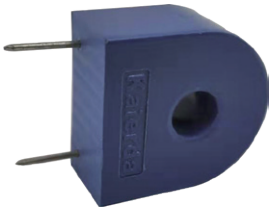
- Fully encapsulated with epoxy resin, resistant to harsh environments, high dielectric strength
- PCB-mount type
- The primary inputs could be PCB mounted, soft wire and tin-plated-copper-core wire
- Linear output current, high precision
- Compact size, light weight, easy for installation
- PBT flame retardant plastic casing

Product and Outline dimensions



HMCT-226A





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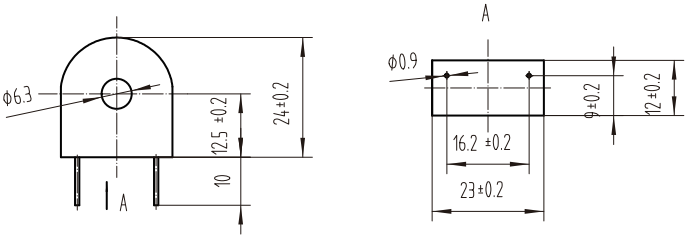
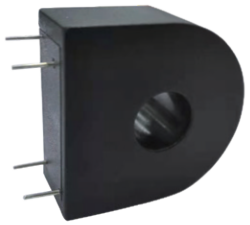
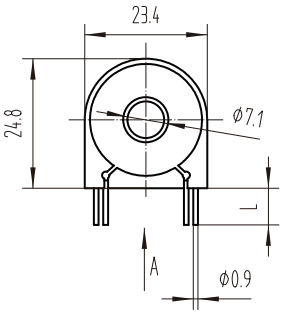
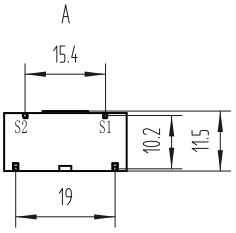




HMCT-406





Characteristics

Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current(mA)	Rated sampling voltage(mV)	Load Resistance(Ω)	Accuracy Class
HMCT-226A	5A/5mA	5A	10A	5.0mA	100mV	20Ω	0.2
	5A/2.5mA	5A	20A	2.5mA	50mV	20Ω	0.2
HMCT-226B	5A/5mA	5A	20A	5.0mA	100mV	20Ω	0.2
	5A/2.5mA	5A	30A	2.5mA	50mV	20Ω	0.1/0.2
	20A/100mA	20A	24A	100mA	500mV	5Ω	0.5
HMCT-406	5A/2.5mA	5A	40A	2.5mA	50mV	20Ω	0.2
	5A/5mA	5A	20A	5.0mA	100mV	20Ω	0.2
	10A/4mA	10A	40A	4.0mA	80mV	20Ω	0.1
	20A/20mA	20A	48A	20mA	400mV	20Ω	0.2

Current type voltage Transformer

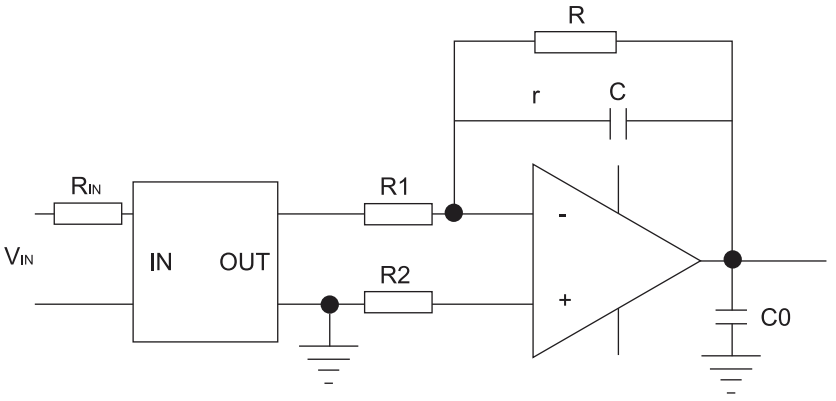
- PCB-mount type
- Very compact size, can be used directly as an electronic component
- High linearity, high precision, wide operating range
-PBT flame retardant plastic casing
- Fully encapsulated with epoxy resin, high dielectric strength, resistant to harsh environments

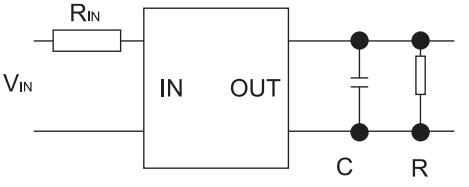
Application note of current type voltage transformer

- PT series are miniature current type voltage transformers, are widely used in electric transmitters and power monitors etc., typical application diagrams are shown in Fig. I and Fig. 2. Input and output current ratio is 1: 1, maximum input current is 10mA, primary input voltage should be less than 1000Vac (connecting with current-limiting resistor).
  Ratio error: ±0.2%, phase error: ±10', output load close to zero.

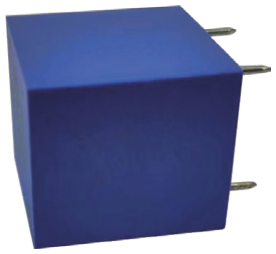
- Fig.I: Secondary load is close to 0, the primary input current is limited by RIN to 0-2mA, the transformer generates the same current of 0-2mA at the secondary output. The operational amplifier output voltage can be adjusted by resistance R.

- Fig.2: Transformer secondary output is connected directly with resistor R, the resistance should not be lower than 500Ω, the maximum output voltage is 1.5Vac. The secondary output load is high, the phase error is high but the linearity keeps the same.

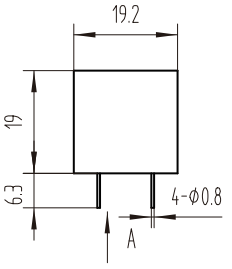


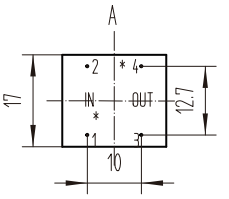


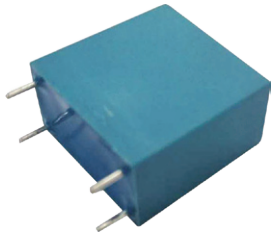
Product and Outline dimensions



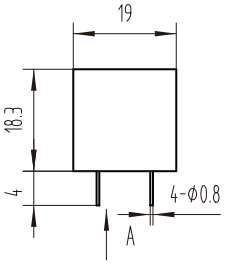
HMPT-401

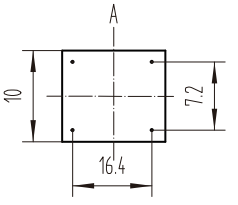






HMPT-403





Characteristics

Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance(Ω)	Accuracy Class
HMPT-401	2mA/2mA	2mA	10mA	2mA	100mV	50Ω	0.2
	5mA/5mA	5mA	10mA	5mA	100mV	20Ω	0.2
HMPT-403	2mA/2mA	2 mA	10mA	2mA	100mV	50Ω	0.2
	5mA/5mA	5mA	10mA	5mA	250mV	50Ω	0.2

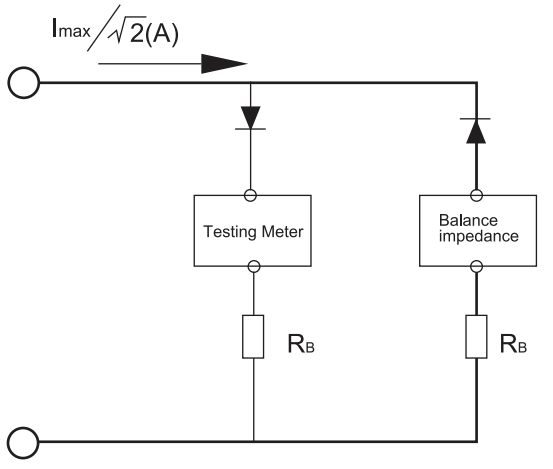
DC immune current transformer

- Low DC tolerance
- Suitable for a wide range of current (from 1.5 to 100A)
- Linear output current, high precision
- Compact size, delicate appearance
- Fully encapsulated with epoxy resin, high dielectric strength

DC Tolerance

-In normal condition, the power net is pure sinusoidal AC signal. But in special cases, the circuit have DC composition. Standard current transformer would be saturated under this condition, and cause huge error rate in the meter measurements. DC immune CT can solve this problem.

-DC tolerance measurement circuit: use half rectified AC signal at input side, and connect meter and balance impedance at output side. Accuracy class 0.1 CTs the DC tolerance is within ±3.0%, and ±6.0% for accuracy class 0.2 CTs.

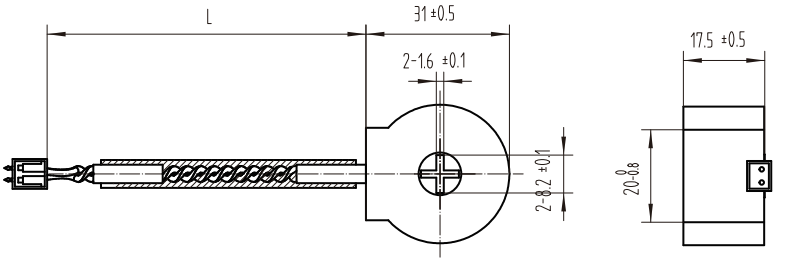


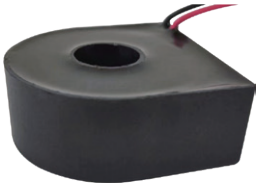
Double iron core DC immune Current Transformer

- Power factor COSΦ=1.0

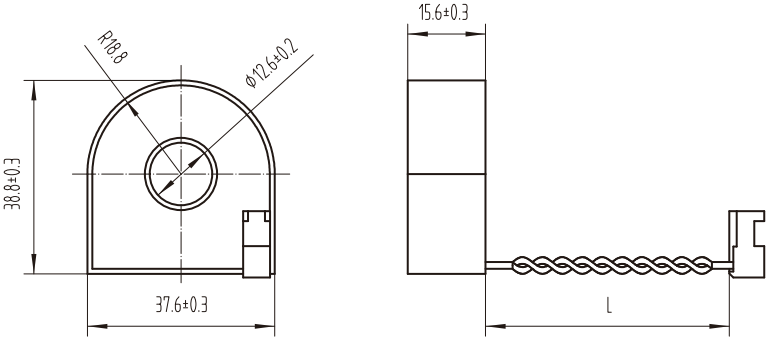
Product and Outline dimensions

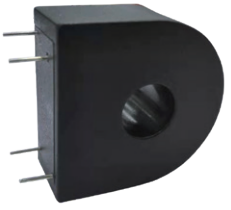
HDCT-615



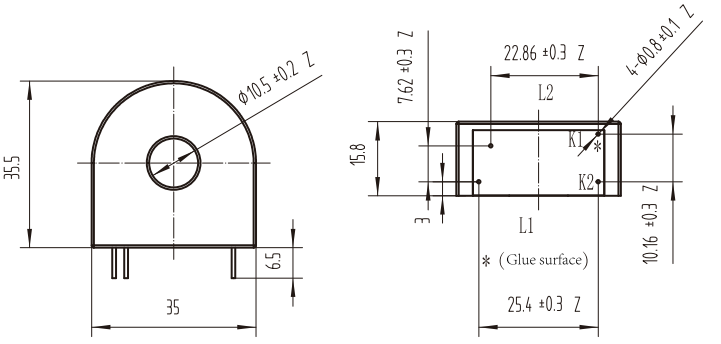


HDCT-631





HDCT1



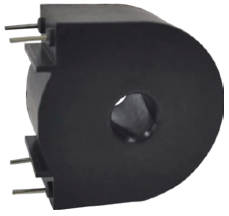
Characteristics

Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	DC immune peak current(A)	Load Resistance (Ω)	Accuracy Class	Power factor
HDCT-631	5-60A/2mA	5A	60A	2mA	60A	20Ω	0.1/0.2	1.0
	10-80A/4mA	10A	80A	4mA	80A	12.5Ω	0.1/0.2	1.0
	10-100A/4mA	10A	100A	4mA	100A	12.5Ω	0.1/0.2	1.0
	20-120A/8mA	20A	120A	8mA	120A	10Ω	0.1/0.2	1.0
HDCT-615	10-60A/4mA	10A	60A	4mA	60A	20Ω	0.1/0.2	1.0
HDCT1	5-60A/2mA	5A	60A	2mA	60A	7.5Ω	0.1/0.2	1.0
	10-100A/4mA	10A	100A	4mA	100A	7.5Ω	0.1/0.2	1.0

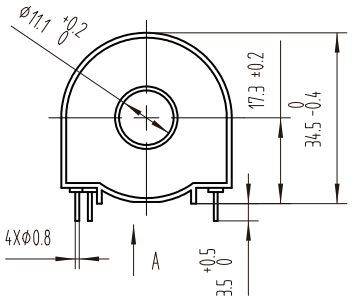
Single iron core DC immune Current Transformer

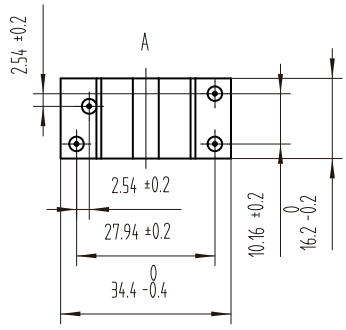
- Power factor COSΦ=0.5/1.0

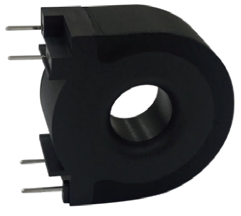
Product and Outline dimensions



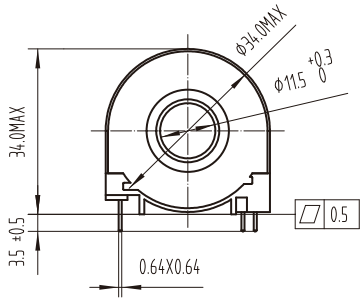
HDCT2

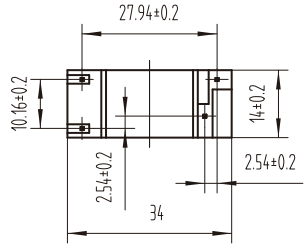






HDCT2-2





Characteristics

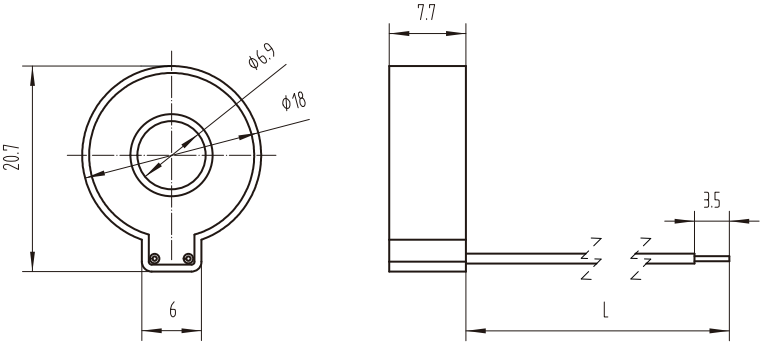
Type	Model	Rated primary current(A)	Max primary current(A)	Rated secondary current(mA)	DC immune peak current(A)	Load Resistance (Ω)	Accuracy Class	Power factor
HDCT2	5-100A/2mA	5A	100A	2mA	100A	7.5Ω	0.1/0.2	0.5/1.0
HDCT2-2	5-100A/2mA	5A	100A	2mA	100A	7.5Ω	0.1/0.2	0.5/1.0

Zero sequence mini current transformer

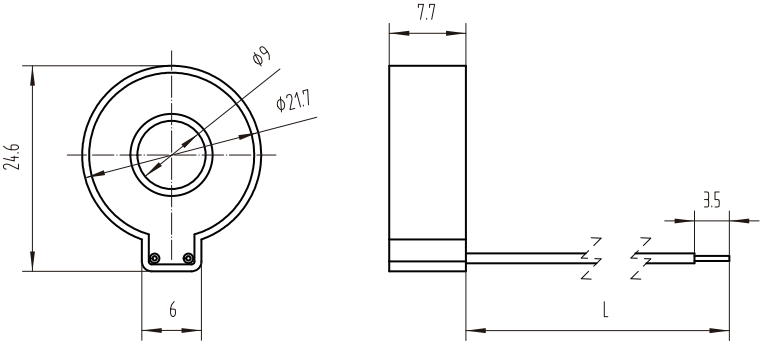
- Widely used in leakage current protection
- PBT flame-retardant plastic casing
- Fully encapsulated with epoxy resin, high dielectric strength, , resistant to harsh environment

Product and Outline dimensions

HZCT-07



HZCT-09



Characteristics

Type	Primary current(mA)	Secondary voltage(mV)
HZCT-07	10-400mA	6-500mV
HZCT-09	10-400mA	6-500mV

Split-Core Current Transformer

Main features

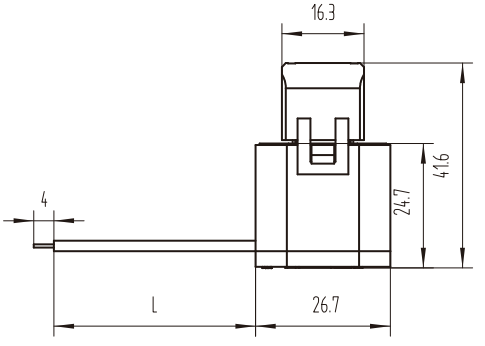
- Divisible iron core, with high accuracy and low magnetic loss
- Elegant appearance, compact size, light weight, easy installation

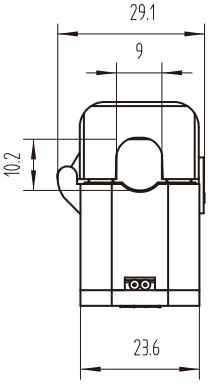
Typical applications:

- Electronic multifunction meter and field calibrator, measurements with instruments and protection functions
- General measurement and protection for power or electric systems that have rather requires motility or dispose limited space

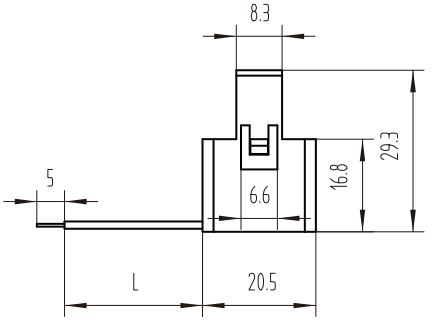
Product and Outline dimensions

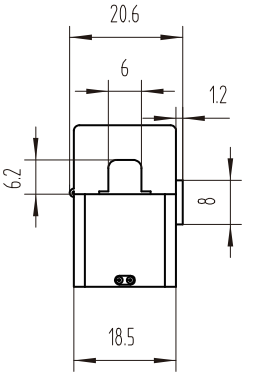
HKCT-10-02



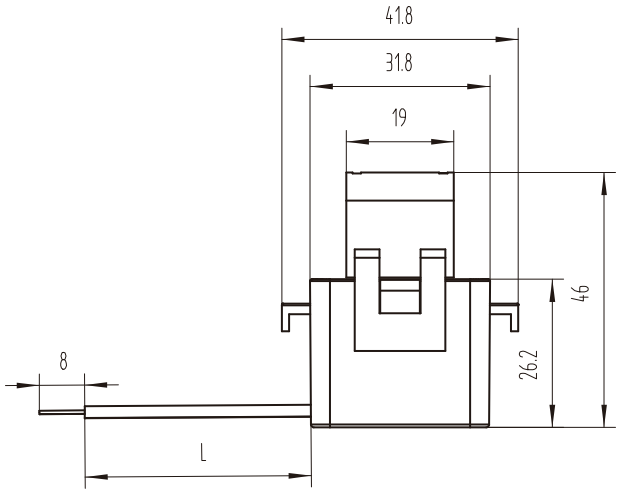


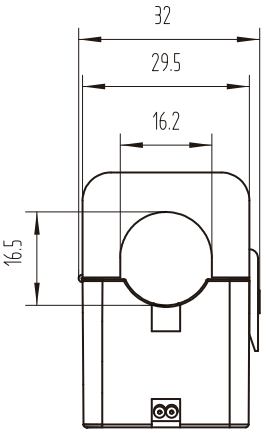
HKCT-06





HKCT-16



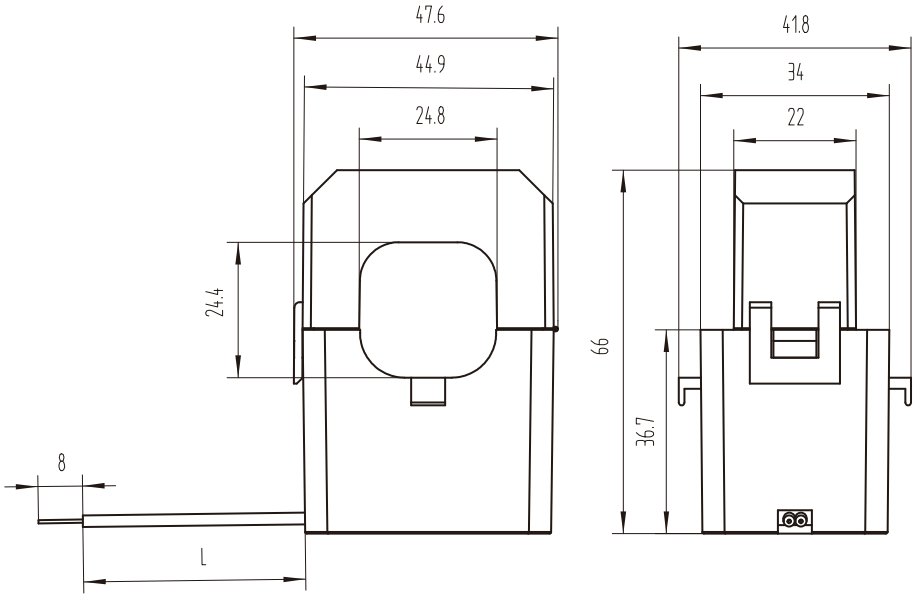


Characteristics

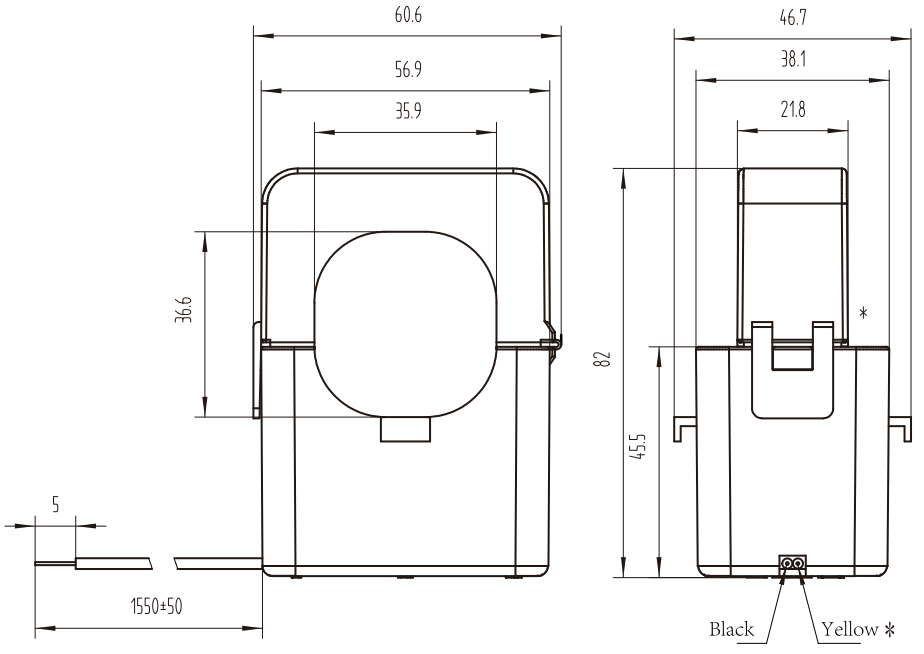
Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance(Ω)	Accuracy Class
HKCT- 06	5A/2.5mA	5A	6A	2.5mA	125mV	50Ω	1.0
	20A/10mA	20A	24A	10mA	500mV	50Ω	1.0
HKCT -10-02	5A/2.5mA	5A	60A	2.5mA	125mV	50Ω	0.5/10
	6A/2.0mA	6A	60A	2.0mA	100mV	50Ω	0.5/1.0
	60A/20mA	60A	60A	20mA	1000mV	50Ω	0.5/1.0
HKCT-16	5A/2.5mA	5A	80A	2.5mA	125mV	50Ω	0.5/1.0
	6A/2.0mA	6A	100A	2.0mA	100mV	50Ω	0.5/1.0
	100A/40.0	100A	120A	40.0mA	2000mV	50Ω	0.5/1.0
	200A/66.7	200A	240A	66.7mA	1500mV	22.5Ω	1.0

Product and Outline dimensions

HKCT-24



HKCT-36

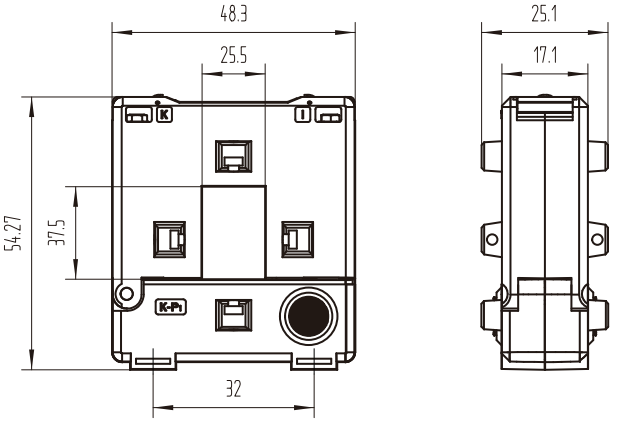


Characteristics

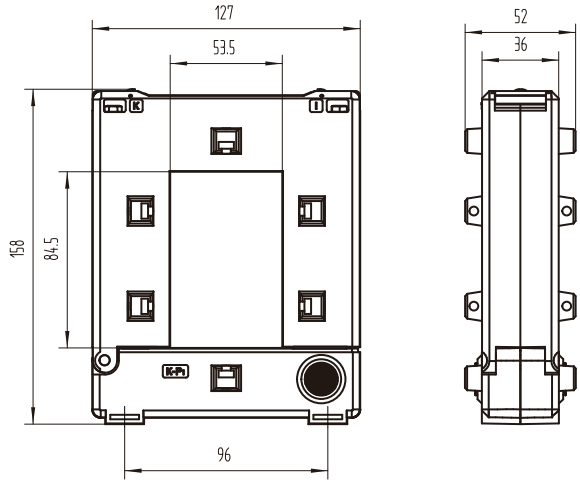
Model	Type	Rated primary current (A)	Max primary current (A)	Rated secondary current (mA)	Rated sampling voltage (mV)	Load Resistance(Ω)	Accuracy Class
HKCT-24	50A/25mA	50A	60A	25mA	1250mV	50Ω	1.0
	100A/20mA	100A	120A	20mA	1000mV	50Ω	0.5/1.0
	200A/40mA	200A	240A	40mA	2000mV	50Ω	0.5/1.0
	400A/80mA	400A	480A	80mA	2000mV	25Ω	1.0
	100A/1A	100A	120A	1000mA	500mV	0.5Ω	1.0
	200A/1A	200A	240A	1000mA	600mV	0.6Ω	1.0
	400A/1A	400A	480A	1000mA	1000mV	1.0Ω	1.0
HKCT-36	80A/40mA	80A	100A	40mA	2000mV	50Ω	1.0
	100A/20mA	100A	120A	20mA	1000mV	50Ω	0.5/1.0
	200A/40mA	200A	240A	40mA	2000mV	50Ω	0.5/1.0
	400A/80mA	400A	480A	80mA	2000mV	25Ω	1.0
	100A/1A	100A	120A	1000mA	500mV	0.5Ω	1.0
	200A/1A	200A	240A	1000mA	600mV	0.6Ω	1.0
	400A/1A	400A	480A	1000mA	1000mV	1.0Ω	1.0

Product and Outline dimensions

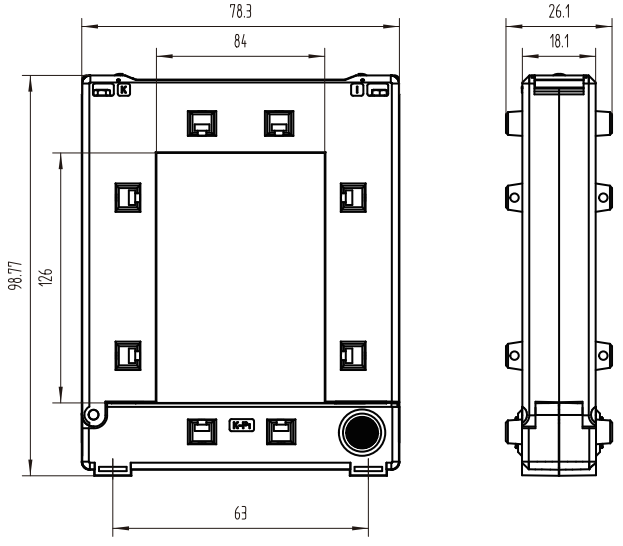
HK-23



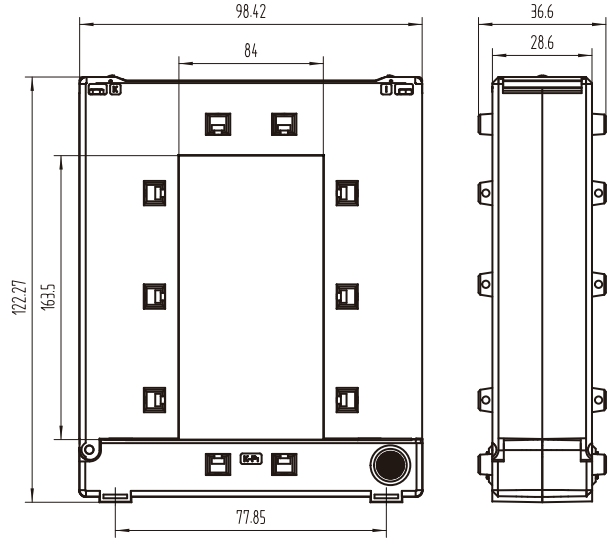
HK-58



HK-812



HK-816



Characteristics

Type	Rated primary current (A)	Rated secondary current (A)	Load (VA)	
			Class 0.5	Class 1
HK-23	100A	5A/1A	-	1.5
	150A	5A/1A	-	1.5
	200A	5A/1A	-	2.5
	250A	5A/1A	1.5	3.75
	300A	5A/1A	1.5	3.75
HK-58	300A	5A/1A	2.5	3.75
	400A	5A/1A	2.5	3.75
	500A	5A/1A	2.5	3.75
	600A	5A/1A	5.0	7.50
	800A	5A/1A	5.0	7.50
	1000A	5A/1A	5.0	7.50
HK-812	600A	5A/1A	5	10
	800A	5A/1A	5	10
	1000A	5A/1A	7.5	10
	1200A	5A/1A	7.5	15
	1500A	5A/1A	7.5	15
HK-816	1500A	5A/1A	10	20
	2000A	5A/1A	15	20
	2500A	5A/1A	15	20
	3000A	5A/1A	20	30
	4000A	5A/1A	20	30
	5000A	5A/1A	20	30

Zero sequence (Leakage protection) Current Transformer

Main features

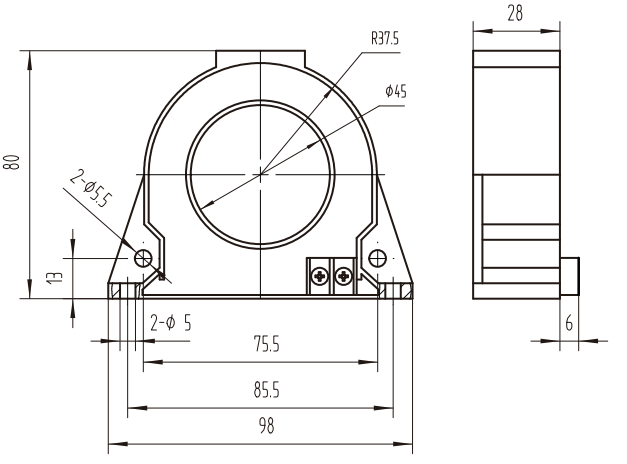
- Fully encapsulated with epoxy resin, high dielectric strength, resistant to harsh environments
- Easy installation
- Wide measurement range
- Elegant appearance, compact size, flexible usage
- PBT flame retardant plastic casing

Typical applications:

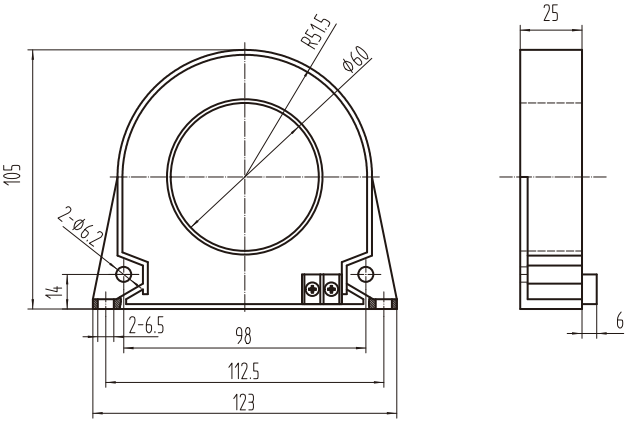
-Electric and fire monitoring, fire prevention and leakage protection system, electromagnetic relay protection, microcomputer protection, etc.

Product and Outline dimensions

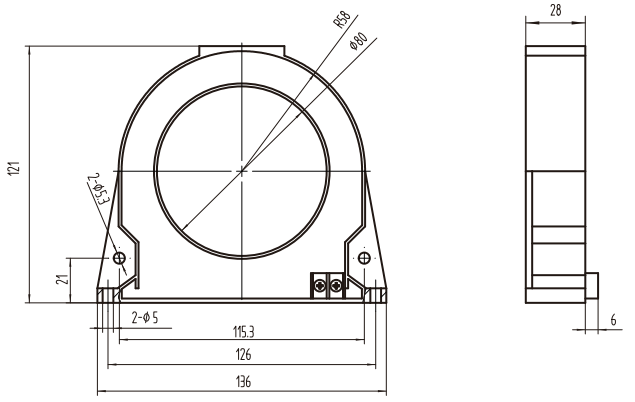
HZCT-45



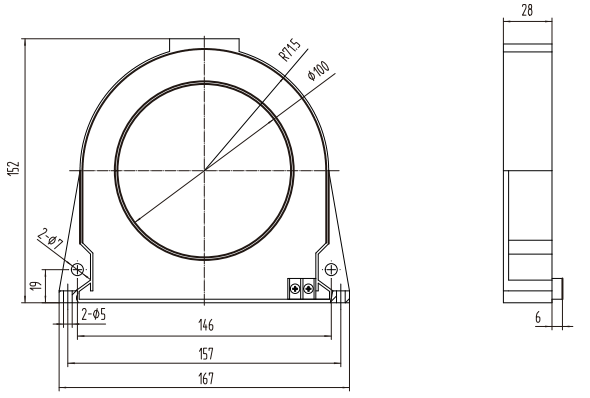
HZCT-60



HZCT-80



HZCT-100



Characteristics

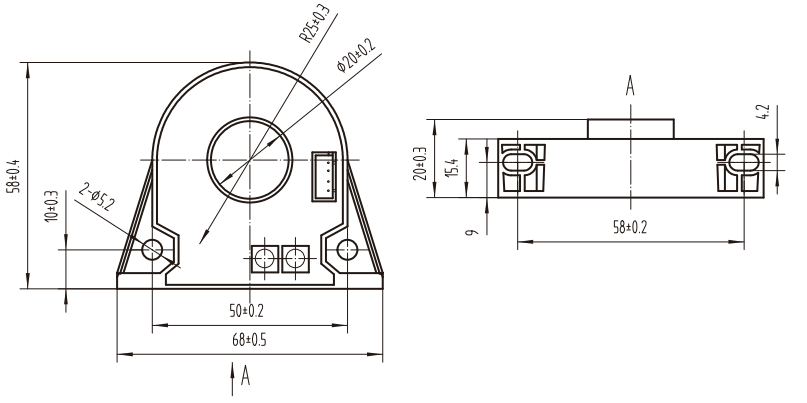
Model	Type	Rated primary current (A)	Max primary current (mA)	Rated secondary current (mA)	Max. current (A)	window size (mm)	Accuracy Class
HZCT-45	0.3A/0.3mA	0.3A	30mA	0.3mA	100A	Φ 45	0.2/0.5
	1A/1mA	1.0A	30mA	1.0mA	100A	Φ 45	0.2/0.5
	1A/0.5mA	1.0A	30mA	0.5mA	100A	Φ 45	0.2/0.5
HZCT-60	0.3A/0.3mA	0.3A	30mA	0.3mA	250A	Φ 60	0.2/0.5
	1A/1mA	1.0A	30mA	1.0mA	250A	Φ 60	0.2/0.5
	1A/0.5mA	1.0A	30mA	0.5mA	250A	Φ 60	0.2/0.5
HZCT-80	0.3A/0.3mA	0.3A	50mA	0.3mA	400A	Φ 80	0.2/0.5
	I.0A/I.0mA	1.0A	50mA	1.0mA	400A	Φ 80	0.2/0.5
	1.0A/0.5mA	1.0A	50mA	0.5mA	400A	Φ 80	0.2/0.5
HZCT-100	0.5A/0.5mA	0.5A	50mA	0.5mA	630A	Φ 100	0.5
	I.0A/I.0mA	1.0A	50mA	1.0mA	630A	Φ 100	0.5
	1.0A/0.5mA	1.0A	50mA	0.5mA	630A	Φ 100	0.5

Hall effect Current Transformer

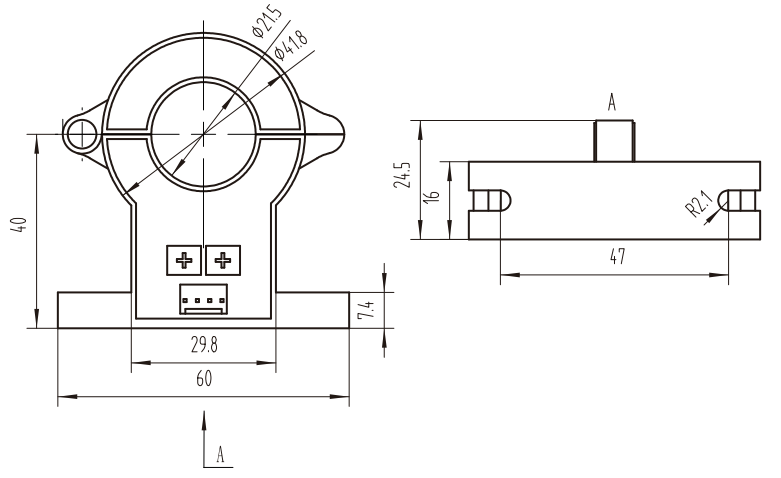
DC, AC and pulsating currents, as well as using these measurements to display, the control system can be used. For example: communication base station, electric locomotive, subway, trolley bus, railway, wind power, DC flexible transmission, charging pile, DC screen, UPS power supply, inverter, rectifier, frequency conversion governor, inverter welding machine, electrolytic electroplating, numerical control machine, Microcomputer and power network monitoring system are widely used.

Product and Outline dimensions

HCF2



HKC2T

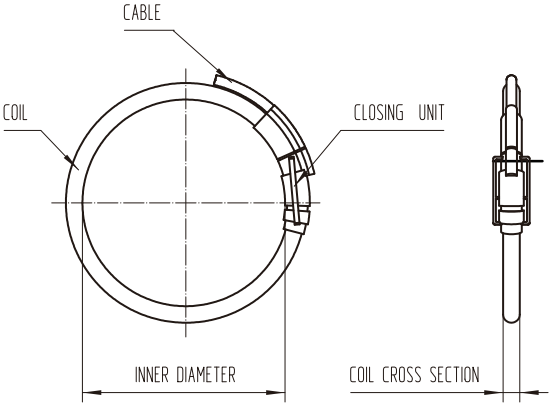


Characteristics

Model	Rated Input current (A)	Rated output current (V)	Bias voltage (V)	Accuracy Class
HCF2-200BSR	200A	2.5V ±2V	2.5V	≤1.0%
HCF2-300BSR	300A			
HCF2-400BSR	400A			
HKC2T-200BSR	200A	2.5V ± 0.625V		
HKC2T-300BSR	300A			
HKC2T-400BSR	400A			

Roche coil

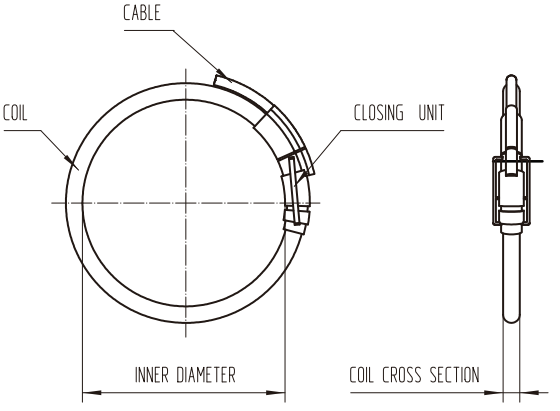
Main applications: measuring instruments, laboratory instrumentations, hormonic and transient signal monitoring, high current measurement and monitoring, energy control system, DC ripple measurement, electromagnetic relay protection.



Model	Coil circumference (mm)	Coil diameter (mm)	Secondary Output (RMS)
FRC040	210mm 350mm	60mm±10% 103mm±10%	40mV/1000A
FRC080	420mm 510mm 600mm 800mm	125mm±10% 155mm±10% 180mm±10% 245mm±10%	80mV/1000A 100mV/1000A
FRC100			

Overview of Roche Coil G1 with Mini USB Integrator

G1 Integrator



Model	Coil circumference (mm)	Coil diameter (mm)	Primary Input (A)	Secondary output (RMS)
FRC-G1	210mm 350mm 420mm 510mm 600mm 800mm	60mm±10% 103mm±10% 125mm±10% 155mm±10% 180mm±10% 245mm±10%	1A-10kA	0-3Vac