



The 513 series residual current transformer is mainly used in low-voltage power distribution such as 380V and 660V, or in drawer cabinets with relatively high density, to continuously detect and monitor the residual current at the installation node of the corresponding circuit.

The shell of this series of products is made of environmentally friendly flame-retardant ABS engineering plastics, high magnetic conductivity nanocrystalline soft magnetic materials, and combined with reasonable structural design and rigorous production technology. It has the characteristics of high precision, good balance characteristics, small size, high insulation strength, strong impact resistance, and easy installation. It can work reliably and stably in indoor environments; and in the structural design of the product, according to the customer's usage suggestions, the fixed foot is designed as a built-in structure, which can be hidden in the corresponding fixed foot slot before transportation and installation, and then rotated out when installed, to avoid product failure due to the breakage of the fixed foot before installation, and can reduce packaging and transportation costs.

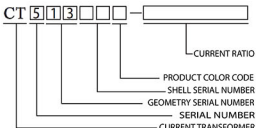
This series of products has a total of 11 specifications and models, suitable for residual current monitoring of cable loops or copper busbar loops, and the minimum leakage current value can reach 5mA or less, and the accuracy reaches and exceeds the national standard requirements of GB14287.2. The balance characteristics can be designed according to usage requirements.

The product shell color can be produced according to the customer's specified color to meet different color schemes.

FEATURES

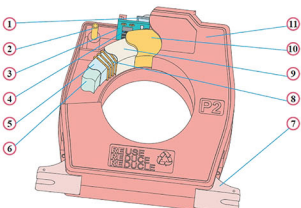
- Large varieties, and wide applicable current range
 - Strong overload capacity, up to 50 times the rated current
 - Excellent balance characteristics, small-size products meet the detector alarm threshold 30mA requirements
- High precision: 0.5/1.0/3 levels optional
 - Compact design, small size and beautiful appearance
 - Strong versatility and good interchangeability

NAMING



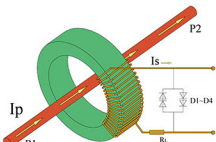
Color code:
0: black; 3: red; 6: blue; 8: gray;
The shell color specified by the customer is coded and classified according to the main color of the color system;

Structure and composition



code	name	key features
1	Terminal Blocks	Secondary signal output interface, tinned brass with iron nickel-plated flat washer integrated fastening bolt
2	Assembly fasteners	Made of brass or ABS plastic, used to connect the two parts of the transformer shell during assembly.
3	Terminal connection PCB board	Attached under the terminal block to connect the secondary signal line and output terminal and voltage clamping device
4	Clamp diode	According to the customer's technical parameters, the output signal is clamped at around 1.2V or 1.8V
5	Core outer insulation layer	A structure used to protect the iron core and prevent the winding enameled wire from being damaged.
6	Winding core	The main core of the product is mostly made of nanocrystalline soft magnetic materials
7	Product fixing pin	Made of flame-retardant ABS engineering plastic, it is screwed out from the housing slot during installation to fix the product.
8	Secondary Winding	The main winding of the transformer is made of oxygen-free copper, direct-weld polyester paint film, and has a temperature resistance of up to 155 degrees.
9	Winding outer insulation layer	The structure that protects the main winding from damage by external components is mostly made of polyester film or PVC film.
10	Shielding structure	The structure that improves the balance characteristics is mostly made of silicon steel soft magnetic material (optional)
11	Main housing	Flame retardant ABS engineering plastic production, color can be selected according to customer's specification

Electrical Schematic



code	Code Description
IP	Measured current/input current
IS	Secondary output current
P1/P2	Measured current input/output terminal
S1/S2	Secondary current output/input terminal
D1~D4	Clamp diode (A7)
RL	Secondary internal resistance

- The primary current IP flows in from the P1 terminal and out from the P2 terminal; the secondary current flows out from the S1 terminal and flows in from the S2 terminal.
- Generally, current transformers use a reduced-pole same-name relationship, that is, the secondary output terminal and the primary input terminal are same-name terminals to indicate the primary-secondary current relationship.
- The output current signal of the secondary side of the residual current transformer is generally small.
- It is recommended to use current output to improve the anti-interference ability as much as possible.
- IP*NI=IS*N2, generally the primary rated current is 1A, the secondary rated current is 0.5mA, or other parameters are specified according to the equation; Ip is the vector sum of the currents of the cables passing through the residual current transformer window loop, and has no significant correlation with the current size of the loop cable.
- The product contains a voltage clamping circuit with an effective value of 1.4V. It can be changed according to customer design during production.

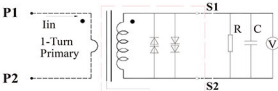
Normal use installation conditions

- Installation location: Indoors.
 - Ambient temperature: -10℃~+40℃.
 - Ambient humidity: Relative humidity should not exceed 80%.
 - The altitude shall not exceed 3000m.
- Atmospheric conditions: There is no serious pollution, corrosive and explosive media in the atmosphere.
 - Environment without significant frequent vibration and shock.
 - Storage temperature: -20℃~+75℃.

General technical indicators

Technical indicators		Electrical parameters				
Rated primary current	1000mA	5A	5A	10A	10A	
Rated secondary current	0.5mA	2.5mA	5mA	5mA	10mA	
Rated continuous thermal current	2000mA	10A	10A	50A	50A	
Operating frequency		50~60Hz				
Rated accuracy grade		Equal to or better than 0.5				
Operating voltage		≤660V				
Product flame retardant grade		UL94-V0				
Insulation resistance		≥1M ohms@500Vdc				
Power frequency withstand voltage		3KV@2mA\1min\50Hz				
Insulation heat resistance grade		E-Class				

When the residual current transformer passes the corresponding sinusoidal AC current, its output sampling value voltage should meet the requirements in the following table.



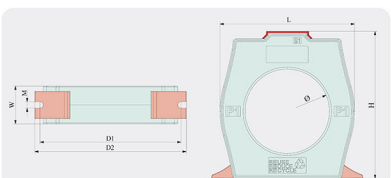
R=1000Ω C=0.022μF Current source frequency: 50-60Hz; accuracy better than 0.1%; voltmeter AC mV sampling accuracy better than 0.1%.

"Current Sense" value (mA)	Corresponding current range (mA)	Connecting load	Measuring end	Sampling voltage range (mV)
50	49.75-50.25	1000Ω //0.022μF	S1、S2	24.64-25.64
200	199-201			97.18~101.14
500	498-502			243.01~253.01
800	796-804			388.7~404.7
1000	995-1005			486.25~506.26

Balance characteristic parameters

Specifications	Main circuit rated working current	Test current	Conductor diameter	Conductor insulation thickness	Residual current characteristics
CT513103A	0≤In≤63A	63A	4mm	0.5mm	≤2mA@63A
CT513103	0≤In≤100A	100A	6mm	1mm	≤5mA@315A
CT513203	0≤In≤250A	315A	10mm	1.5mm	≤5mA@315A
CT513303	0≤In≤315A	315A	10mm	1.5mm	≤10mA@630A
CT513403	0≤In≤630A	630A	14mm	2.0mm	≤20mA@630A
CT513503	0≤In≤1000A	1000A	20mm	2.0mm	≤20mA@1000A

Product size corresponding chart



Specifications	Main circuit current (A)	Aperture (mm)	Dimensions (mm)			Mounting size (mm)	
			L	W	H	D1-D2	M
CT513103A	≤63A	30	65	32	75	67.5-75.5	6
CT513103	≤100A	46	85	32	94	88.5-100.5	6
CT513203	≤250A	65	108	32	120	108.5-122	6
CT513303	≤315A	80	128	36	140	134-144	6
CT513403	≤630A	100	150	36	162	152-172	6
CT513503	≤1000A	120	172	36	184	177-197	6