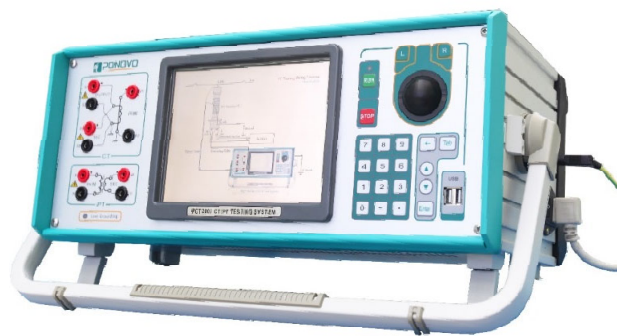




## PCT200 Series CT/PT Test System

PONOVO POWER CO., LTD.  
[www.ponovo.net](http://www.ponovo.net)





## PCT200 Series CT/PT Test System



PCT200 series CT/PT test set (CT Analyzer) is a current transformer test equipment specially designed for current transformer characteristic test and plus PT reference testing functions. There are two models, PCT200i and PCT200Ai. PCT200Ai has higher accuracy than PCT200i. Within built-in testing software based on Windows system in its local screen, PCT200 series are the test tool to finalize all the current transformer testing without laptop control. And the reports can be managed and analyzed on PC and converted to multi-results reports in excel format.

### Product Features

- Can test M/P/TP type, bushing and GIS type CT
- Ratio check up to 30000:1 and 45000:5
- Knee point/Excitation Test check up to 45000V
- More than 100,000 reports can be saved in its local storage, and support report software used on the kit and on PC for managing and analyzing the reports
- Standards: IEC60044-1/6, IEC61869-2, ANSI/IEEE C57.13, IS2705
- Guess nameplate function
- Results saved in Excel format
- Report can be transferred to flash disk via USB port and view and print the report on a PC
- Report could be customizable
- Local sunlight readable LCD display, 8.4inch screen, within built-in Windows 7 system
- Weight: 10kg/14kg

M type CT



Bushing type CT



GIS CT

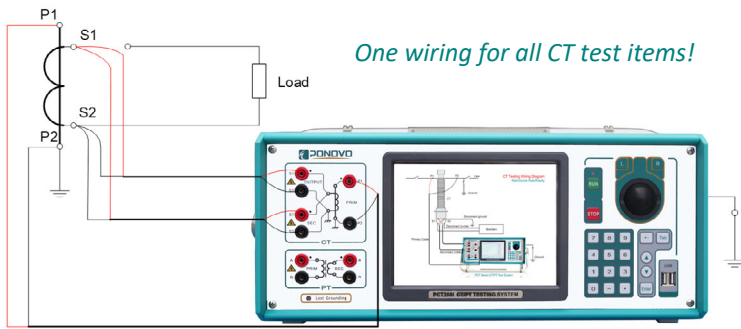


PT



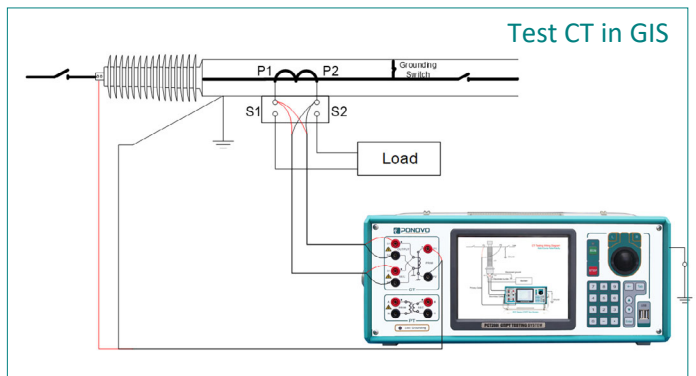
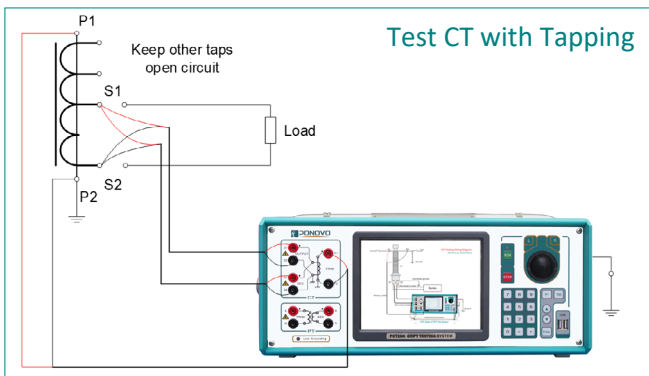
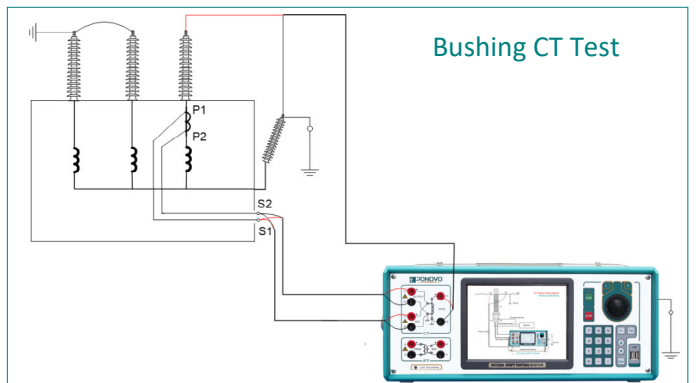
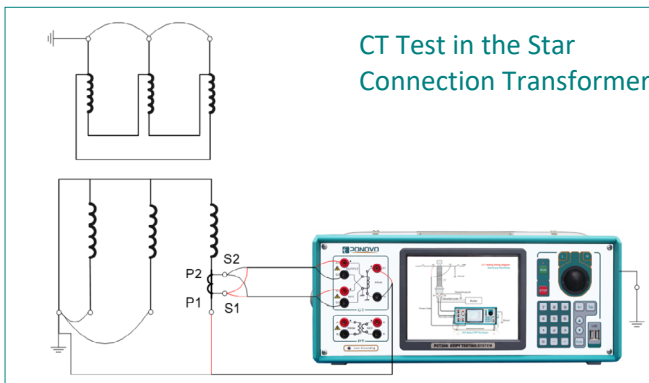
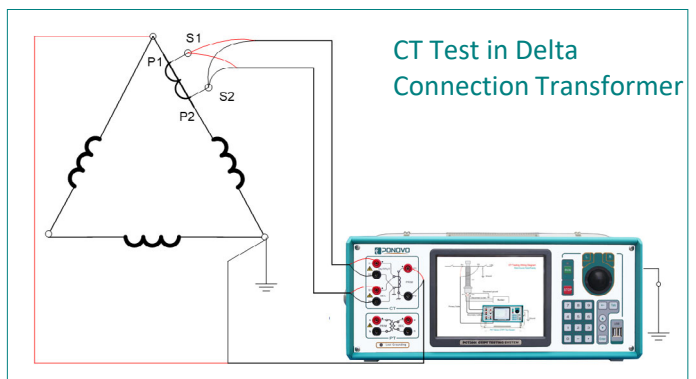
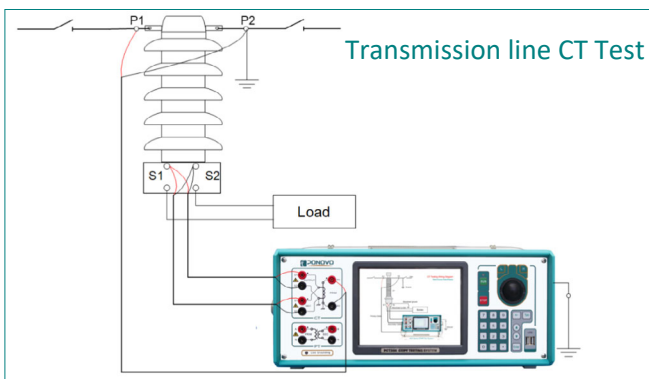
### More than 20 CT tests can be performed automatically in one time

- Burden
- Winding resistance
- Excitation
- Polarity
- Ratio
- Turn-Ratio
- Winding Ratio
- Ratio error and phase displacement
- The leakage inductances (Ls)
- Remanence factor (Kr)
- Secondary loop time constant (Ts)
- Accuracy limit factor (ALF)
- Instrument security factor (FS)
- Transient dimensioning factor (Ktd)
- Peak value of instantaneous error ( $\epsilon^{\wedge}$ )
- Composite error
- Demagnetization



## Various CT can be test

PCT200 series can test various CT, including transmission line CT, delta connection transformer, star connection transformer, CT with tapping, bushing type CT which requires large power output capacity, GIS type CT whose primary side length is long and requires large power output capacity, etc.



## Following PT tests can be done automatically

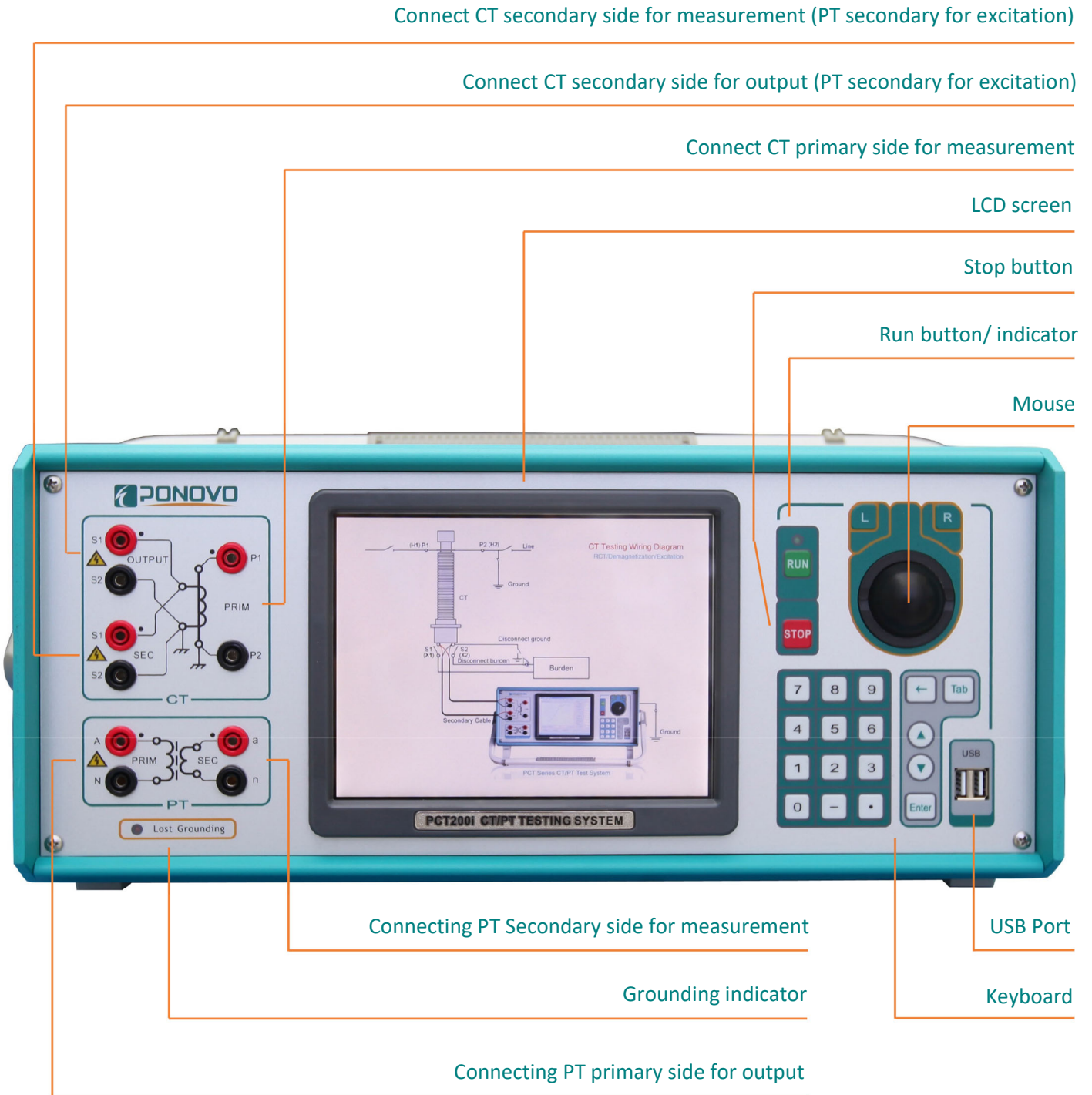
- Polarity
- Ratio
- Excitation
- Burden



## PCT200 Series Panels

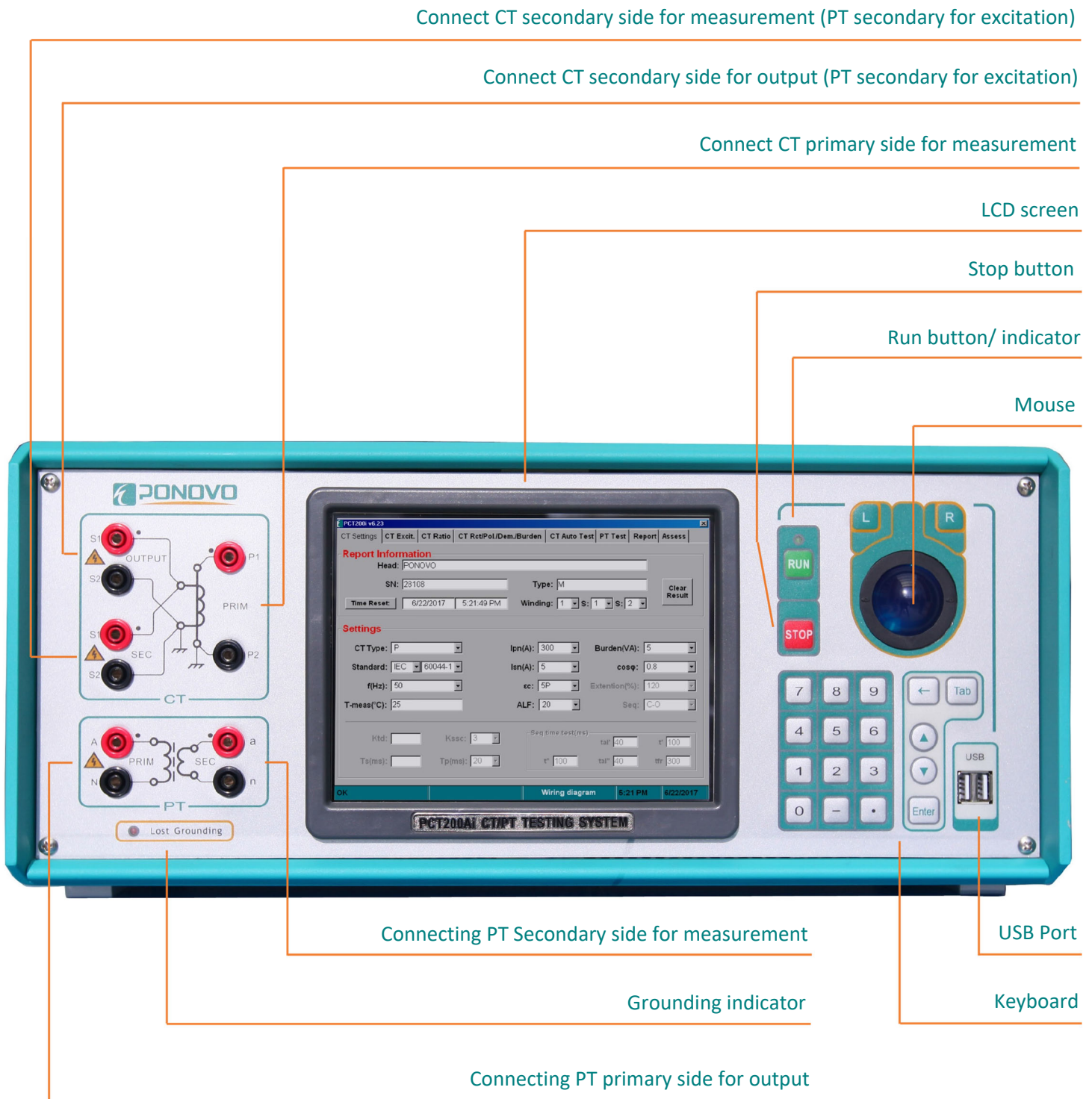
The front panel of PCT200i and PCT200Ai are same except product name, the right panel and rear panel are same.

### PCT200i Front Panel



# PCT200 Series CT/PT Test System

## PCT200Ai Front Panel



## PCT200i/PCT200Ai Rear Panel



## PCT200i/PCT200Ai Right Panel



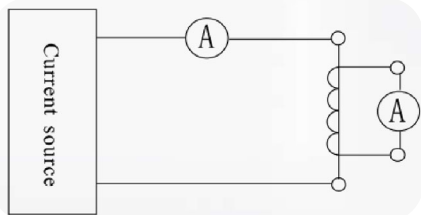
## PCT200 Series Test Principle

PCT200 series test set is professional CT/PT test set which adopts new principle launched by PONOVO. The new principle is the "voltage method" test principle used for the transformation ratio, and the "DC method" test principle for the excitation characteristics which is more advanced than the conventional "frequency conversion method".

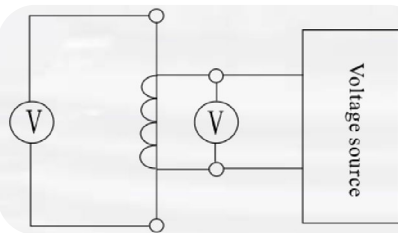
### ➤ Ratio test based on voltage method

The "voltage method" test principle is the AC voltage of 0~120V output to the secondary side of transformer. By using high-precision voltage acquisition circuit to collect and analyze the voltage induced by the primary side, then calculate the actual transformer ratio. Ratio check up to 30000:1.

**Conventional method – Current source is at primary side and current measurement is at the secondary side**



**New method – Voltage source is at secondary side and voltage measurement is at primary side**

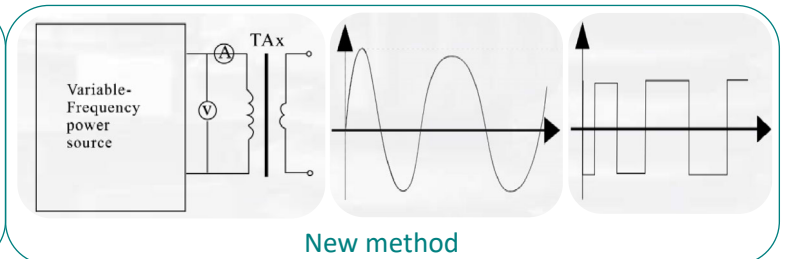
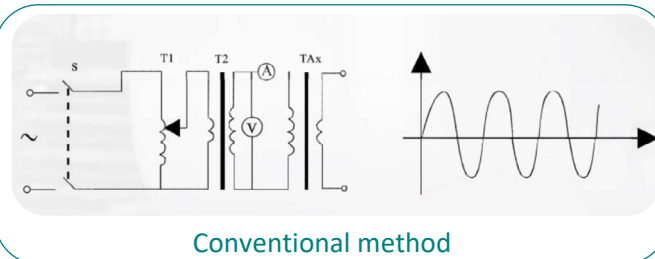


### Features of new method

- Ratio check up to 30000:1
- Can check busing CT
- Can check GIS CT

### ➤ Excitation characteristics test based on DC method

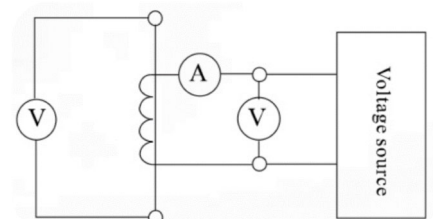
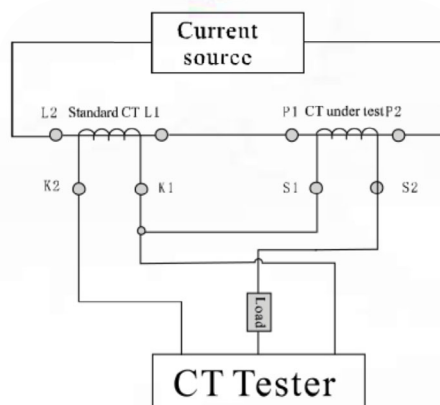
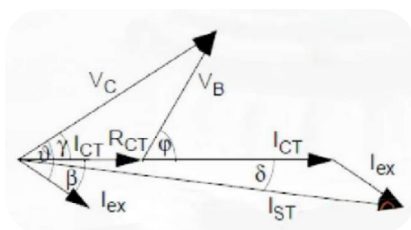
The "DC method" test principle is applying DC voltage on the secondary side of the transformer to quickly saturate the transformer. By using high-precision current acquisition circuit to test the current change and the saturation time on the transformer secondary side, then comprehensive calculate to get the excitation characteristics quickly. Knee point check up to 45KV.



- Features of new method**
- Can check CT with high knee point value
  - High efficiency, high accuracy, more safe

### ➤ Error check with extrapolation method for M type CT

Get the ratio error and angle error based on extrapolation method, no need to use extra standard CT nor standard load. Accuracy better than  $\pm 0.05\%$ .





## PCT200 Series CT/PT Test System Software

PCT200 series software is a smart comprehensive automated testing software. It adopts the windows operating system, which makes the human-computer interaction more friendly. Test report can be saved for a long time, and can also be exported through the U disk at any time and edited. When using PCT200, the tester only needs wire tester and transformer, input the nameplate of the transformer then press Run button, really realizing "one-key test". After the test is completed, the tester will generate test report and automatically judge whether the transformer is qualified.



### ➤ "One-key test" Process

#### ① Set Test Parameters

Report Information  
Head: ponovo  
SN: 28108 Type:   
Time Reset: 12/30/2022 10:44:36 AM Winding: 1 S: 1 S: 2 Clear Result

Settings  
Standard: IEC 60044-1 lpn(A): 2000 Burden(VA): 10  
CT Type: M Isn(A): 5 cosφ: 0.8  
f(Hz): 50 Class: 0.2S Extension(%): 120  
T-meas(°C): 25 FS: 10 Seq: C-O  
Ktd: Kssc: 3  
Seq time test(ms) t1: 100 tal: 40 t2: 100  
Ts(ms): Tp(ms): 20 ttr: 300

#### ② Select Test Functions

CT Test Task  
 Rct  
 Polarity  
 Ratio  
 Demagnet.  
 Excitation  
 Select None  
 Coarse Ratio

CT Parameter  
SN: 28108 CT Type: M  
Winding: 1 S: 1 S: 2 f(Hz): 50  
lpn(A): 2000 Isn(A): 5 Burden(VA): 10

CT Result  
Rct(Ω): V-kn(V):  
Polarity: I-kn(A):  
Ratio: Coarse Ratio:  
 lpn/Isn

Run Stop Save Report

#### ③ Test in process

CT Test Task  
 Rct  
 Polarity  
 Ratio  
 Demagnet.  
 Excitation  
 Select None  
 Coarse Ratio

CT Parameter  
SN: 28108 CT Type: M  
Winding: 1 S: 1 S: 2 f(Hz): 50  
lpn(A): 2000 Isn(A): 5 Burden(VA): 10

CT Result  
Rct(Ω): 0.4629 V-kn(V): 12.342  
Polarity: Positive I-kn(A): 0.02661  
Ratio: Coarse Ratio:  
 lpn/Isn

Run Stop Save Report

Ratio.Phase... Running..... 10:48 AM 12/30/2022

#### ④ Test result

CT Test Task  
 Rct  
 Polarity  
 Ratio  
 Demagnet.  
 Excitation  
 Select None  
 Coarse Ratio

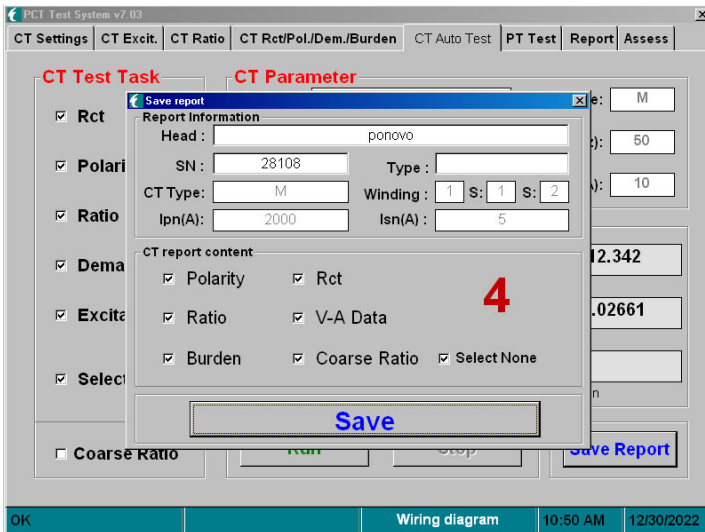
CT Parameter  
SN: 28108 CT Type: M  
Winding: 1 S: 1 S: 2 f(Hz): 50  
lpn(A): 2000 Isn(A): 5 Burden(VA): 10

CT Result  
Rct(Ω): 0.4629 V-kn(V): 12.342  
Polarity: Positive I-kn(A): 0.02661  
Ratio: 2000:4.9999 Coarse Ratio:  
 lpn/Isn

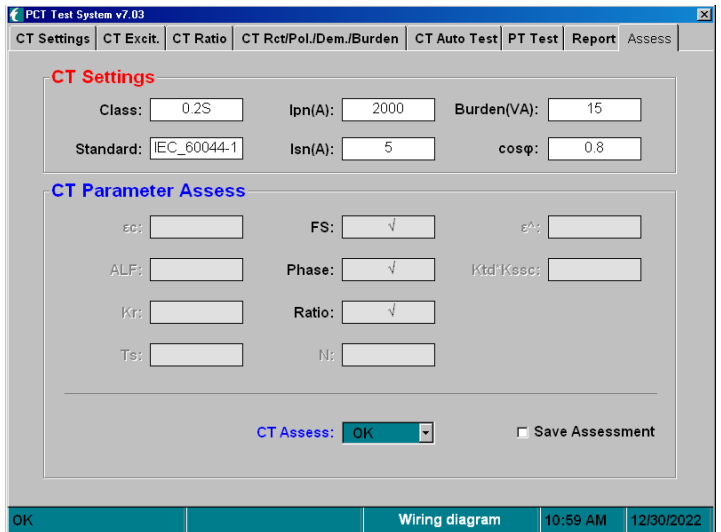
Run Stop Save Report

OK Wiring diagram 10:50 AM 12/30/2022

## ⑤ Save test report

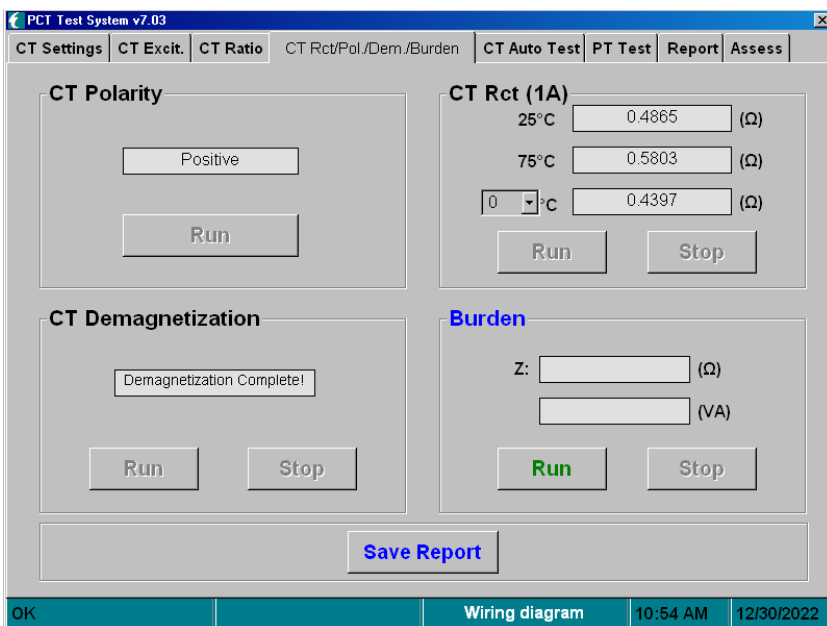


## ⑥ CT parameter assess



## ➤ CT Test for Single Item

Sometimes not all the CT test tasks are required to be tested once. In this case, the single CT test item can be selected for testing. More detailed test result can be checked in each unit.



### • CT Polarity

CT polarity check can be done after pushing the run button. It stops automatically and the lamp is off. The test method is negative polar.

### • CT Rct (1A)

CT secondary winding resistance test can be done after entering the Rct measuring unit, the secondary winding Rct can run automatically after pressing the run button. The measuring result 25°C means the resistance at current temperature and the 75°C means the resistance at 75°C.

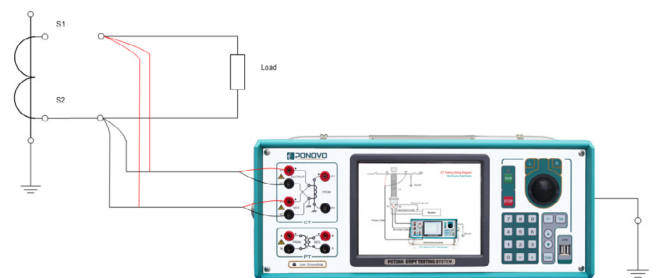
### • CT Demagnetization

CT demagnetization process will automatically run when entering the unit and pushing the run button. After the test, it will automatically stop and the lamp is off.

### • Burden

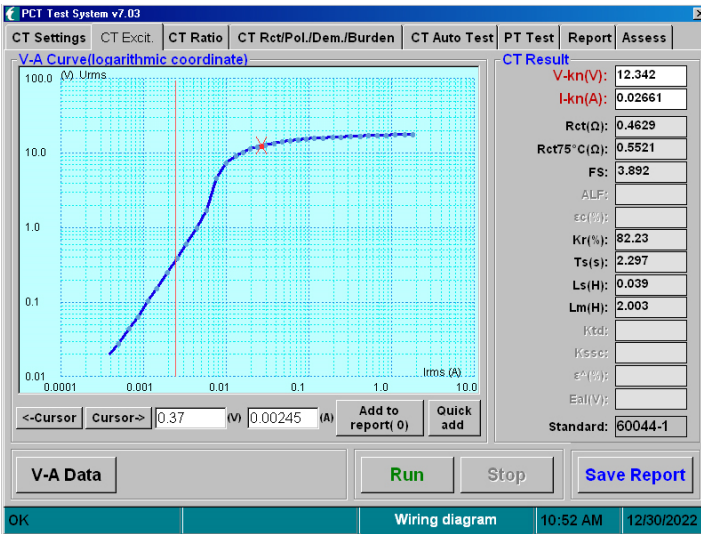
CT secondary burden measuring can be done after entering this unit and moving the cursor to the **Burden** box, press Run to start the test.

The test result will be shown after testing is finished.



## • Excitation Test

CT excitation test can be done in **CT Excit.** unit. Test result can be display in V-A curve or V-A Data. In V-A curve, the voltage and current are shown the figure at knee point. Press V-A Data, the excitation curve can be changed into data table to check every voltage, current, magnetic flux and inductance figure.



**V-A Data**

	Urms(V)	Irms(A)	Ipeak(A)	Remanence	L(H)
1	17.604	1.79386	5.91296	0.05429	0.01340
2	17.508	1.44643	4.56661	0.05420	0.01726
3	17.368	1.11036	3.42349	0.05407	0.02284
4	17.225	0.86605	2.58459	0.05392	0.03000
5	17.064	0.67782	1.99186	0.05384	0.03856
6	16.894	0.52641	1.51889	0.05354	0.05007
7	16.718	0.41842	1.13905	0.05337	0.06607
8	16.478	0.32133	0.88901	0.05326	0.08344
9	16.259	0.24653	0.67348	0.05285	0.10868
10	16.037	0.19252	0.51186	0.05259	0.14103
11	15.795	0.14957	0.39011	0.05223	0.18226
12	15.534	0.11587	0.28807	0.05160	0.24275
13	15.254	0.09257	0.21805	0.05104	0.31492
14	14.917	0.07416	0.16616	0.05040	0.40411

**CT Result**

- V-kn(V): 12.342
- I-kn(A): 0.02661
- Rct(Ω): 0.4629
- Rct75°C(Ω): 0.5521
- FS: 3.892
- ALF: [ ]
- ed(%) [ ]
- Kr(%): 82.23
- Ts(s): 2.297
- Ls(H): 0.039
- Lm(H): 2.003
- Ktd: [ ]
- Kssc: [ ]
- e(%) [ ]
- Eal(V): [ ]
- Standard: 60044-1

## • Ratio Test

CT ratio test can be made in CT Ratio unit. CT ratio, ratio error, phase displacement, composite error and turns ratio error can be automatically tested.

## ➤ PT Polarity and Ratio Test

Set parameters according to PT nameplate, press Run to start the PT polarity and ratio test.

**Rated Parameter**

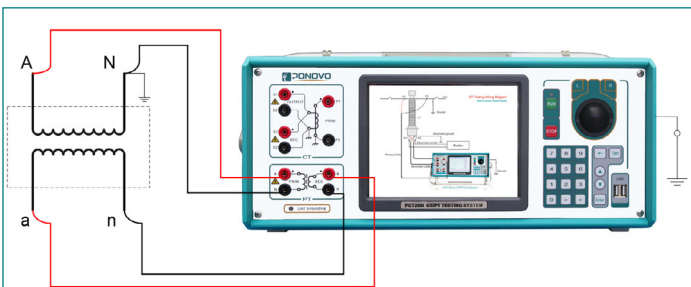
Ratio:	2000.49999	Error(%):	-0.002	Phase(min):	1.798	N:	399.444	N(%):	-0.139	Guess Ratio:	2000.5
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**Ratio Error (%) (at Ipn%)**

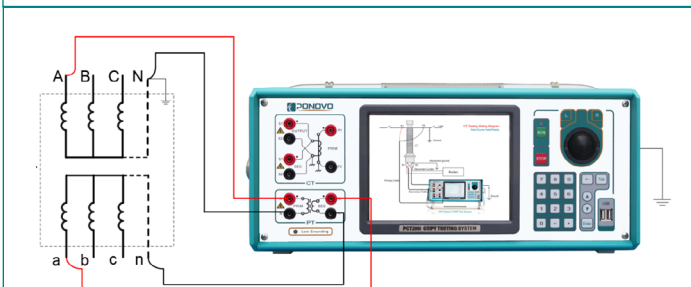
VA	cosPhi	1%	5%	20%	100%	120%
10.00	0.8	-0.376	-0.154	-0.062	-0.002	0.003
2.50	1.0	-0.141	-0.028	0.018	0.046	0.049

**Phase Displacement (min) (at Ipn%)**

VA	cosPhi	1%	5%	20%	100%	120%
10.00	0.8	16.31	8.10	4.90	1.80	1.51
2.50	1.0	17.46	8.77	5.30	2.64	2.38



Single-phase voltage transformer wiring



Three-phase voltage transformer wiring

**Report Information**

Head: JDZ-10

Time Reset: 8/10/2022 9:07:32 AM SN: 22050293 Type: Inner

**PT (Inductive VT) Polarity/Ratio test**

Upn(kV): 10 Primary: A-N

Usn(V): 100 Secondary: a-n

f(Hz): 50 Winding: 1

Ratio: 9.988KV-100V

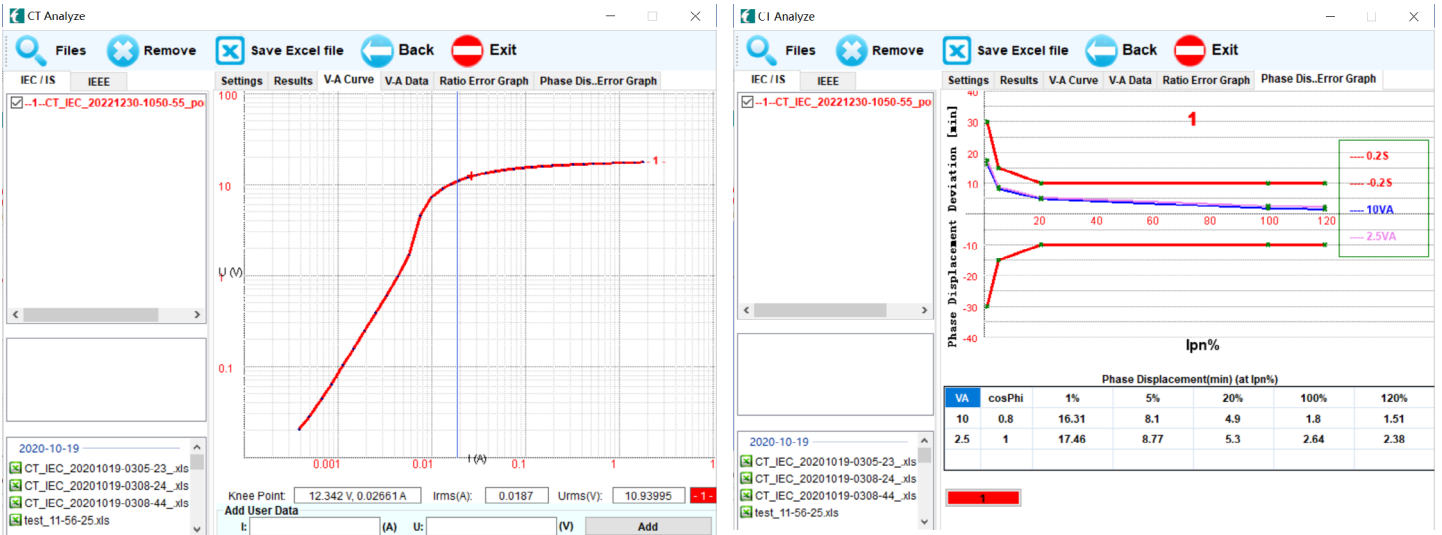
Error(%): 0.124

Polarity: Positive

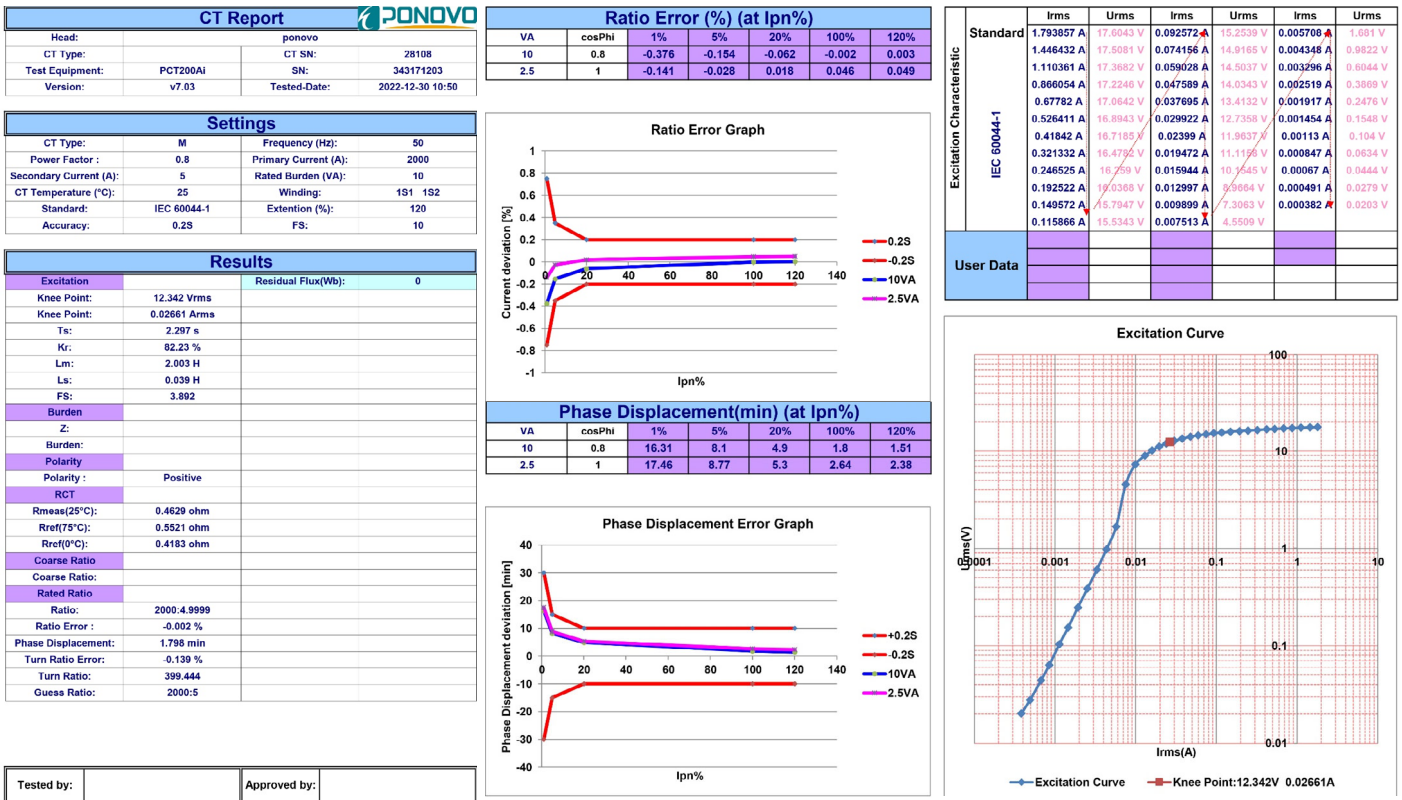
**PT (Inductive VT) Excitation test**

V-A Curve Run Stop Save Report





## Test Report in Excel format



## PONOVO Activities in Worldwide





## Optional Accessory

### ATB01

## PCT Auto-Test Box for PCT200i/PCT200Ai CT/PT Tester

### Introduction

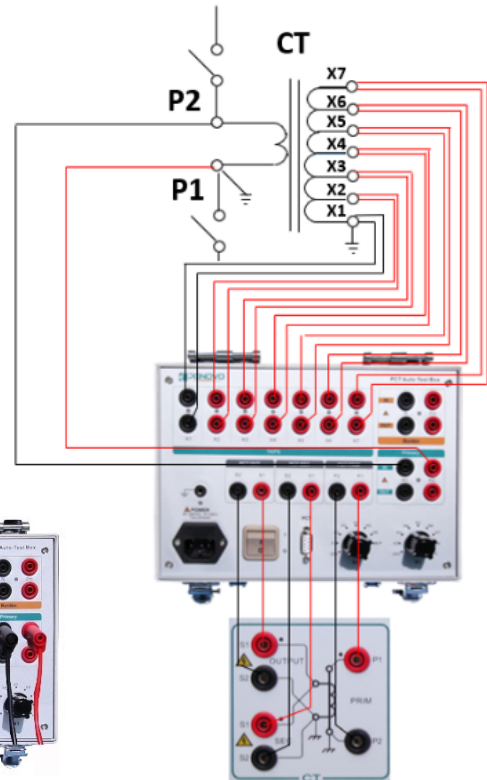
ATB01 is an accessory for the PCT200i/PCT200Ai CT/PT Tester which allows automatic testing of multi-ratio current transformers. ATB01 is connected to all taps of the current transformer and to the PCT200i/PCT200Ai CT/PT Tester. This allows the transformer ratios of all winding combinations to be automatically tested with the PCT200i/PCT200Ai CT/PT Tester.

### Main Features

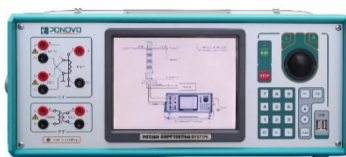
- Up to six connections for the secondary side of the current transformer
- Automatic check to ensure correct wiring
- Separate connections for primary resistance measurement and measurement of the secondary burden
- Fully automated testing with no need for rewiring

### Applications

Testing multi-ratio current transformers



## PCT200 Series CT/PT Test System



**PCT200i**



**PCT200Ai**

### Specifications

Application		Test M/P/TP type CT and PT	Test M/P/TP type CT and PT
Specifications	Output voltage range	0-120V	0-120V
	Output current range	0-5Arms (15A peak)	0-5Arms (15A peak)
	Output power	0.0001VA~500VA (1500VA peak)	0.0001VA~500VA (1500VA peak)
CT	Ratio test range	30000:1 / 45000:5	30000:1 / 45000:5
	Ratio test accuracy*	±0.05% Typ. ±0.1% Gur.	±0.02% Typ. ±0.05% Gur.
	Winding ratio accuracy	0.1% or 1 turn	0.1% or 1 turn
	Turn ratio range	1-30000	1-30000
	Max. knee point voltage	45000V	45000V
	Burden test range	0.05-1000Ω	0.05-1000Ω
	Burden test accuracy	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.
	Winding resistance test range	0.05~1000Ω	0.05~1000Ω
	Winding resistance test accuracy	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.
	Temperature Compensation	-20 °C-120 °C	-20 °C-120 °C
	Accuracy limit factor (ALF)	Yes	Yes
	Instrument security factor (FS)	Yes	Yes
	Remanence factor (Kr)	Yes	Yes
	Secondary loop time constant (Ts)	Yes	Yes
	The leakage inductances (Ls)	Yes	Yes
	Excitation characteristic curve	Yes	Yes
	Rated symmetrical short-circuit current factor (Kssc)	Yes	Yes
	Rated equivalent limiting secondary e.m.f. (Eal)	Yes	Yes
	Transient dimensioning factor (Ktd)	Yes	Yes
	Peak value of instantaneous error (ε^)	Yes	Yes

# PCT200 Series CT/PT Test System



## Specifications(continue)

**PCT200i**

**PCT200Ai**

	Composite error ( $\epsilon_c$ )	Yes	Yes
	Polarity	Yes	Yes
	Winding polarity test	Yes (Phase between $\pm 45^\circ$ )	Yes (Phase between $\pm 45^\circ$ )
	Ratio test points selected	Automatic test of all points according to standard requirement	Automatic test of all points according to standard requirement
	Phase displacement	1min Typ. 3min Gur. resolution:0.01min	1min Typ. 2min Gur. resolution:0.01min
PT	Ratio	Yes	Yes
	Polarity	Yes	Yes
	Excitation characteristic	Yes	Yes
Others	Main supply	110-240Vac/50-60Hz (nominal) 90-260Vac/45-65Hz (permissible)	110-240Vac/50-60Hz (nominal) 90-260Vac/45-65Hz (permissible)
	Operation temperature	-10 °C-50 °C	-10 °C-50 °C
	Storage temperature	-25 °C-70 °C	-25 °C-70 °C
	Relative humidity	5% - 95%, not condensing	5% - 95%, not condensing
	Dimensions(WxHxD)	470mmx200mmx245mm	470mmx200mmx245mm
	Weight	10/14kg	14kg
	LCD display	8.4inch, color display	8.4inch, color display
	Operating system	Windows 7	Windows 7
	EMC	EN 61326-1:2013 EC Council Directive 2014/30/EU ICES-001:2006 FCC Part 15: Subpart B:2015	EN 61326-1:2013 EC Council Directive 2014/30/EU ICES-001:2006 FCC Part 15: Subpart B:2015
	Safety	IEC 61010-1/2-030:2010 Low Voltage Directive 2014/35/EU UL 61010-1/2-030:2012 CAN/CSA-C22.2 NO. 61010-1-12/2-030-12	IEC 61010-1/2-030:2010 Low Voltage Directive 2014/35/EU UL 61010-1/2-030:2012 CAN/CSA-C22.2 NO. 61010-1-12/2-030-12

\*: At 100%I<sub>p</sub>n&VA

Specifications are subject to modification without notice



# Professional Solution Provider For The Power World

*Since 2001, Ponovo Power has been focusing on providing professional solutions to over 5000 clients in the fields of intelligent testing and power quality control in China and abroad*



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