

# *PCT200 Series CT/PT Test System*

Bushing type CT



GIS CT



PT

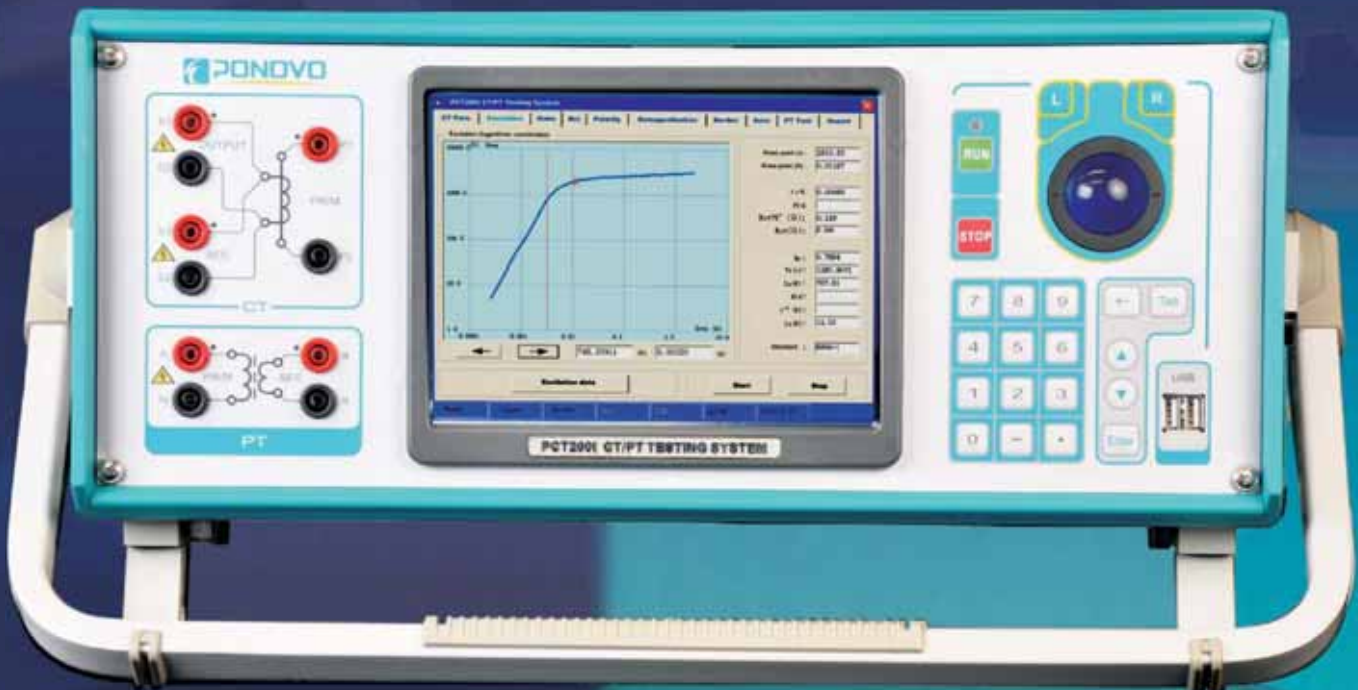


M type CT



## Features:

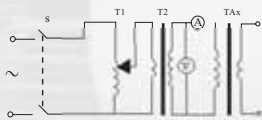
1. Test CT according to IEC60044-1/6, IEC61869-2, ANSI/IEEE C57.13 and IS2705(Indian national CT standard)
2. Can test all types of CT: M, P, TPY, Bushing CT, GIS CT.etc
3. Kneepoint check up to 45000V
4. One test can get all CT parameters
5. Fast test for excitation check
  - 11kV knee point check time: 50s
  - 1kV knee point check time: 15s
6. Built-in Auto-assessment Function :PASS or Fail judgement after testing
7. PT test
  - Ratio
  - Polarity
  - Excitation
  - Burden



# Principle

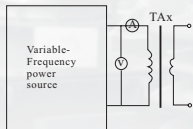
## Excitation characteristics test based on DC method

<Conventional method>



*Kneepoint check up to  $\pm 0.1\text{KV!}$*

<New method>

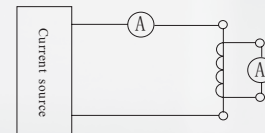


● **Features of new method:**

- Can check CT with high knee point value
- High efficiency, high accuracy, more safe

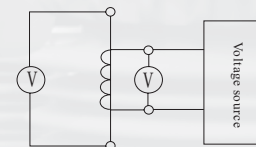
## Ratio test based on voltage method

<Conventional method>



Current source is at primary side and current measurement is at the secondary side

<New method>

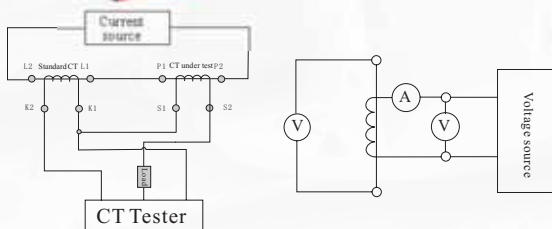
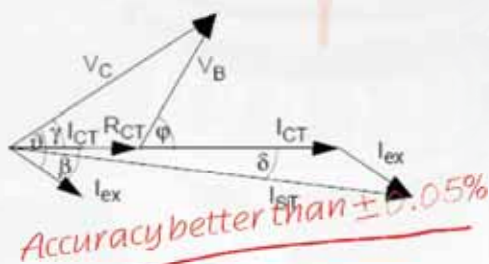


Voltage source is at secondary side and Voltage measurement is at primary side

● **Features of new method:**

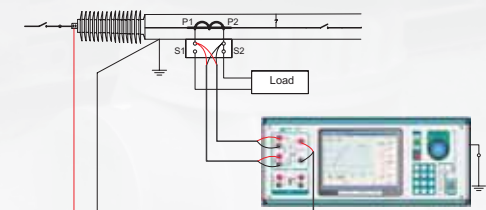
- Ratio check up to 30000:1
- Can check bushing CT
- Can check GIS CT

## 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.

## Test special CT

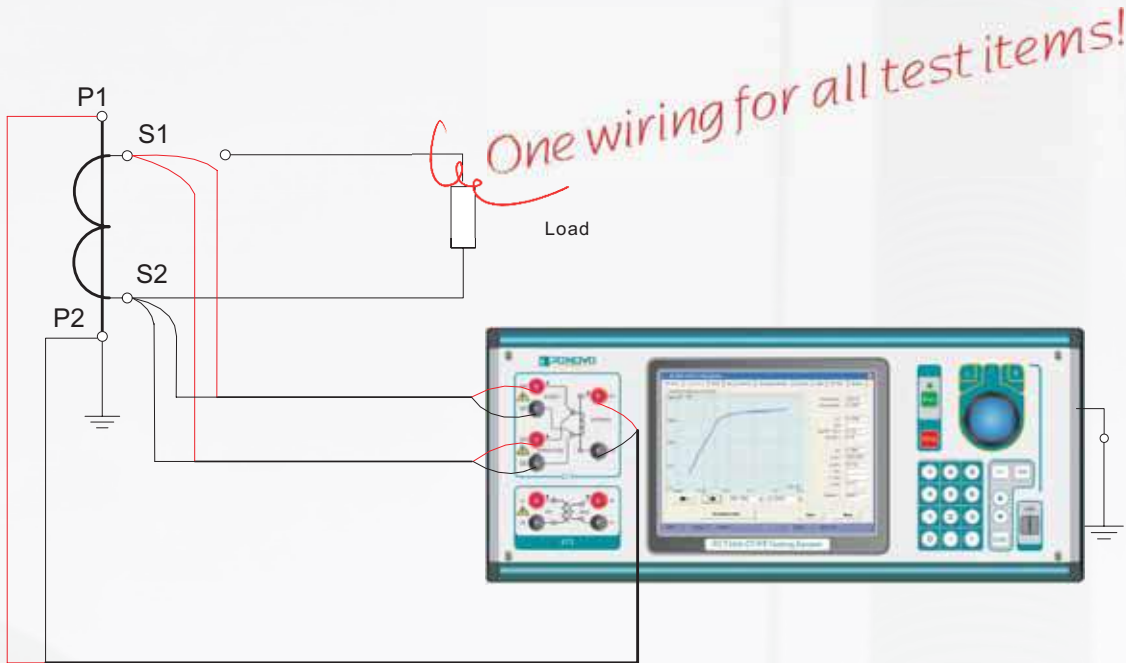


- Bushing type CT requires large power output capacity which conventional CT tester can not give. New test method can solve this problem
- The primary side length is long for GIS type CT and this requires large power output capacity which conventional CT test can not supply. New test method can solve this problem



# Test at field

## Simple wiring



## Software Interface

PCT200i operation

Easy to operate!



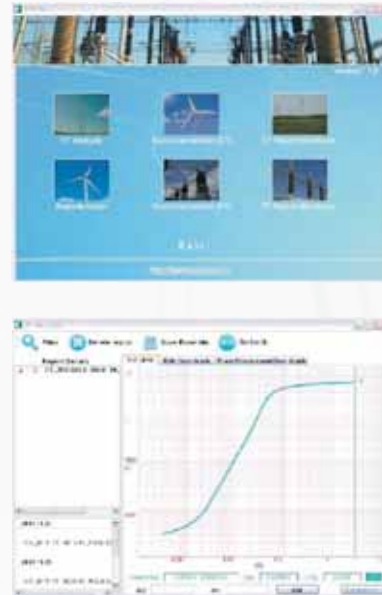
## Test Report

PCT200i Report



- Excel format test report
- A4 size
- Test result can be exported to key drive through USB port.
- Can save 10,000 results in non-volatile memory

PCT series report analyze software



## Standard Accessories

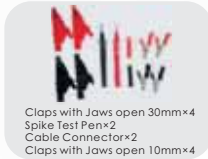
Soft bag



Test leads



Transportation Case  
(Anti Water & vibration)



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

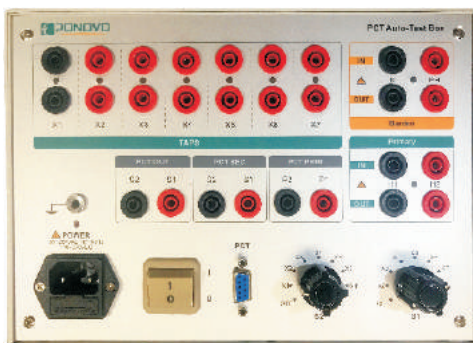
## Introduction

The PCT Auto-Test Box is an accessory for the PCT200i/PCT200Ai CT/PT Tester which allows automatic testing of multi-ratio current transformers. The PCT Auto-Test Box 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.



## Key features

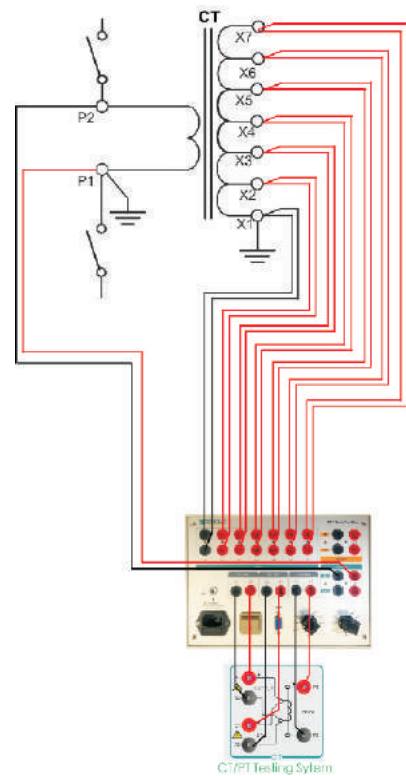
- Up to six connections for the secondary side of the current transformer
- Automatic check to ensure correct wiring
- Separate connections for primary resistance measurement and measurement of the secondary burden
- Fully automated testing with no need for rewiring



Front panel of PCT

## Applications

Testing multi-ratio current transformers



CT/PT Testing System

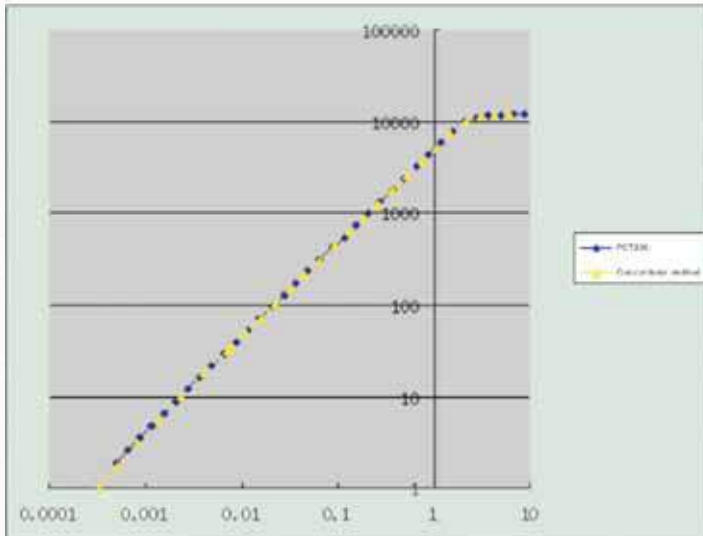


# Field Test Examples

## Customer: Beijing High Transmission Company

Comparison of excitation tests between conventional test method and PCT200i

500kV TPY(transient) type CT



TPY type CT test	
V <sub>90%</sub> (V)	10371.64
I <sub>90%</sub> (A)	2.2548
Polarity	decreasing
W <sub>90%</sub> (JSC)	7.691
SCF	5.9512
T <sub>90%</sub>	1.839
L <sub>90%</sub>	22.46
Mag	24.236
ε <sub>90%</sub>	1.289
L <sub>ε</sub>	0.21
K <sub>ε</sub>	0.0713
Under rated load	
Ratio	7500 1.0000
Ratio error (%)	0.917
Angle error (min)	10.76
Turn ratio (%)	1.205

Test results

## Chongqing Power Plant

Generator Output CT



Generator output 6000:1 Test Result

Excitation Data	
Knee Point Voltage (V)	1012.3 V
Knee Point Current (A)	0.0175 A
Secondary Time Constant (T <sub>s</sub> )	14.7147 S
Remanence Coefficient (K <sub>r</sub> )	0.738
Unsaturated Inductance (L <sub>u</sub> )	346.28 H
Saturated Inductance (L <sub>s</sub> )	2.921 H
ALP coefficient	>50.389
Composite Error	0.0199 %
Ratio Ratio Data	
Ratio	6000 1.0003
Ratio Difference	0.033
Phase Difference (minute)	1.667



## Tianjing Huapanshan Power Plant

500kV Tranformer Bushing CT



500kV Transformer Casing CT  
TPY Class 1250:1 test Datasheet

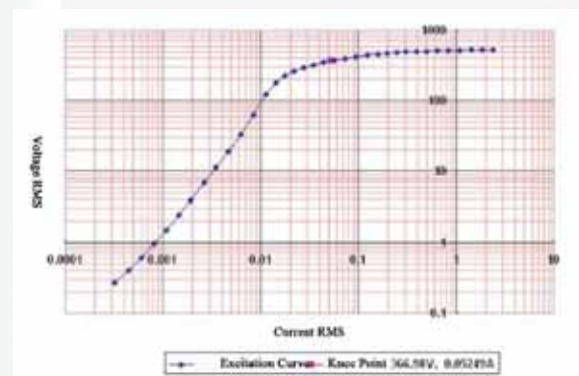
Rate Current Percentage	
Knee Point Voltage (V):	<b>13056.52 V</b>
Knee Point Current (A):	<b>2.33426 A</b>
Secondary Time Constant (Ts):	<b>1.3271 S</b>
Remanence Coefficient (Kr):	<b>0.0424</b>
Remanence Coefficient:	<b>27.49 H</b>
Unsaturated Inductance (Ls):	<b>0.206 H</b>
Transient Area Coefficient (Ktd):	<b>8.806</b>
Instantaneous Peak Error (Ls):	<b>2.112 %</b>
Equivalent Secondary Limited EMF:	<b>4176.73 V</b>
Multiple of Symmetrical SCC:	<b>&gt;55.649</b>
Rate Ratio Data	
Ratio:	<b>1250:0.9894</b>
Ratio Difference:	<b>-1.065</b>
Phase Difference (minute)	<b>8.343</b>

## Shan Xi 500kV Substation

220kV Transmission Line CT



220kV Transmission line GIS CT P  
Class 1250:1 excitation characteristic curve





### Szechwan Substation (500kV)



500kV Class CT TPY 4000:1 Test result

Excitation Data	
Knee Point Voltage (V)	<b>7312.42 V</b>
Knee Point Current (A)	<b>1.83965 A</b>
Secondary Time Constant (Ts)	<b>1.194 S</b>
Remanence Coefficient (Kr)	<b>0.0213</b>
Unsaturated Inductance (Ls)	<b>19.37 H</b>
Saturated Inductance (Ls)	<b>0.168 H</b>
Transient Area Coefficient (Kid)	<b>8.79</b>
Instantaneous Peak Error (Ls)	<b>2.343 %</b>
Equivalent Secondary Limited EMF	<b>480.47 V</b>
Multiple of Symmetrical SCC	<b>60.205</b>
Rate Ratio Data	
Ratio	<b>4000:0.9950</b>
Ratio Difference	<b>-0.496</b>
Phase Difference (minute)	<b>9.775</b>

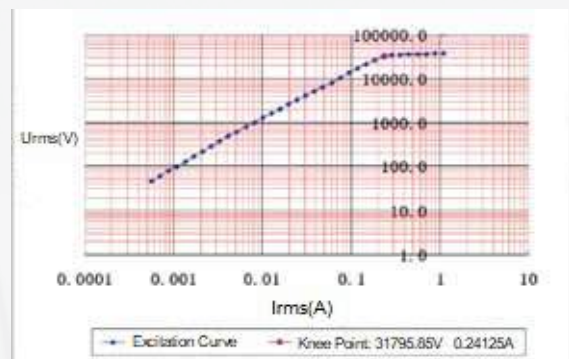
200 kV transmission line  
GIS CT Class P 1500:1 Test result

Excitation Data	
Knee Point Voltage (V)	<b>1726.02 V</b>
Knee Point Current (A)	<b>0.02783 A</b>
Secondary Time Constant (Ts)	<b>7.1649 S</b>
Remanence Coefficient (Kr)	<b>0.7865</b>
Unsaturated Inductance (Ls)	<b>291.39 H</b>
Saturated Inductance (Ls)	<b>5.443 H</b>
ALF	<b>53.301</b>
Composite Error	<b>0.1017 %</b>

### Shen yang CT/PT factory



Shen yang CT/PT factory



Generator Output TPY CT

Excitation Data	
Knee Point Voltage (V)	<b>31795.85 V</b>
Knee Point Current (A)	<b>0.24125 A</b>
Secondary Time Constant (Ts)	<b>3.657</b>
Remanence Coefficient (Kr)	<b>0.0091</b>
Unsaturated Inductance (Ls)	<b>634.58</b>
Saturated Inductance (Ls)	<b>6.88</b>
Transient Area Coefficient (Kid)	<b>12.809</b>
Multiple of Symmetrical SCC	<b>7.729</b>
Instantaneous Peak Error (Ls)	<b>1.115</b>
Equivalent Secondary Limited EMF	<b>12224.75</b>
Rate Ratio Data	
Ratio	<b>35000:1.0001</b>
Ratio Difference	<b>0.013</b>
Phase Difference (minute)	<b>2.217</b>

# PCT200 Series CT/PT Test System

## Specifications



	PCT200i	PCT200Ai	
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	0.0001~500VArms(1500VA peak)	0.0001~500VArms(1500VA peak)
CT	Ratio test range	30 000:1~45000:5	30 000:1~45000:5
	Ratio test accuracy	±0.1%	±0.05%
	Max. knee point voltage	45000V	45000V
	Burden test range	0.001-1000Ω	0.001-1000Ω
	Burden test accuracy	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.
	Winding resistance test rang	0.05~200Ω	0.05~200Ω
	Winding resistance test accuracy	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.	±0.05%±1mΩ Typ. ±0.1%±1mΩ Gur.
	Accuracy limiting factor (ALF)	Yes	Yes
	Instrument security factor (FS)	Yes	Yes
	Remanence flux (Kr)	Yes	Yes
	Secondary time constant (Ts)	Yes	Yes
	Unsaturated inductance (Lu)	Yes	Yes
	Saturated inductance (Ls)	Yes	Yes
	Excitation characteristic curve	Yes	Yes
	10%(5%)error curve	Yes	Yes
	Rated symmetrical short circuit current factor (Kssc)	Yes	Yes
	Accuracy limiting voltage (Eal)	Yes	Yes
	Transient dimensioning factor (Ktd)	Yes	Yes
	Peak instantaneous error (ε <sup>^</sup> )	Yes	Yes
	Composite error (ε <sub>c</sub> )	Yes	Yes
Ratio error	±0.05%Typ. ±0.1%Gur.	±0.02% Typ. ±0.05% Gur.	
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 (normal) 90-260Vac/45-65Hz (permissible)	110-240Vac/50-60Hz (normal) 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	470 x 200 x 245mm (W×H×D)	470 x 200 x 245mm (W×H×D)
	Weight	10/14Kg	14Kg
	LCT display	8.4 inch, color display	8.4 inch, color display
	Operating system	windows	windows



EMC (E&I) EN/IEC 61326-1  
 Safty EN/IEC 61010-1/1-12/2-030 EN/IEC 60255-25/27  
 FCC Part 15:Sub B  
 Others ECS-001:2006LVD EU





# Professional Provider of Power Testing Instrument

TPYCT



M type CT



Bushing Type CT



PT



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