PCT200
Portable CT/PT Testing System

4kg

PONOVO POWER CO., LTD.
www.ponovo.net

PCT200 Portable CT/PT Testing System

PCT200 Portable CT/PT Testing System is a test equipment specially designed for current transformer and voltage transformer characteristic tests. PCT200 Portable series has two models, the standard PCT200X and the higher accuracy PCT200AX. Each model has 2 optional power supply type-external power supply type (PCT200X, PCT200AX) and large-capacity lithium battery supply type (PCT200X-B, PCT200AX-B). With built-in testing software in its local 7inch touch screen, all test items can be completed automatically after pressing the Run key and generating Excel and PDF reports. The test set can finalize various testing functions and support IEC, IEEE and IS standards. It suits the testing required in research institutes, labs, manufacturers, power utilities, power supply and debugging companies, etc.

Product Features

- The advanced model of PCT200 with built-in battery can complete a day's duty of testing after being fully charged.
- Can test M/P/TP/PS/PX/PXR type, bushing and GIS type CT.
- Ratio check up to 50000:1.
- Knee point/Excitation Test check up to 45000V.
- 7-inch built-in touch screen, all test items can be completed automatically after press Run key.
- Test results saved in Excel and PDF format, and CT test result can be evaluated automatically.
- More than 10,000 reports can be saved in its local storage, and support readback of stored data.
- Standards: IEC60044-1/6, IEC61869-2, ANSI/IEEE C57.13, IS2705
- Guess nameplate function
- Support control through mobile phone and tablet
- Sliding operation to switch parameters and test pages
- Weight: 4kg

M type CT

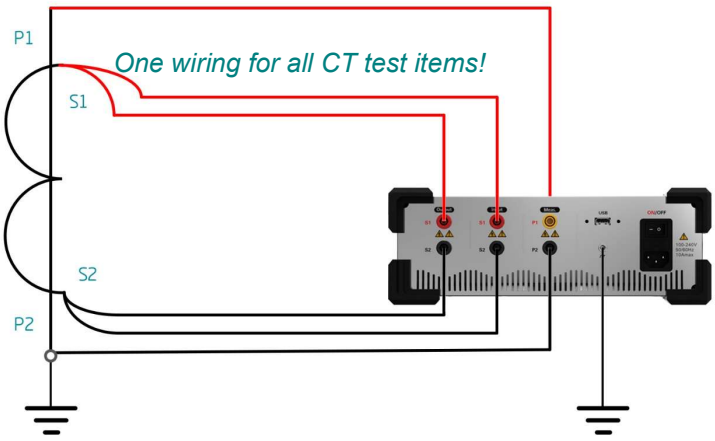
Bushing type CT

GIS CT

PT

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

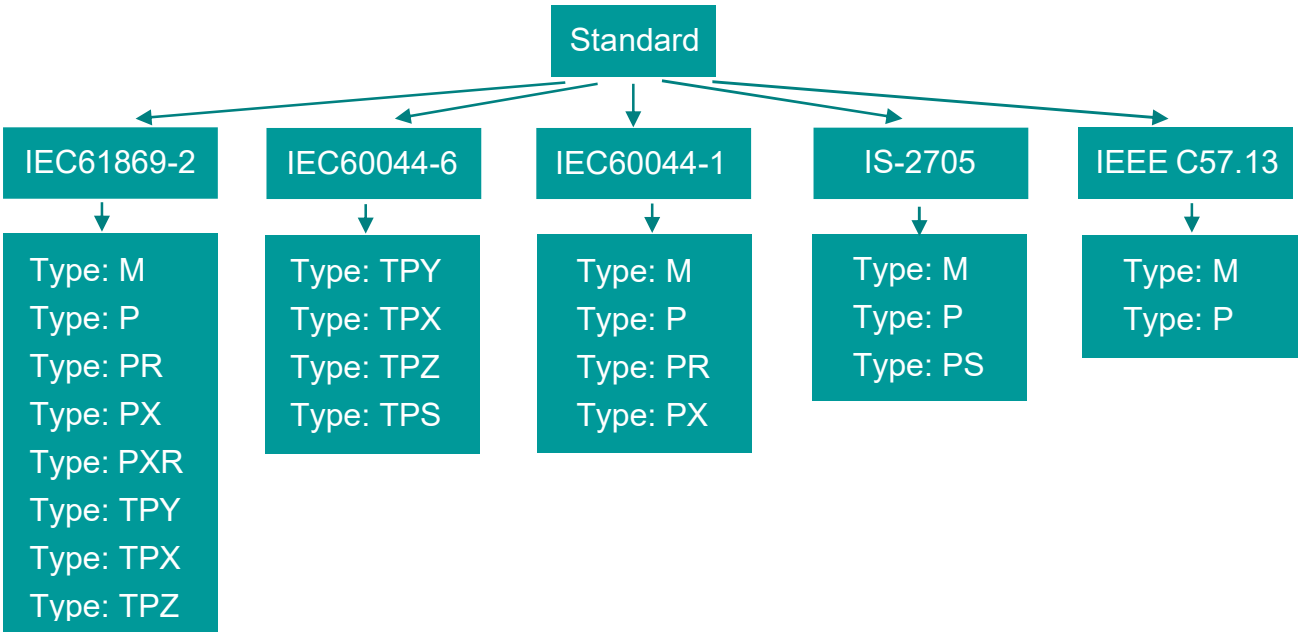
- Burden
- Winding resistance
- Excitation
- Polarity
- Ratio
- Turn-Ratio
- Knee point
- Composite error
- Demagnetization
- Current injection



- Ratio error and phase displacement
- Saturated inductance (Ls)
- Remanence factor (Kr)
- Accuracy limit factor (ALF)
- Instrument security factor (FS)
- Secondary loop time constant (Ts)
- Transient dimensioning factor (Ktd)
- Peak value of instantaneous error ($\varepsilon^{\wedge}$)
- Rated symmetrical short-circuit current factor (Kssc)
- Rated equivalent limiting secondary e.m.f. (Eal)

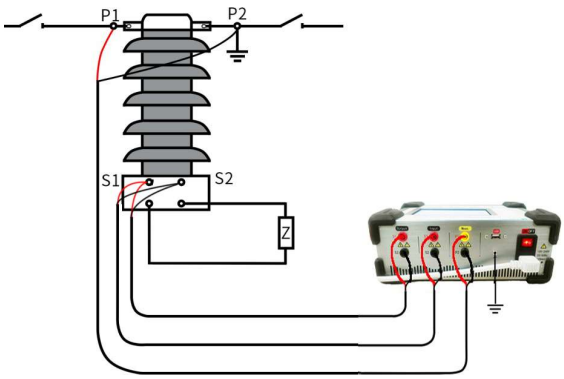
Various CTs can be tested

PCT200 portable series can test various CT, including Steady-state CT, which include protection CT, measurement CT and metrology-grade CT; Transient CT, which include TPS, TPX, TPY, TPZ grade; Transmission line CT, Bushing type CT which requires large power output capacity including delta connection transformer, star connection transformer, GIS type CT whose primary side length is long and requires large power output capacity and CT with multiple taps, etc.

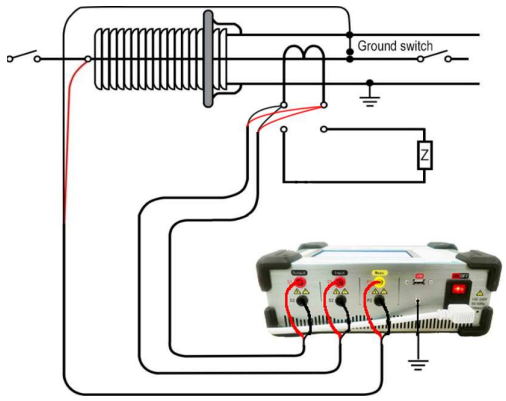


Wiring connection of various CT testing

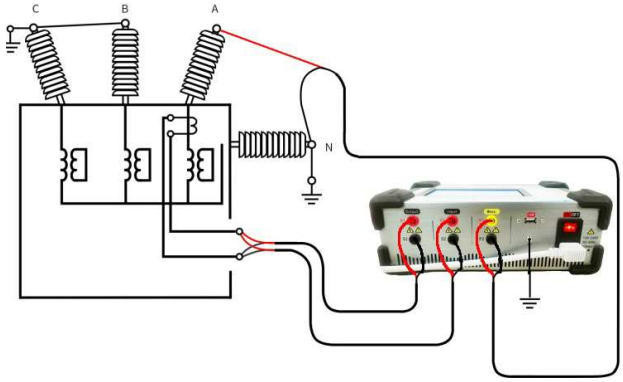
Transmission line CT test



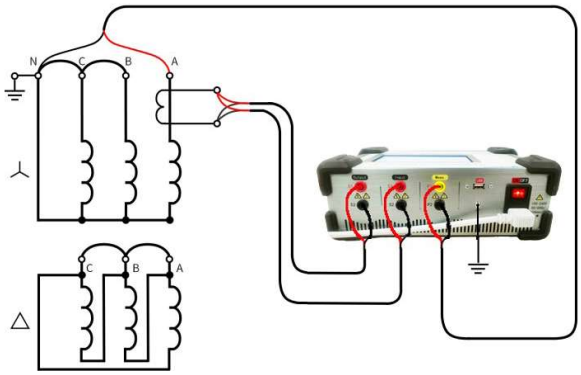
Test CT in GIS



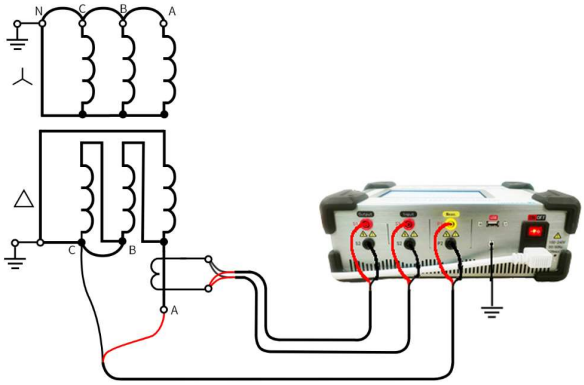
CT test in the star connection transformer



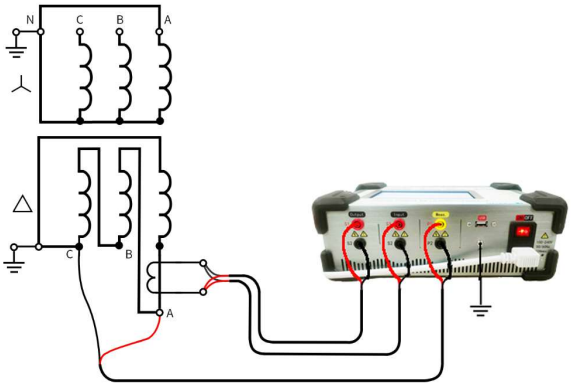
CT test in the star connection transformer



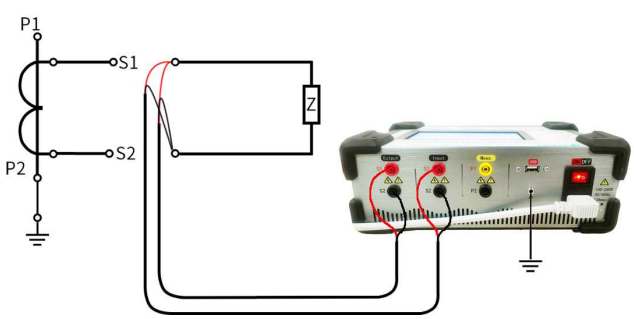
CT test in Delta connection transformer



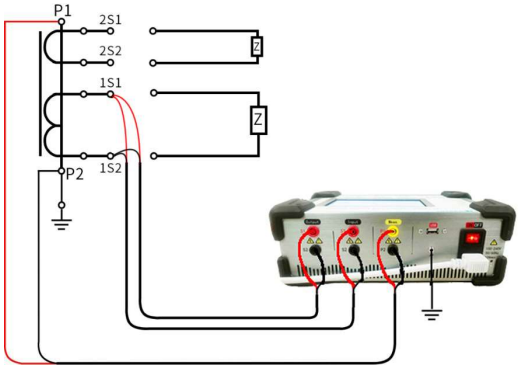
CT test in Delta connection transformer



Burden test / Current injection test



Test CT with multiple taps

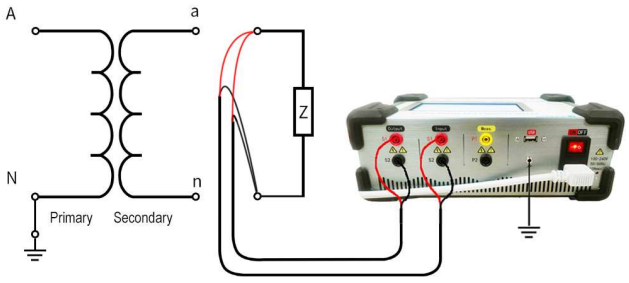


Following PT tests can be done

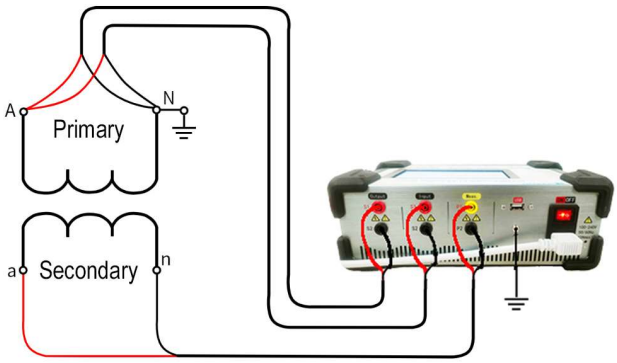
- Polarity
- Winding resistance
- Excitation
- Voltage injection
- Ratio
- Knee point
- Burden

Wiring connection

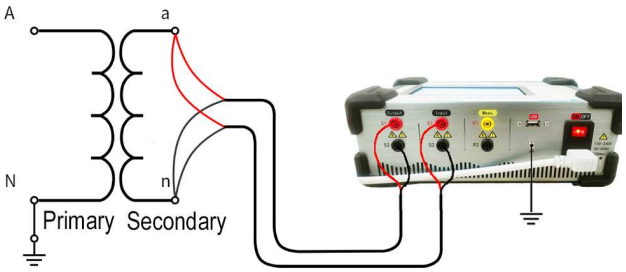
Voltage injection test



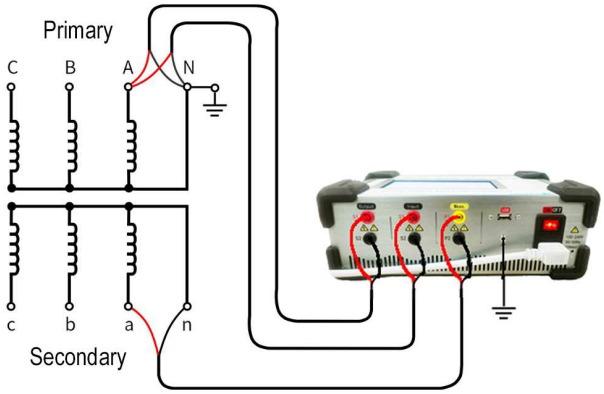
Single phase PT test-polarity and ratio



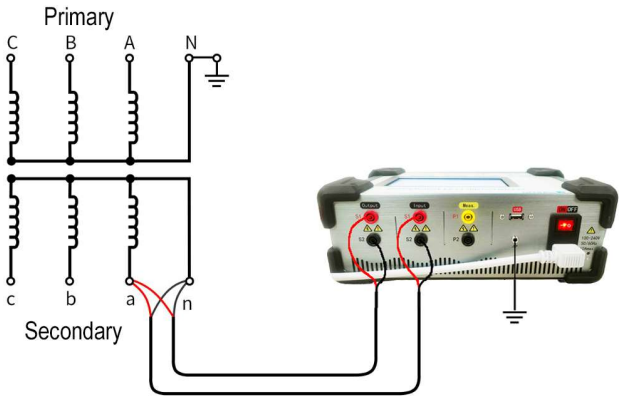
Single phase PT test-resistance and excitation



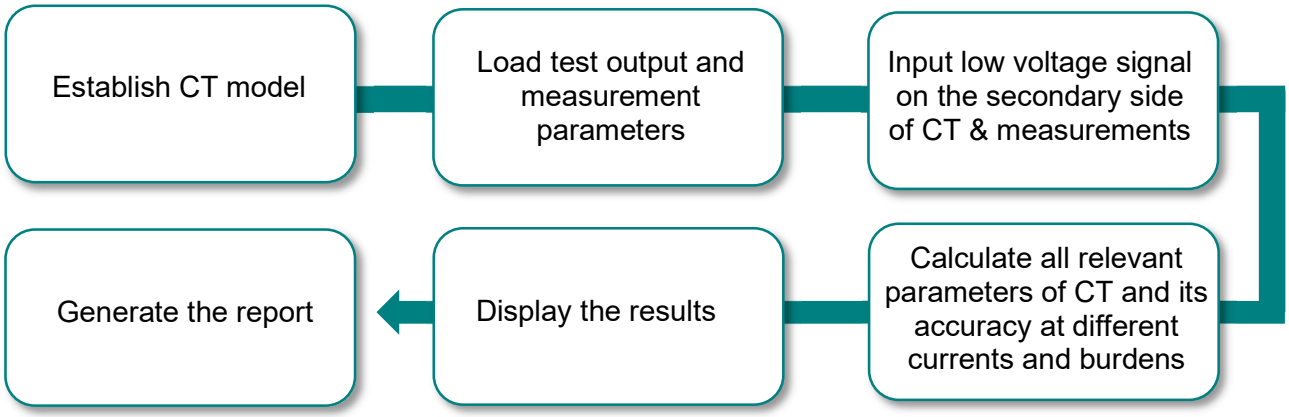
Three phase PT test-polarity and ratio



Three phase PT test- resistance and excitation



PCT200 Portable CT/PT Testing System Test Principle

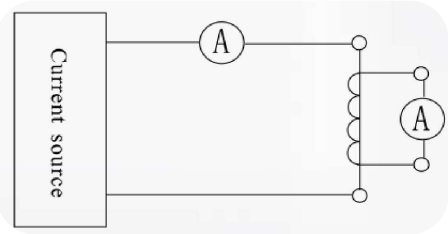


PCT200 portable CT/PT testing system is professional CT/PT test set which adopts new principle launched by PONOVO. The new principle is the "voltage method" test principle used for the transformation ratio, and the "DC method" test principle for the excitation characteristics which is more advanced than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

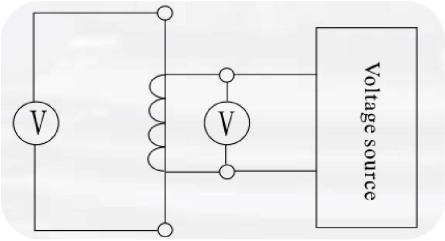
➢ Ratio test based on voltage method

The "voltage method" test principle is the AC voltage of 0~130V 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 50000:1.

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

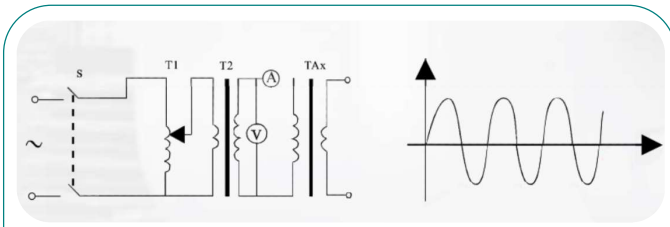


New method – Voltage source is at secondary side and voltage measurement is at primary side

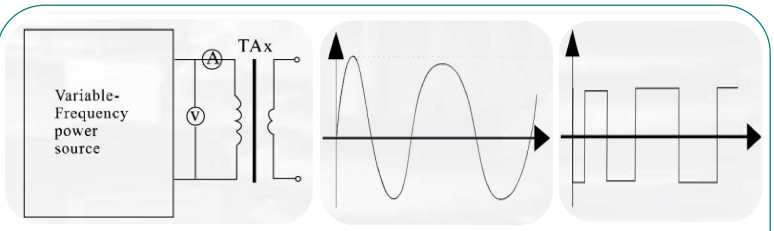


➢ Excitation characteristics test based on DC method

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.



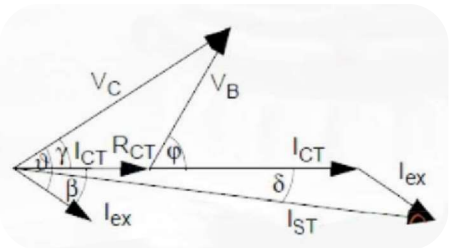
Conventional method

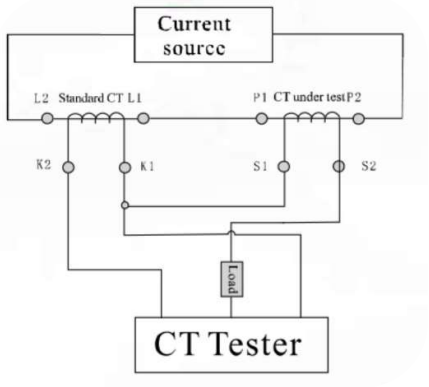


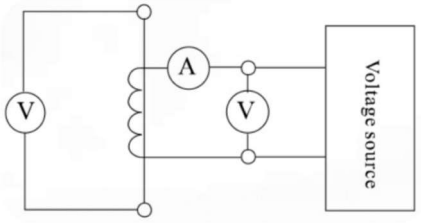
New method

➢ 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 ±0.02%.



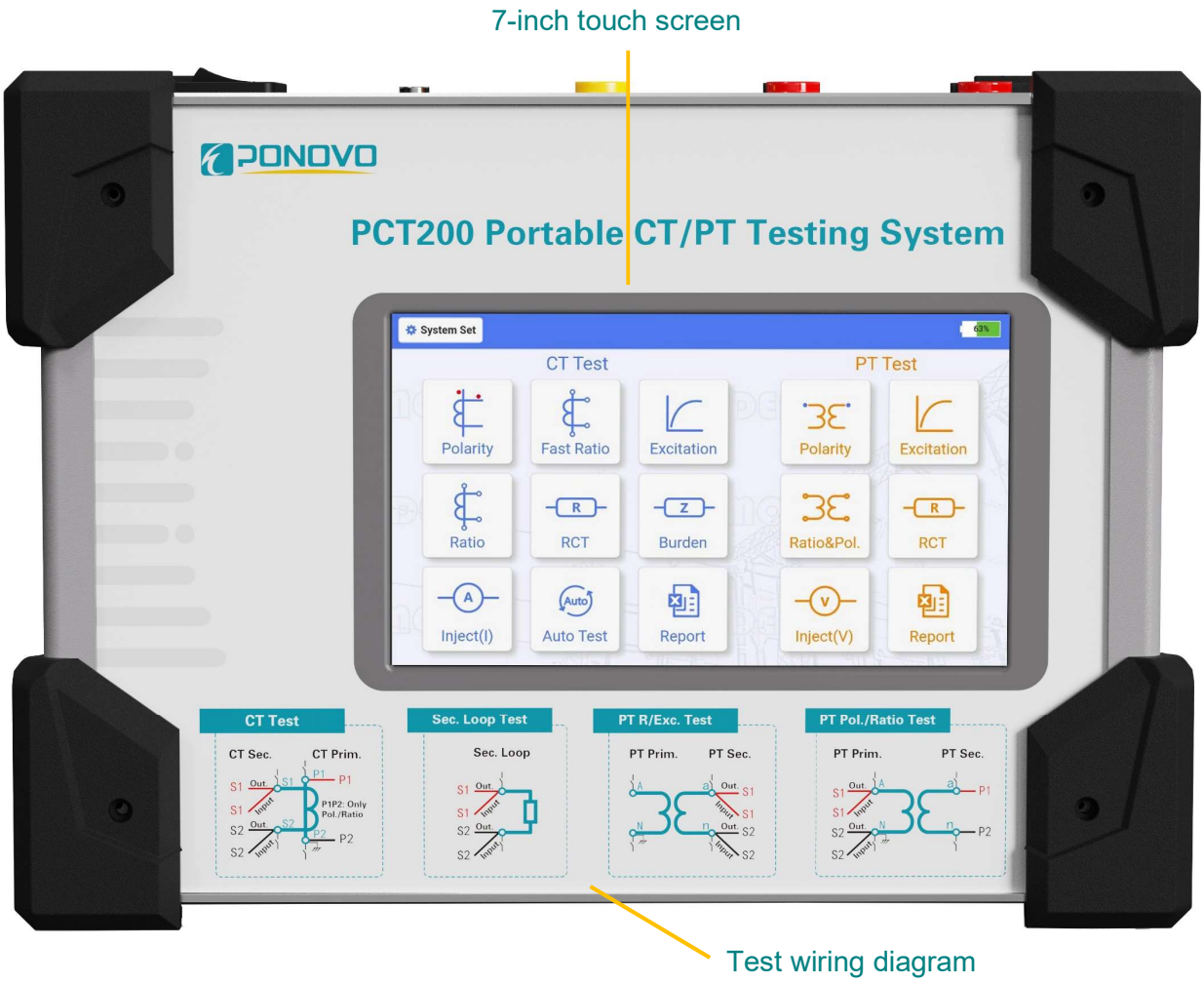




PCT200 Portable Series Panels

The front panel of PCT200 Portable Series are same, the top panel of external power supply type and battery type are different.

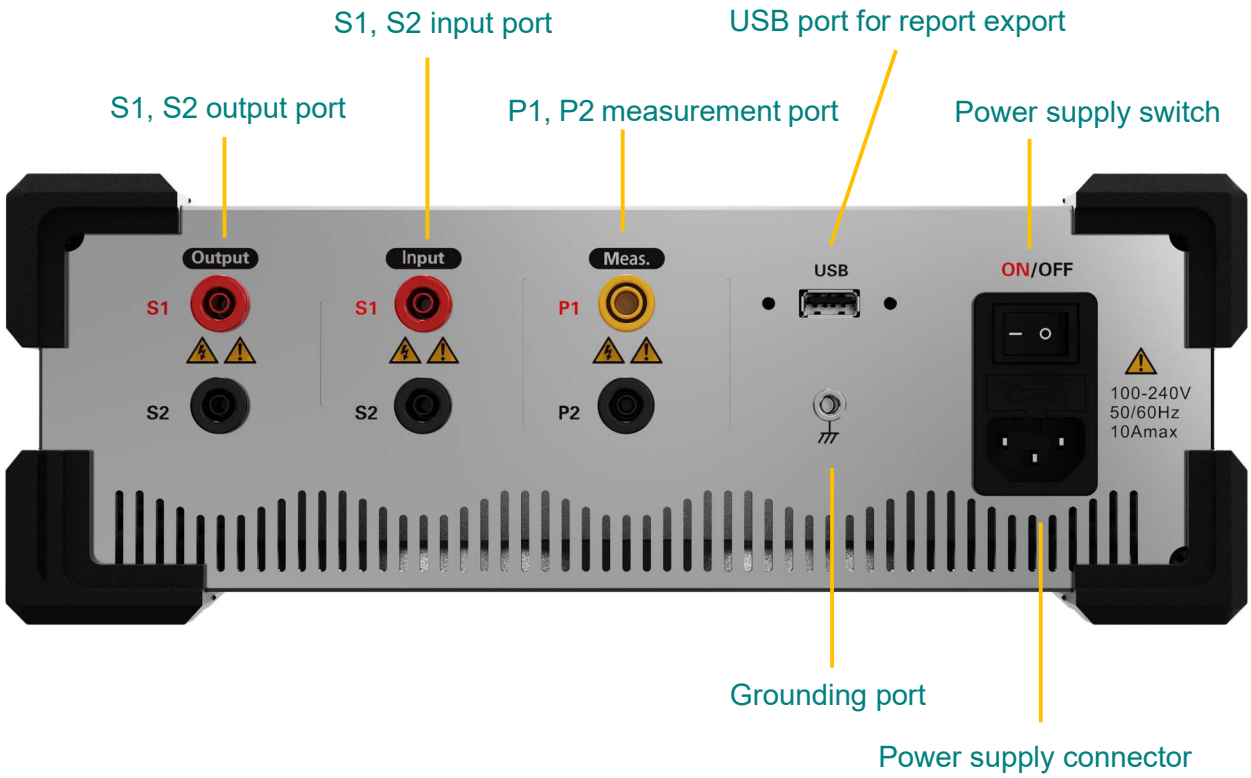
PCT200 Portable Series Front Panel



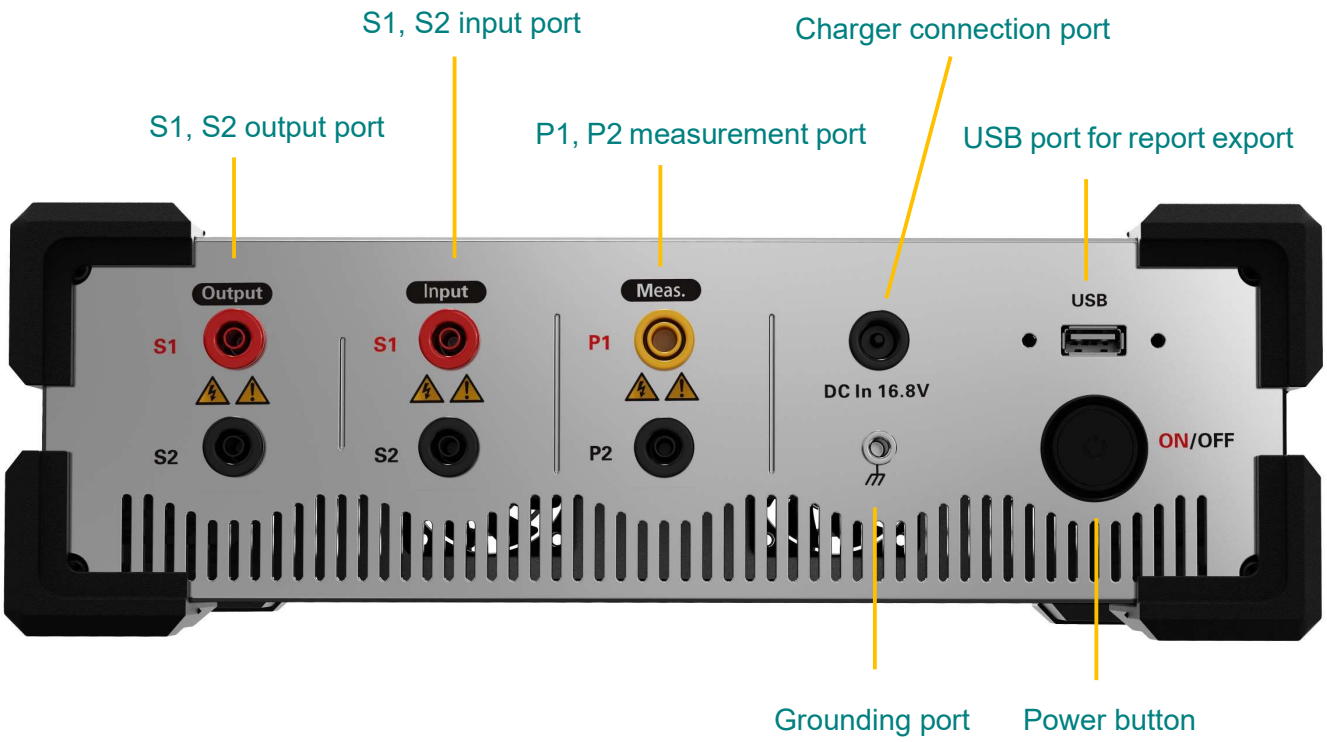
External power supply type

Battery type

PCT200 Portable Series Top Panel- external power supply type

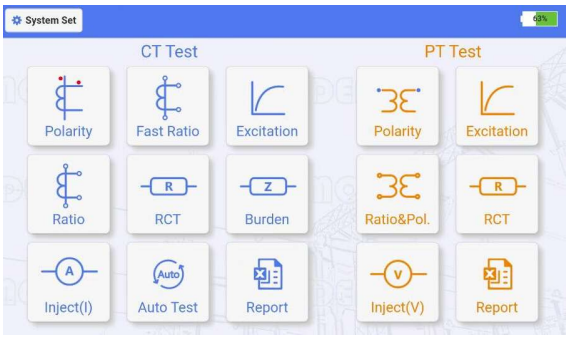


PCT200 Portable Series Top Panel- battery type



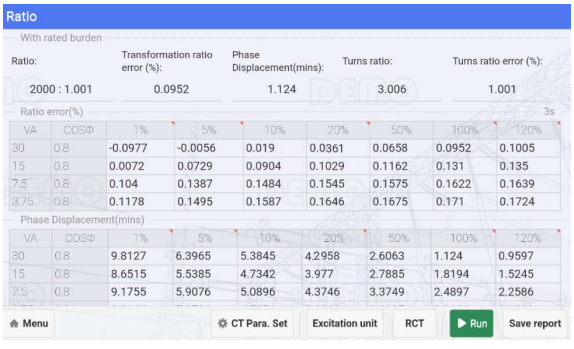
PCT200 Portable CT/PT Testing System Software

PCT200 portable CT/PT testing system software is a smart comprehensive automated testing software. It adopts the built-in touch screen, which makes the human-computer interaction more friendly. Test report can be saved for a long time, also can be exported through the U disk at any time and edited. When using PCT200, the tester only needs to 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.

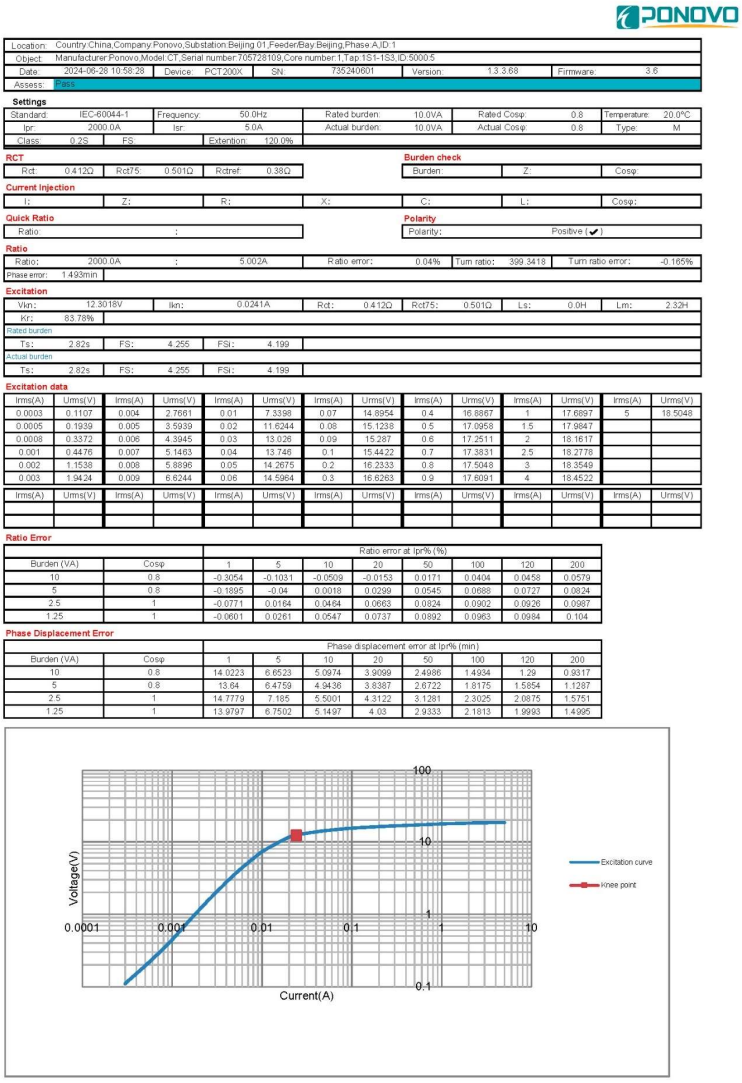


Main interface

Excitation curve test interface



Ratio test interface

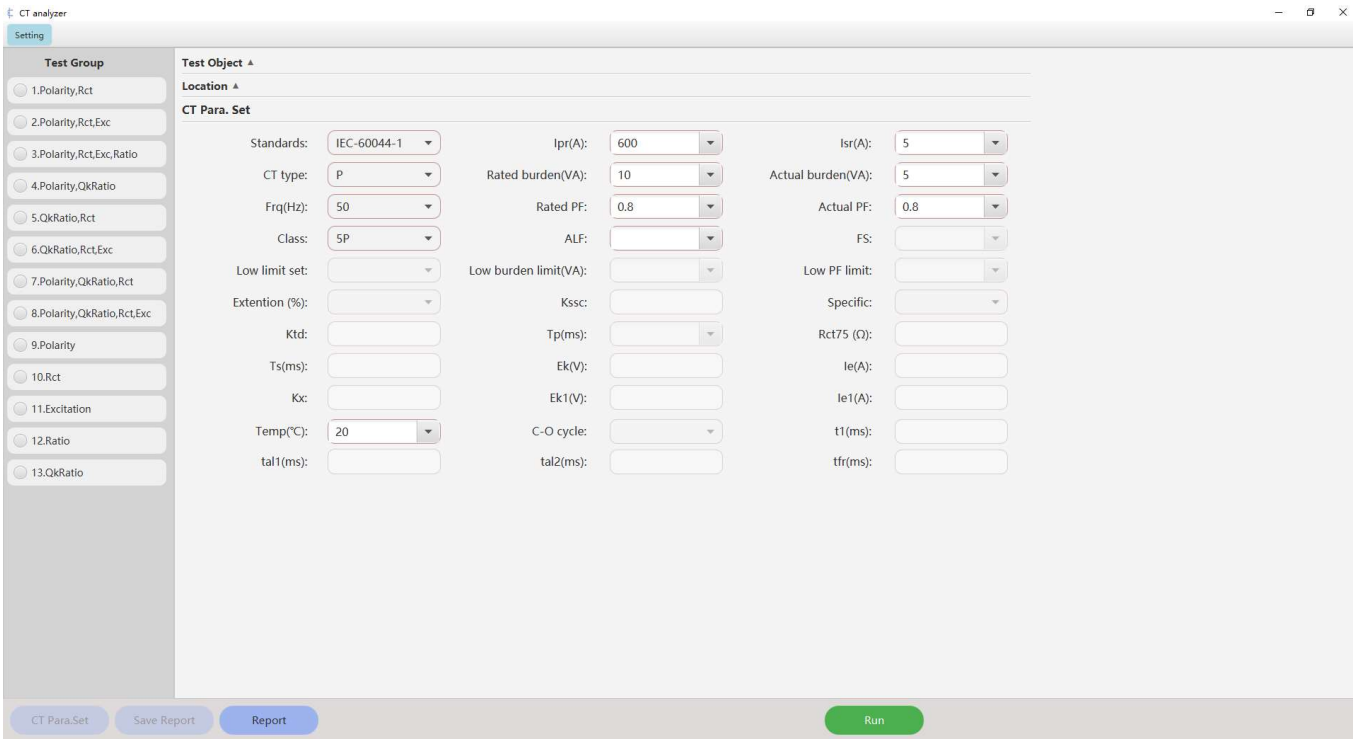


Page 1 / 2 Tested by:_____ Approved by:_____

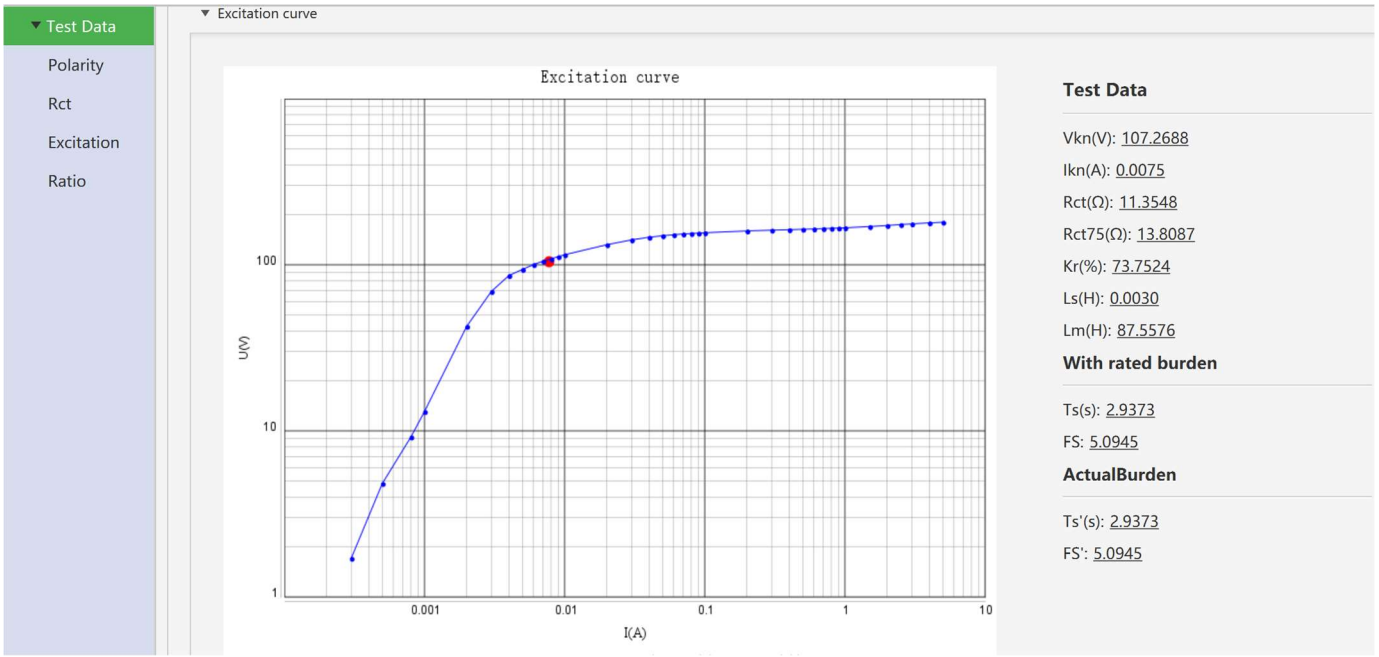
Test report example

CT Analyzer – PC software (optional)

PCT200 portable CT/PT testing system also supports PC control. The connection between test set and PC by WIFI. The function is same with local software.



Main interface



Result page

PCT200 Portable CT/PT Testing System

Specification		PCT200X	PCT200X-B	PCT200AX	PCT200AX-B
Application		Test M/P/TP type CT and PT	Test M/P/TP type CT and PT	Test M/P/TP type CT and PT	Test M/P/TP type CT and PT
Output voltage		0-130V	0-130V	0-130V	0-130V
Output current		0~5Arms (15 Apeak)	0~5Arms (15 Apeak)	0~5Arms (15 Apeak)	0~5Arms (15 Apeak)
Output power		0~500VArms	0~500VArms	0~500VArms	0~500VArms
CT	**Ratio test**				
	Ratio test range	< 50000:1	< 50000:1	< 50000:1	< 50000:1
	Ratio test accuracy	±0.05% Typ. ±0.1% Gur.	±0.05% Typ. ±0.1% Gur.	±0.02% Typ. ±0.05% Gur.	±0.02% Typ. ±0.05% Gur.
	Max. knee point voltage	45kV	45kV	45kV	45kV
	Phase displacement				
	Accuracy	1min Typ. 3min Gur.	1min Typ. 3min Gur.	1min Typ. 2min Gur.	1min Typ. 2min Gur.
	Resolution	0.01min	0.01min	0.01min	0.01min
	Winding resistance				
	Range	0.01-1000Ω	0.01-1000Ω	0.01-1000Ω	0.01-1000Ω
	Accuracy	0.02%rg. + 0.03%rd. Typ. 0.05%rg. + 0.05%rd. Gur.	0.02%rg. + 0.03%rd. Typ. 0.05%rg. + 0.05%rd. Gur.	0.02%rg. + 0.03%rd. Typ. 0.05%rg. + 0.05%rd. Gur.	0.02%rg. + 0.03%rd. Typ. 0.05%rg. + 0.05%rd. Gur.
	Resolution	1mΩ	1mΩ	1mΩ	1mΩ
	Turn ratio				
	Accuracy	0.05% Typ. 0.1% Gur.	0.05% Typ. 0.1% Gur.	0.05% Typ. 0.1% Gur.	0.05% Typ. 0.1% Gur.
	Resolution	0.0001	0.0001	0.0001	0.0001

Specification		PCT200X	PCT200X-B	PCT200AX	PCT200AX-B
CT	**Others**				
	Temperature Compensation	-20 ℃-120 ℃	-20 ℃-120 ℃	-20 ℃-120 ℃	-20 ℃-120 ℃
	Burden test	Yes	Yes	Yes	Yes
	Accuracy limit factor (ALF)	Yes	Yes	Yes	Yes
	Instrument security factor (FS)	Yes	Yes	Yes	Yes
	Remanence factor (Kr)	Yes	Yes	Yes	Yes
	Secondary loop time constant (Ts)	Yes	Yes	Yes	Yes
	Saturated inductance (Ls)	Yes	Yes	Yes	Yes
	Excitation characteristic curve	Yes	Yes	Yes	Yes
	Rated symmetrical short-circuit current factor (Kssc)	Yes	Yes	Yes	Yes
	Rated equivalent limiting secondary e.m.f. (Eal)	Yes	Yes	Yes	Yes
	Transient dimensioning factor (Ktd)	Yes	Yes	Yes	Yes
	Peak value of instantaneous error (ε^)	Yes	Yes	Yes	Yes
	Composite error (ε_c)	Yes	Yes	Yes	Yes
	Polarity	Yes	Yes	Yes	Yes
	Winding polarity test	Yes	Yes	Yes	Yes
	Ratio test points selected	Yes	Yes	Yes	Yes
	Phase displacement	Yes	Yes	Yes	Yes
	Multiple@RE10%	Yes	Yes	Yes	Yes
	Vb@RE10%	Yes	Yes	Yes	Yes
	RE@20*Isn	Yes	Yes	Yes	Yes
	RCF	Yes	Yes	Yes	Yes

Specification		PCT200X	PCT200X-B	PCT200AX	PCT200AX-B
CT	TCF	Yes	Yes	Yes	Yes
	Current injection	Yes	Yes	Yes	Yes
PT	Ratio	Yes	Yes	Yes	Yes
	Polarity	Yes	Yes	Yes	Yes
	Excitation characteristic	Yes	Yes	Yes	Yes
	Winding resistance	Yes	Yes	Yes	Yes
	Knee point	Yes	Yes	Yes	Yes
	Voltage injection	Yes	Yes	Yes	Yes
Others	Main/Charger supply	100-240Vac/50-60Hz	100-240Vac/50-60Hz	100-240Vac/50-60Hz	100-240Vac/50-60Hz
	Built-in battery	-	207.36Wh	-	207.36Wh
	Operation temperature	-10 ℃-50 ℃	-10 ℃-50 ℃	-10 ℃-50 ℃	-10 ℃-50 ℃
	Storage temperature	-25 ℃-70 ℃	-25 ℃-70 ℃	-25 ℃-70 ℃	-25 ℃-70 ℃
	Relative humidity	5%-95%, not condensing	5%-95%, not condensing	5%-95%, not condensing	5%-95%, not condensing
	Dimensions(W×H×D)	290×210×95mm	290×210×85mm	290×210×95mm	290×210×85mm
	Weight	4kg	4kg	4kg	4kg
	LCD display	7inch touch screen	7inch touch screen	7inch touch screen	7inch touch screen
	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	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	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

Specifications are subject to modification without notice

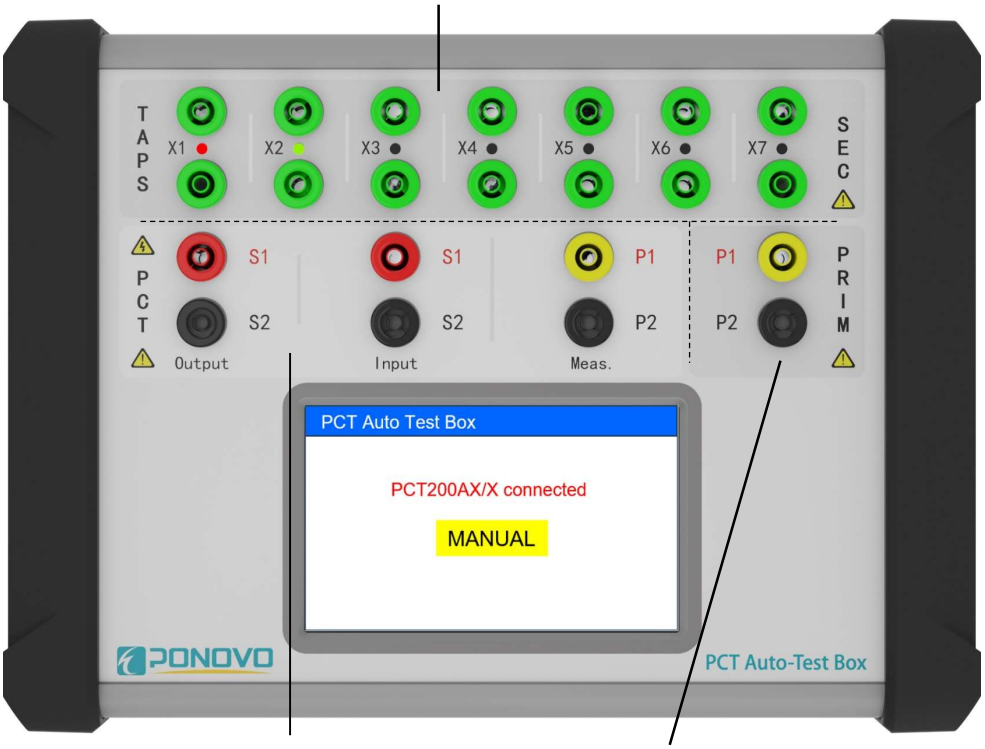
Optional Accessory

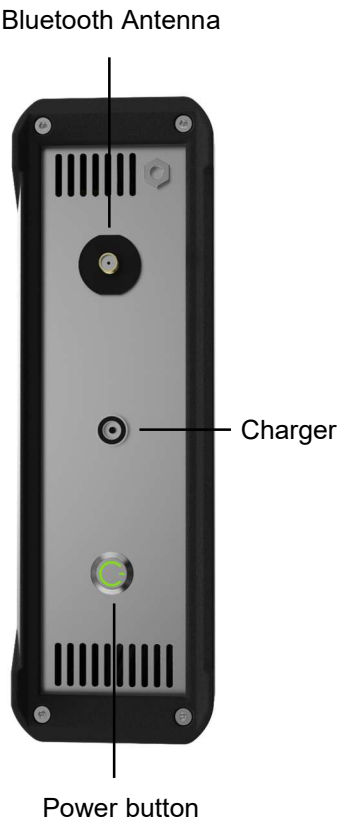
ATB02
PCT Auto-Test Box for PCT200 Portable CT/PT Testing System

ATB02 is an accessory for the PCT200X/PCT200AX Portable CT/PT Testing System allows automatic testing of multi-core/ratio current transformers. ATB02 is connected to multi-taps of the current transformer, and the PCT200X/PCT200AX CT/PT Testing System. This allows the transformer ratios of all winding combinations to be automatically tested with the PCT200X/PCT200 AX CT/PT Testing System.

Main Features

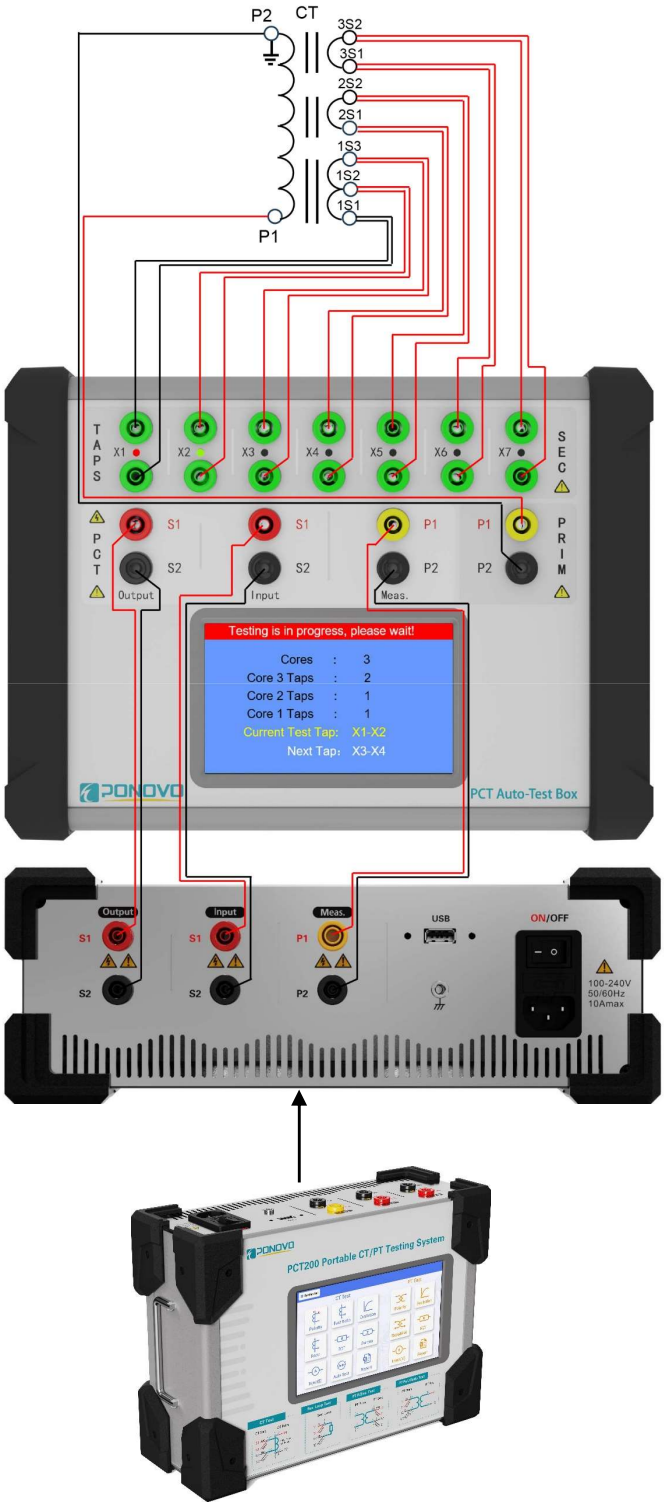
- Supported max three-core, supported max six-tap connections for the secondary side of the current transformer.
- Automatic check to ensure correct wiring.
- Fully automated testing with no need for re-wiring in multi-taps test.
- Supports AC power supply.
- Built-in batteries can power it and work for a day.
- Can work while charging.





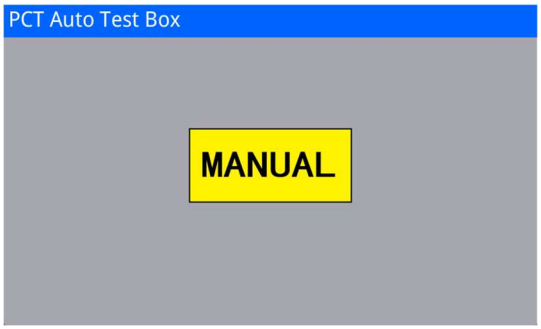
Sample Wiring Connection

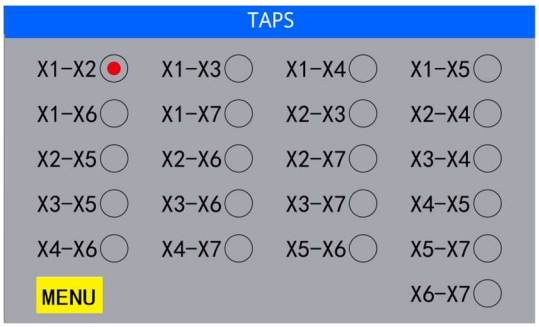
3 cores 4 taps connection between ATB02 PCT Auto-Test Box and PCT200 Portable CT/PT Testing System for multi-ratio current transformer Test.



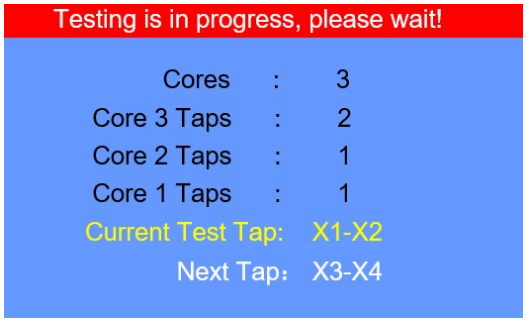
Software Interface

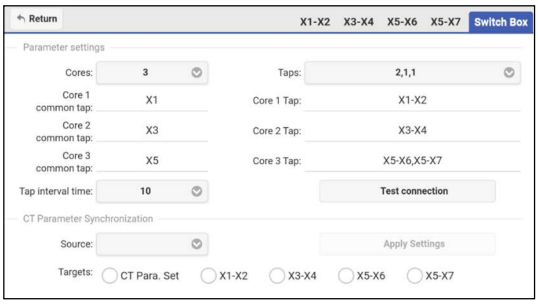
- ATB02 manual software interface





- ATB02 auto-test software interface





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