KINGSINE ELECTRIC AUTOMATION CO., LTD

A professional Manufacturer of Power Testing Products

The KT210 CT/PT Analyzer is the first device with such capabilities.

- Ratio (up to 10000 : 1)
- Current ratio error and phase error for all measurement points defined in selected standard
- Winding resistance
- Excitation/saturation voltage current
- Secondary burden
- Saturated inductance (Ls)
- Unsaturated inductance (Lm)
- Remanence flux factor (Kr)
- Secondary time constant (Ts)
- Accuracy limiting factor (ALF / ALFi)
- Instrument security factor (FS / FSi)
- Dimensioning factor according to class PX, TPS (Kx)
- Accuracy limiting voltage/current according to class PX (Ek / Ie)
- Turns ratio according to class PX (N)
- Turns ratio and composite error (εt ,εc)
- Rated symmetrical short-circuit current factor (Kssc)
- Transient dimensioning factor (Ktd)
- Peak instantaneous error (ε^)
- Maximum emf voltage (Emax - calculated value)
- Accuracy limiting voltage/current (Val/Ial)
- Knee-point voltage/current (Vkn / Ikn)
- The impedance / admittance of CT secondary Load, Like the burdens of various meters, relays, selector switches etc. are measured

Current transformers are used for relaying and metering purposes in electrical power systems. They connect the high power primary side to the protection and metering equipment on the secondary side. Depending on the application they are used for, current transformers are designed differently.

Protection current transformers

As it is used to feed protective relays, the CT must be accurate during normal and fault conditions. Failures in transformation could lead to misoperation of the relay along with unwanted and costly outages. To test CTs according to the requirements of modern protection systems, it is compulsory to consider transient components and auto-reclosure systems.

Metering current transformers

CTs for metering purposes must provide high accuracy up to class 0.1 to guarantee correct billing. It is therefore essential to test and calibrate the metering current transformer, as the entire metering chain is only as accurate as the instrument transformers feeding the meter.

In contrast to protection CTs, metering CTs must go into saturation directly above the nominal primary current level to protect the connected metering equipment.

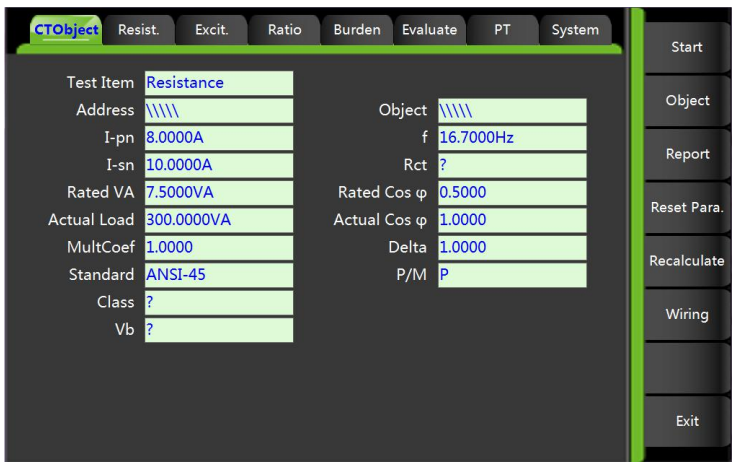
KT210 - a new way of testing CTs

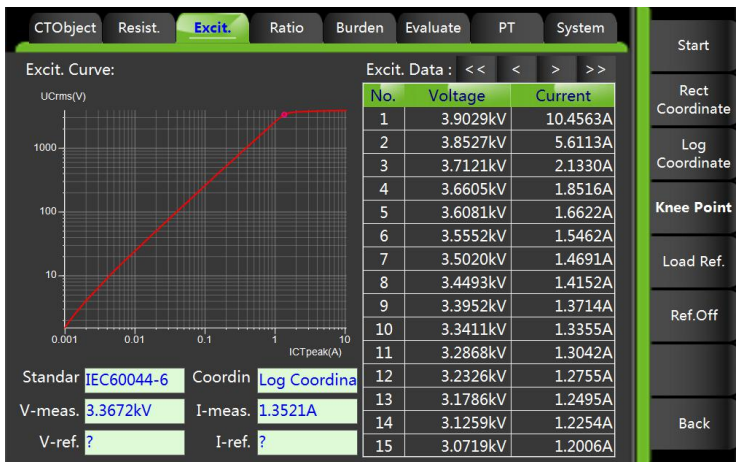
The KT210 is the most complete testing system for protection and metering CTs according to IEEE and IEC standards.

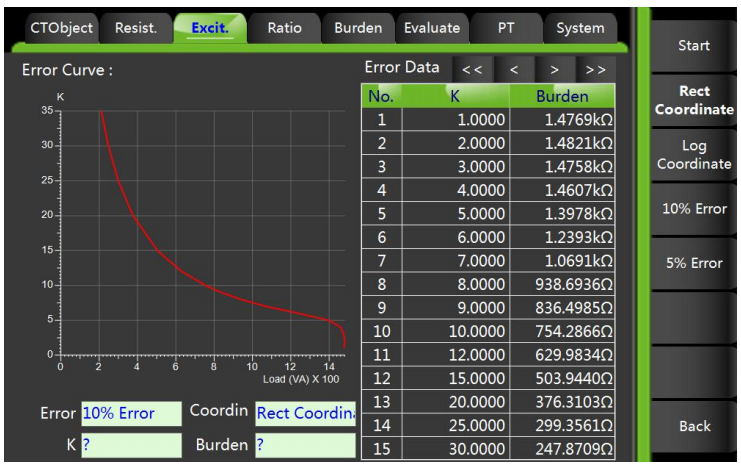
It allows all types of single and multi-ratio current transformers to be tested on-site in power system grids. Manufacturer of CTs, transformers or GIS use the KT210 in their production facilities and test / development labs.

The KT210 offers a wide range of measurements, such as:

- CT-ratio and phase-angle accuracy with consideration of nominal and operational burden for various currents
- CT winding resistance
- CT excitation / saturation (unsaturated and saturated)
- ALF and FS (direct and indirect)
- Burden impedance
- CT residual magnetism
- PT ratio, polarity and excitation curve







Automated testing procedure

The KT210 is designed to accurately measure all relevant CT parameters and compare them to the requirements of the defined IEEE or IEC standard. Due to this automated assessment, testing engineers receive the 'pass or fail' decision within seconds.

Step 1: Measurement of parameters

Measurement of CT parameters like
Excitation curve
Eddy current
Ratio, etc

Step 2: Modeling

Definition of CT model elements with variable frequency and calculation of CT parameters through embedded mathematical functions.

Step 3: Assessment according to IEEE or IEC standard

Automated comparison of test results with the defined values according to the selected IEEE or IEC standard.

Step 4: Reporting

All data is delivered in an XML file and can be displayed via the reporting tool.

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Auto Demagnetizes

- Software-based tool to determine the residual magnetism in current transformers
- Analysis of the remanence condition before putting into operation the CT to assure proper function
- Simplifies power grid failure analysis after unwanted operation of protective relays
- Demagnetizes the CT core after measurement

PC Control Available

- Full access to all functions of the KT210 via a PC using the RJ45 interface
- Optimizes the integration into automated testing procedures in production lines
- Data export into Word
- Customizable testing and reports

Data Handling and Reporting

- Test reports can be saved on the CF card of host and transferred to a PC
- Data and protocols can be shown on a PC via the Word file loader program

"Guessing" Nameplates（Reference for unknown CT）

- Determination of unknown CT data
- Older CTs can be classified and put into service without contacting the manufacturer
- Determinable parameters include:
  - CT type
  - Class
  - Ratio
  - Knee point
  - Power Factor
  - Nominal and operating burden
  - Secondary winding resistance

Technical Features Standard Package

- Excellent noise immunity to disturbances from energized power lines close to the measurement
- CT ratio and phase measurement with consideration of nominal and connected secondary burden; CT ratio up to 10000:1
- Knee-point voltage from 1 V up to 30 kV can be Measured
- Currents from 1% up to 400 % of the rated value
- Different burdens (full, ½, ¼, ⅛ burden)
- Determination of ALF/ALFi and FS/FSi, Ts, and composite error for nominal and connected burden
- CT winding resistance measurement
- CT excitation curve (unsaturated and saturated)
- Saturation characteristic recording
- Direct comparison of excitation curve to a reference curve
- CT phase and polarity check
- Secondary burden measurement
- Automatic demagnetization of the CT after the test
- Small and lightweight (< 8 kg)
- Short testing time due to fully automatic testing
- High level of safety using patented variable frequency method (max. 120 V)
- "Nameplate guesser" function for CTs with unknown data
- PC control interface
- QuickTest: Manual testing interface
- Color display readable in bright sunlight
- Simulation of measured data with different burdens and currents
- Easily adaptable reports (customizable)
- Knee-point voltage from 1 V up to 30 kV can be Measured
- Automatic assessment according to IEC 60044-1, IEC 60044-6, IEC61869-2, ANSI30/45
- Automatic assessment for accuracy class > 0.1
- Measurement of transient behavior of TPS, TPX, TPY and TPZ type CTs
- PT ratio, polarity and excitation curve according to IEC60044-2

Technical Data of KT210 CT/PT Analyzer

Current Ratio Accuracy

Ratio 1 - 5000	0.03 % (typical) / 0.1 % (guaranteed)
Ratio 5000 - 10000	0.05 % (typical) / 0.2 % (guaranteed)

Phase Displacement

Resolution	0.01 min
Accuracy	1 min (typical) / 3 min (guaranteed)

Winding Resistance

Range	0.1 - 100 Ω
Resolution	1 mΩ
Accuracy	0.05 % (typical) / 0.1 % + 1 mΩ (guaranteed)

Power Supply

Input Voltage	176 Vac to 264 Vac @ 10A Max
Permissible Input Voltage	120 Vdc to 370 Vdc @ 5A Max
Frequency	50 / 60 Hz
Permissible Frequency	47 Hz to 63 Hz
Connection	Standard AC socket 60320

Output

Output Voltage	0 Vac to 120 Vac
Output Current	0 A to 5 A (15 A peak)
Output Power	0 VA to 450 VA (1500 VA peak)

Physical Dimensions

Size (W x H x D)	360 x 140 x 325mm
Weight	<8 kg (without accessories)

Environment Conditions

Operating Temperature	-10°C up to + 55°C
Storage Temperature	-25°C up to + 70°C
Humidity	Relative humidity 5% up to 95% not condensing

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