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INSTRUMENTS FOR POWER INDUSTRY

Making energy visible

CURRENT TRANSFORMER TEST SET

MarsTest-CT-300

Output current range: from 3 kA to 300 kA

The test set includes:

- ① Power control unit (PCU) with high-voltage capacitors
- ② Scaling current converter PTM-300
- ③ Comparator of the Energomonitoring family with primary and secondary current sensors
- ④ PC with MarsTest-CT software



Purpose

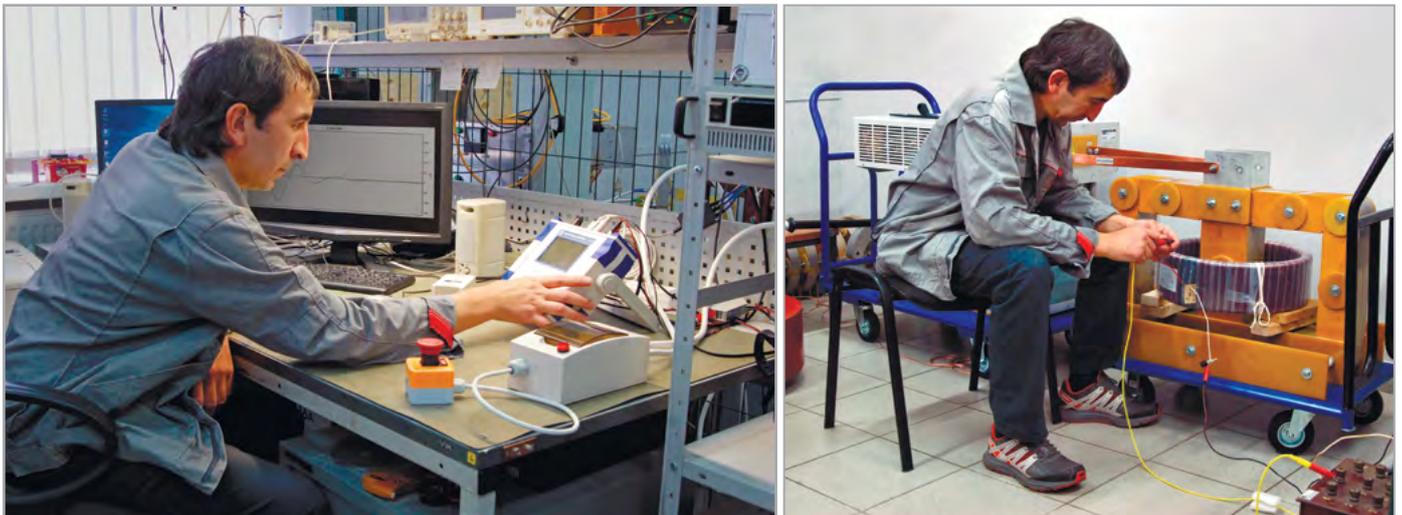
The test set is designed to perform investigation or testing (calibration) of current measuring converters with a current of up to 300 kA.

Key features

The test set generates damping sine current waveforms in the measurement loop (included in the scope of supply) with a first half-wave of 10 ± 1 ms duration at a 50 ± 5 Hz signal frequency. The amplitude of the first half-wave of current can be adjusted in the range of 3 to 300 kA

Application

The test set can be used by the laboratories of National Metrology Institutes, manufacturers of instrument and protective current transformers, power industry enterprises and by the territorial bodies of the Federal Agency for Technical Regulation and Metrology (Rosstandart). Our test set is recommended by the standard approved by PJSC Rosseti (STO 34.01-3.2-017-2022. Digital current transformers 6-750 kV) for analysing the accuracy specifications of CTs of unified accuracy classes PR, TPX, TPY, and TPZ used for protection, metering and measurement purposes.



Application and key benefits

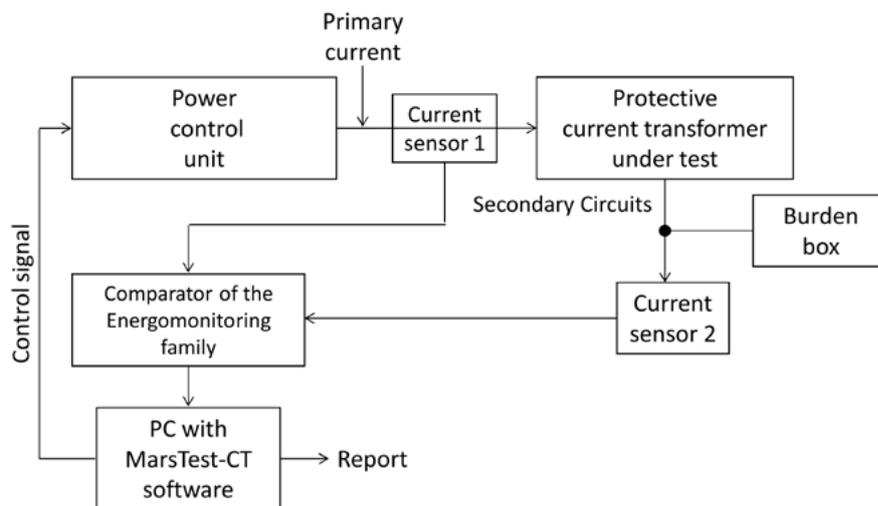
The test set can be applied for:

1. Analysing the behaviour of CTs used in relay protection systems under short-circuit conditions and in a transient short-circuit state accompanied by saturation of the magnetic core
2. Accuracy testing of protective current transformers for compliance with accuracy classes PR, TPX, TPY, TPZ according to IEC 61869-2-2015
3. Calibration of low-power instrument transformers (LPITs) including optical CTs with digital output.

Key benefits:

- CTs are tested under conditions that are the closest to real practice, whereas the test set is powered from the mains supply.
- A unified design provides fast and easy connection of the tested transformer irrespective of its size and type.
- A special service mode is provided to perform demagnetization of tested CTs with a continuous AC current of up to 8 kA.

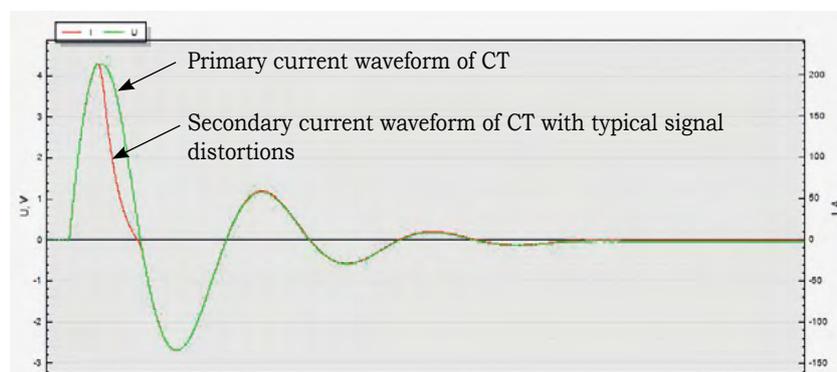
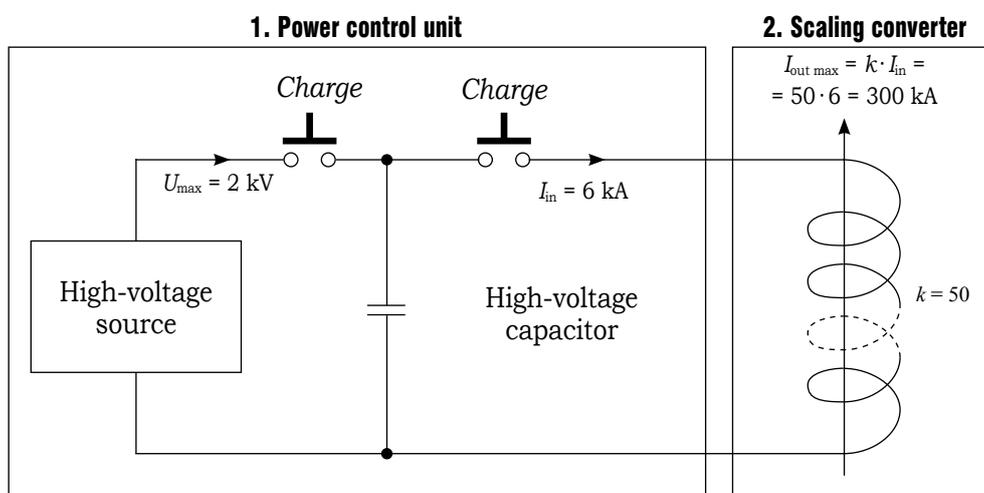
MarsTest-CT application scheme



Operation principle

A high-energy capacitor is charged from a high-voltage source, and then discharged through a multiplier coil which makes up an RLC together with a capacitor.

The components of the RLC are selected to provide a damping sine current waveform in the scaling converter circuit with the 1st half-wave amplitude up to 300 kA and 50Hz frequency.



Current waveform on the output

General specifications

Parameter	Value
Amplitude range of the output current for "MarsTest-CT-300"	3-300 kA
Nominal primary current of the current sensor	10/25/250 kA
The maximum charging voltage of the capacitor bank	2,0 kV
The duration of the first half-wave of the current	(10±1) ms
The peak amplitude of the first half-wave of the current	300 kA
Standard deviation of the output current from its setpoint value	±10 %, or less
Charging time of the capacitor bank	1 min, or less
Recommended interval between discharges	3 min, or more
Power supply voltage	(230±23%) V
Power supply frequency	(50 ± 1%) Hz
Power consumption	2 000 VA, or less
Average lifespan	10 years
Dimensions:	
Power control unit BUS	(635x560x740) mm
Scaling converter PTM-300kA	(810x510x430) mm
Dimensions of the busbar type current transformer under test:	
Outside diameter	575 mm
Inside diameter	225 mm
Height	275 mm
Weight:	
Power control unit BUS	150 kg, or less
Scaling converter PTM-300kA	80 kg
Set of cables	3 kg

Supply package

1. Power control unit BUS with high-voltage capacitors
2. Scaling converter PTM-300kA
3. Primary current sensor 1 (Rogowski coil)*
4. Secondary current sensor 2 (100A and 1000A current clamps)*
5. Multifunctional reference instrument of the Energomonitoring family*
6. Burden box*
7. Emergency shutdown block
8. Power busbar (2 units)
9. Power supply cable
10. 4RS232-USB interface converter
11. Cable RS-232
12. User Manual
13. MarsTest-CT software
14. Transport trolley (2 units)
15. Transport packaging

* *Optional*