



Three-phase Transformer Turns Ratio Tester TRT03A



- Test voltages 8 V, 40 V, 100 V AC
- Ratio range 0,8 – 15 000
- Measurement of turns ratio
- Measurement of phase shift
- Measurement of excitation current
- Three-phase and single-phase test
- Verifies winding configurations

Three phase Turns Ratio Tester

TRT03A is a three-phase, fully automatic, test set specially designed for turns ratio, phase shift and excitation current measurement of power, distribution and instrument transformers. TRT03A determines the transformer turns ratio by accurately measuring the voltages across the unloaded transformer windings and then displaying the ratio of these voltages (ratios range from 0,8 to 15 000).

Description

TRT03A is based on state of the art technology, using the most advanced technique available today. The test set can be used to test single-phase and three-phase transformers, both with and without taps in accordance with the requirements of the IEC 60076-1 standard.

For three-phase measurement, the test set is connected to all three phases of the transformer to be tested. If specific vector diagrams for different types of transformers are selected, the TRT03A will run a specific test for each transformer type (i.e., single phase, Delta to y, Y to delta, Delta to delta, or Y to y) without the need to switch test hookup cables. Turns ratio, phase shift and excitation current are shown on the display

TRT03A lets users enter a transformer's nameplate voltages for the turns-ratio calculation. This feature eliminates any error otherwise caused by an operator's manual calculation. The TRT03A also compares the test result with the calculated ratio and prints out the % of error for each test. It is easy to read display and easy to follow menu. View the result on the display. There is enough memory in TRT03A to store 100 test records and each record consists of 100 test readings. All measurements are time and date stamped. The measurements can be printed on a built-in thermal printer using the Print button.

Transformer excitation current as well as phase shift angles helps to detect transformers shorted turns or unequal number of turns connected in parallel. Operating conditions messages or error messages identify incorrect test conditions, abnormal operating condition or winding problems.

TRT03A has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing appropriate hardware and software.

DV-Win software

All measurements can also be exported to a PC with the DV-Win software. The software connects a PC to TRT03A with USB cable. Using the DV-Win it is possible to report and analyze results. Also TRT03A can be controlled and test status could be viewed using the DV-Win software.

Typical application

TRT03A is programmed to automatically test turns ratio, phase shift and excitation current of power, distribution and instrument transformer types defined by CEI/IEC standards.

Accessories

Included

- ✓ DV-Win PC software including USB cable
- ✓ Built-in Tap Changer Control Unit
- ✓ Tap Changer Control cable set 5m
- ✓ Mains power cable
- ✓ Ground (PE) cable

Recommended

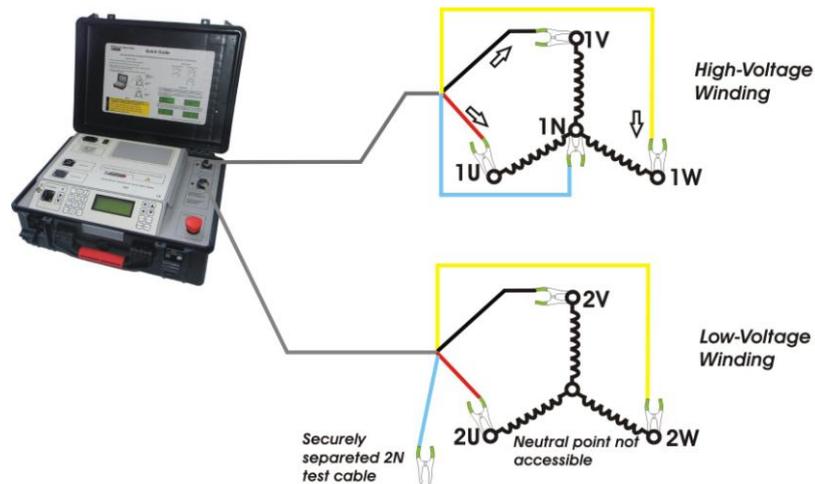
- ✓ H winding test cable 5 m, three-phase connection, clip-end terminated
- ✓ H winding test cable extension, 5 m, shielded
- ✓ X winding test cable, 5 m, three-phase connection, clip-end terminated
- ✓ X winding test cable extension, 5 m, shielded
- ✓ Cable bag

Optional

- ✓ H winding test cable extension, 10 m, shielded
- ✓ X winding test cable extension, 10 m, shielded
- ✓ H winding test lead, 3 m, single-phase connection, clip-end terminated
- ✓ X winding test lead, 3 m, single-phase connection, clip-end terminated
- ✓ USB flash drive feature
- ✓ Built-in thermal printer
- ✓ Cable plastic case
- ✓ TRTC Verification Calibrator

Tap-Changer Control Unit permits users to change transformer taps remotely. This remote-controlled tap-changer unit eliminates the need to change the transformer's step-up and step-down taps by hand.

Connecting a Test Object to TRT03A



Technical Data

Mains Power Supply

- Voltage: 110 - 230 V AC
- Frequency: 50 - 60 Hz
- Input power: 200 VA
- Fuse: 2 A / 250 V, type F

Output Data

- Test voltage 8 V AC, 40 V AC, 100 V AC
- Ratio measuring range 0,8 to 15 000 (5-digit Resolution)
- Typical Ratio Accuracy:

0,8 - 999: $\pm 0,05$ %	1000 - 3999: $\pm 0,1$ %	4000 - 15000: $\pm 0,2$ %	@100 V AC
0,8 - 999: $\pm 0,05$ %	1000 - 3999: $\pm 0,1$ %	4000 - 15000: $\pm 0,2$ %	@40 V AC
0,8 - 999: $\pm 0,05$ %	1000 - 3999: $\pm 0,1$ %	4000 - 15000: $\pm 0,2$ %	@8 V AC
- Excitation current Range 0 – 2 A
- Typical Excitation current Accuracy ± 1 mA
- Excitation current Resolution 0,1 mA
- Phase Angle Range 360 Degrees
- Typical Phase Angle Accuracy $\pm 0,05$ Degrees
- Phase Angle Resolution 0,01 Degree

Display

- LCD Screen: 20 Characters by 4 Lines; LCD display with backlight, viewable in bright sunlight.

Interface

- TRT03A is equipped with an USB port to connect to an external computer.

Test Result Storage

- TRT03A can store 100 transformer test records; each test record can store 100 test readings.

Environmental Conditions

- Indoor use
- Altitude below 2000 m
- Temperature -10 °C - +55 °C / 14 °F - +131 °F
- Maximum relative humidity 95 % for temperatures up to 31 °C, decreasing linearly to 40 % relative humidity at 55 °C
- Mains supply voltage fluctuations up to ± 10 % of the nominal voltage
- Installation/overvoltage category II
- Pollution degree 2

Dimensions and Weight

- Dimensions 450 x 175 x 320 mm (W x H x D)
17,72 x 6,89 x 12,6 in
- Weight 8 kg / 17,5 lbs

Safety Standards

- European standards LVD 2006/95/EC
EN 61010-1
- International standards IEC 61010-1
UL 61010-1
CAN/CSA-C22.2 No. 61010-1, 2nd edition, including
Amendment 1

Electromagnetic Compatibility (EMC)

- CE conformity EMC directive 2004/108/EC
- Emission EN 61326-1
- Interference Immunity EN 61326-1

All specifications herein are valid at ambient temperature of + 25 °C and standard accessories.
Specifications are subject to change without notice.