

# Automatic Ratio Tester

## TTR-3D

HIGHEST ACCURACY & LOWEST COST



## TTR-3D

Real simultaneous 3 phase test voltage output.

Up to 275 volts output for high accuracy.

Optional tertiary winding channel.

Fully automatic tap changer test mode.

Large color, sunlight readable, transmissive, touch screen.

USB thumb drive & Ethernet ports.

amperis

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The TTR-3D of ratio meters are high precision instruments, designed to measure turn ratios, phase displacements, excitation currents of single phase and three phase power, distribution and instrument transformers in conformity to the IEEE C57.12.90 & IEC 60076.

### Features

With its real 3-phase test circuit the TTR-3D can address complex ratio measurements of Phase-Shifting/ Regulating or irregular vector group type transformers otherwise impossible to achieve with conventional ratio meters. Zigzag type transformers testing is very easy and will not require the installation of jumpers or the use of relay matrix circuits.

The single or real 3 phase voltage output up to 275V is very interesting as it contributes to higher magnetization currents and therefore stronger flux for better signal reflection on secondary and/or tertiary windings allowing more accurate results. The TTR-3D phase displacement measurements enables for simple detection of the transformer vector group.

### Convenience with performance

The instrument's rugged design is perfectly suited to tackle the most challenging field or manufacturing environments. Powerful filtering circuits and algorithms reduce the effect of noise. Additionally, the anti-induction mode strongly enhances the efficiency of the measurements by countering the unwanted effect of nearby induction interference that is quite common in high-voltage substations. The large, very high contrast, color touch screen display makes the TTR-3D and TTR3-DX very comfortable and easy to operate, create test plans and view test data files. The integrated LTC control terminal allows for manual or fully automatic testing sequence of On-Load Tap changers with configurable pulse duration and duty cycle. The large onboard memory can store thousands of test files and/or test plans. The IEC, ANSI and Australian winding vector group configurations are user selectable.

### Easy of use

With TTR-3D's intuitive menus, high contrast touch screen, convenient graphical test representation, highest test voltage on the market, long and flexible multipurpose test leads configuration, real 3-phase output, the widest range of applicable transformer types, it has never been so simple and easy to achieve high accuracy Transformer Turn Ratio measurements.

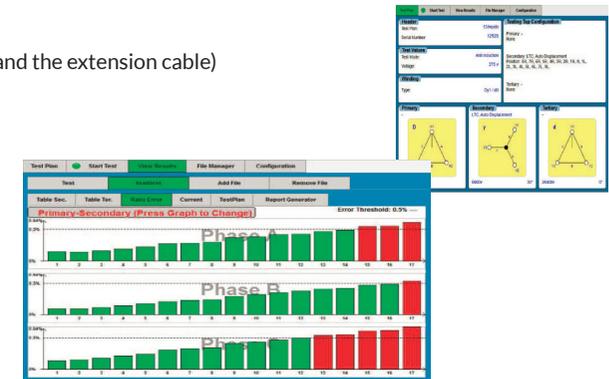


### TTR-3D's Specifications

<b>Ratio Range</b>	0.75 to 25000
<b>Ratio accuracy</b>	0.03% from 0.8 to 1000:1 at 275V 0.05% from 0.8 to 1000:1 with 8V, 40V & 100V 0.1% from 1000 to 5000:1 0.2% from 5000 to 10000:1 0.3% from 10000 to 25000:1
<b>Test voltages</b>	8V, 40V, 100V, 275V
<b>Power input</b>	100V to 250V, 45 - 65Hz
<b>Phase angle range</b>	+/- 180 degrees
<b>Phase angle accuracy</b>	+/- 0.05 degree
<b>Magnetising current range</b>	Up to 2A
<b>Magnetising current accuracy</b>	+/- 1% of range
<b>Measuring time</b>	5 to 10 seconds
<b>Data Storage</b>	> 10000 test files
<b>Display</b>	Backlit 6.5" LCD, 640x480, Ultra high brightness,
<b>Data displayed</b>	- Vector group, phase, tap position, ratio, ratio deviation, phase angle displacement, excitation current, pass-fail results. - Up to 3 test files can be loaded simultaneously for comparison - Graphical and tabulated representation of test results USB (USB memory drive), Ethernet (remote control)
<b>Interface</b>	
<b>Tested for</b>	EMI, Safety

### Accessories included:

- Test Leads (main cable with 4 terminals and the extension cable)
- Length of 50Ft/ 15m
- Tap Changer Cable
- Ground Cable
- HV/LV cables
- Remote control software
- Calibration certificates
- Shipping case



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