Accessible version (HTML): amperis.com/en/accesible/catalogo-amperis-trt-avanzada-en/

TRT

Advanced Series

Test templates and automatic test mode built into the instrument's touch screen

TRT

Three-phase turns ratio measurement with touch screen

amperis

www.amperis.com

C/ María Barbeito, 14
27003, Lugo, Spain

Contact

T [+34] 982 20 99 20
info@amperis.com | www.amperis.com

General description

Front view of the TRT Advanced Series, with a 7 or 10.1 inch graphical touch screen.

True three-phase test voltage up to 500 V AC

The TRT Advanced series applies the same true three-phase test technique as the rest of the TRT range, but raises the single-phase test voltage up to 500 V AC on the TRT500 model, compared with 250 V AC on the Standard range, improving accuracy on large power transformers. The instrument connects to all three phases at once and, by selecting the vector diagram for each connection type - star-delta, delta-delta, star-zigzag, etc. - runs the corresponding test without changing the test leads, in accordance with IEC 60076-1.

Extending the range to capacitive voltage transformers

With the external CVT20 auxiliary transformer, TRT500 raises the test voltage up to 5,000 V AC, the level needed to verify the ratio of capacitive voltage transformers, a test the Standard range does not cover. The rest of the calculation functions remain unchanged: the operator enters the nameplate voltages, the instrument calculates the ratio deviation and compares the result with the nameplate value, flagging any anomaly immediately thanks to its filtration of electrostatic and electromagnetic interference.

Connection to the transformer and to CTs

Two sets of four cables connect all primary and secondary bushings in a single step, on both transformers and three-phase autotransformers defined by the IEC, IEEE and ANSI standards. TRT Advanced also tests single-phase units by reusing part of the same cable set, as well as current transformers: the "X" leads connect to the primary side of the CT or slide through its window and are short-circuited when no primary terminals exist.

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Applications and software

Connection panel of the TRT Advanced Series (top view).

Applications

- Commissioning and maintenance of power, distribution and instrument transformers, with or without an on-load tap changer.
- Testing of capacitive voltage transformers with TRT500 and the CVT20 auxiliary transformer (up to 5,000 V AC).
- Testing of special transformers - phase-shifting, rectifier and arc-furnace units - using the true three-phase test voltage.
- Automatic vector group detection and magnetic balance test on three-phase units, with test templates stored in the instrument itself.

Cables shared with the winding analyzer

TRT Advanced shares its H and X leads with the TWA Three-Phase Winding Analyzer, so a single connection to the bushings chains the turns ratio test with winding resistance, tap-changer DVtest and demagnetization, without rewiring the transformer.

PC software

The Windows-based DV-TR software, included in the purchase price with free updates, controls TRT Advanced from a computer and creates and stores test templates. The touch screen already includes those same templates and a fully automatic test mode that steps through the tap-changer positions without operator intervention, a function only available through the PC software in earlier generations. Results are shown numerically and graphically and export to spreadsheet or PDF. Accessories: H and X cable sets in several lengths, transport and cable cases, TRTC verification calibrator, built-in thermal printer (112 mm on TRT500, 58 mm on the rest) and, for TRT500, the CVT20 auxiliary transformer.

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TRT — MEASUREMENT DATA

Maximum single-phase test voltage	500 V AC (TRT500); 430 V AC (TRT400); 250 V AC (TRT250); 170 V AC (TRT100)
Extension with CVT20 auxiliary transformer	Up to 5,000 V AC, for capacitive voltage transformers (TRT500 only)
Turns ratio range	0.8 - 50,000 (5-digit resolution)
Accuracy at maximum voltage (500/430/250 V AC)	±0.03% (0.8-999); ±0.05% (1,000-19,999); ±0.1% (20,000-50,000)
Accuracy at minimum voltage (1 V AC)	±0.05% (0.8-999); ±0.1% (1,000-4,000)
Excitation current range	0 - 2 A; resolution from 0.1 µA to 100 µA depending on range
Excitation current accuracy	±(0.25% of reading + 0.5 mA)
Phase angle range	0 - 360°; resolution 0.01°; accuracy ±0.05°

Accuracy depends on the selected test voltage; the highest- and lowest-voltage cases are shown, with intermediate steps in the manufacturer's current datasheet.
Data valid at +25 °C with standard accessories.

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TRT — TECHNICAL SPECIFICATIONS

	TRT500	TRT400	TRT250	TRT100
Voltage source	Single-phase and true three-phase	Single-phase and true three-phase	Single-phase and true three-phase	Single-phase and true three-phase
Test voltage	1-500 V AC (5,000 V AC with CVT20)	1-430 V AC	1-250 V AC	1-170 V AC
Input power	250 VA	250 VA	250 VA	250 VA
Display	Graphical touch screen, 10.1 in	Graphical touch screen, 7 in	Graphical touch screen, 7 in	Graphical touch screen, 7 in
Internal memory	32 GB SD card	32 GB SD card	32 GB SD card	32 GB SD card
Interface	USB; Ethernet	USB; Ethernet	USB; Ethernet	USB; Ethernet
Dimensions (W×H×D)	505 × 257 × 409 mm	478 × 194 × 390 mm	478 × 194 × 390 mm	478 × 194 × 390 mm
Weight	10.5 kg	9 kg	9 kg	9 kg

Optional built-in thermal printer: 112 mm on TRT500; 58 mm on TRT400, TRT250 and TRT100.
Environmental conditions: operation from -20 to +60 °C, storage from -40 to +70 °C, relative humidity up to 95% non-condensing.
Standards: safety EN 61010-1; electromagnetic compatibility EN 61326-1. Specifications valid at +25 °C; subject to change without notice (manufacturer's datasheet).

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