

TWA

Advanced Series



TWA500

Tap-changer vibration channel and 32 GB of internal memory, exclusive to this range

TWA

Winding resistance, touch screen, simultaneous DVtest

amperis

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General description



Front view of the TWA Advanced Series (TWA500 model), with graphical touch screen and transport case.

Six-winding resistance measurement with a fully automatic test

The TWA Advanced Series measures the resistance of all six windings - primary and secondary - of three-phase transformers and autotransformers with a single cable setup, injecting a true, ripple-free DC current at a voltage of up to 55 V DC. By energising all three phases on the HV and LV sides at once, the instrument quickly saturates the magnetic core of each limb and shortens the test duration. A tap-changer control unit, built into the instrument itself, also runs a fully automatic test mode: the touch screen steps through the tap-changer positions on its own and automatically detects when each reading has stabilised, without the operator intervening between one position and the next.

Simultaneous DVtest, with motor current and vibration

DVtest measures the dynamic resistance of the on-load tap changer with a 0.1 ms resolution, on a single phase or on all three at once, on both models in the range. A dedicated channel records the tap-changer motor current - using a 30/300 A current clamp - and another channel, with an optional accelerometer, records the mechanism's vibration during switching; both signals are plotted on the same graph as the test current, making it easier to tell an electrical fault from a purely mechanical one. Quick YN mode measures the resistance of all three phases of a YN-connected winding simultaneously, with a combined current of up to 40 A DC during the phase-synchronisation check.

Four-wire Kelvin connection and automatic demagnetization

Two sets of four cables with two-contact clamps apply the four-wire (Kelvin) method and connect every bushing on the primary and secondary sides in a single step. The test leads are interchangeable with those of the TRT turns ratio tester, so both instruments share the same connection to the transformer. Once the resistance measurement ends, the TWA automatically demagnetizes the core, in three-phase or single-phase mode, applying an alternating current of decreasing magnitude until the remaining flux is cancelled out.



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Applications and software



TWA500

Connection panel of the TWA Advanced Series (TWA500 model), with the H/X connectors, the motor current channel and the tap-changer vibration channel.

Applications

- Commissioning and maintenance of power and distribution transformers and autotransformers with an on-load tap changer.
- Tap-changer condition assessment combining simultaneous DVtest, motor current and mechanism vibration.
- Synchronisation check between the phases of a three-phase tap changer.
- Fully automatic test mode across several tap-changer positions, without manual intervention.

Cables shared with TRT

The TWA Advanced Series uses the same H and X cable set as the TRT turns ratio tester, so a single connection to the transformer bushings chains the turns ratio test, winding resistance, tap-changer DVtest and demagnetization, without rewiring the unit.

PC software

A Windows-based PC software, included in the purchase price, controls and monitors the test from the computer, saves and analyses the results, and generates customised reports that export to spreadsheet, PDF, Word or ASCII format. The instrument's own touch screen already includes the test templates and the fully automatic test mode across several tap-changer positions, with no computer needed during the test. Accessories: H and X cable sets in several lengths with TTA clamps, a 30/300 A current clamp for the motor-current channel, an ICP accelerometer for the vibration channel, a temperature sensor, a transport case, cable cases and, for TWA400, an optional 58 mm built-in thermal printer.



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TWA – MEASUREMENT DATA

Resistance measurement range	0.1 $\mu\Omega$ - 10 k Ω
Accuracy	$\pm(0.1\%$ of reading + 0.1% F.S.) up to 1.999 k Ω ; $\pm(0.2\%$ + 0.1% F.S.) from 2 to 9.999 k Ω
Test current	5 mA - 25 A DC (resistance measurement, sequential or simultaneous Quick YN); up to 40 A DC during the tap-changer synchronisation check
Output voltage	Up to 55 V DC
DVtest resolution	0.1 ms, on one phase or all three at once (TWA500 and TWA400)
Motor current channel	30/300 A current clamp; up to 20 kHz; accuracy $\pm 1\%$ of reading
Vibration channel	ICP accelerometer, ± 100 mV/g, ± 50 g (optional accessory)
Temperature measurement	-50 to +180 $^{\circ}\text{C}$; Pt100 class B probe; 0.1 $^{\circ}\text{C}$ resolution

The 40 A DC figure corresponds to the phase-synchronisation check of the tap changer; the resistance measurement - sequential or simultaneous in YN connection - reaches 25 A DC on both models. Data valid at +25 $^{\circ}\text{C}$ with standard accessories; mains supply 90-264 V AC (50/60 Hz), 1500 VA (manufacturer's current datasheet, 2026-02-09 revision).



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TWA – TECHNICAL SPECIFICATIONS

	TWA500	TWA400
Measurement	Three-phase, six windings	Three-phase, six windings
Test current	5 mA-25 A DC; up to 40 A DC during synchronisation check	5 mA-25 A DC; up to 40 A DC during synchronisation check
DVtest resolution	0.1 ms, one phase or all three at once	0.1 ms, one phase or all three at once
Motor and vibration channels	Yes (30/300 A clamp) and yes (optional accelerometer)	Yes (30/300 A clamp) and yes (optional accelerometer)
Demagnetization	Automatic, three-phase and single-phase	Automatic, three-phase and single-phase
Display / internal memory	10.1 in touch screen; 32 GB	7 in touch screen; 32 GB
Interface	USB; Ethernet	USB; Ethernet
Optional thermal printer	Not available	Yes, 58 mm
Dimensions and weight	505 × 257 × 409 mm; 13.5 kg	543 × 218 × 427 mm; 15.0 kg

Both models share the same resistance range (0.1 $\mu\Omega$ -10 k Ω), the same test current and the same DVtest resolution; they differ in screen size, the optional thermal printer (TWA400 only) and their dimensions and weight.

Environmental conditions: operation from -20 to +55 °C, storage and transport from -40 to +70 °C, relative humidity up to 95% non-condensing.

Standards: safety EN 61010-1; electromagnetic compatibility EN 61326-1. Mains supply 90-264 V AC (50/60 Hz), 1500 VA. Specifications valid at +25 °C; subject to change without notice (manufacturer's datasheet, 2026-02-09 revision).



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