



Tap-Changer & Winding Analyzer TWA30D

- Three-phase On-Load Tap Changer dynamic resistance measurement – 30 A total current, 10 A per phase
- Total test current 10 mA – 30 A DC
- Winding Ohmmeter range 0,1 $\mu\Omega$ - 2 k Ω
- Extremely quick measurement, one cable setup
- Automatic discharge and demagnetization circuit
- Rapid automatic demagnetization
- Tap changer motor current recording
- Built-in tap changer control unit



Three-phase extra-high DC-current tap changer analyzer and six-winding resistance meter for power transformers

The Tap Changer Analyzer & Winding Ohmmeter TWA30D is designed for simultaneous three-phase tap changer analysis and six-winding resistance measurement of both the primary and the secondary transformer side. This is done on a transformer with only one single-cable setup, with test current up to 30A. Once all 6-8 bushings are connected and the transformer configuration selected, the instrument adjusts the test automatically. The TWA30D generates true DC ripple-free current. Both the injection of current and the discharge of energy from the magnetic circuit are automatically regulated.

Winding resistance of all six windings

The TWA30D injects current with a voltage as high as 60 V to all three phases simultaneously. This ensures that the magnetic core is saturated quickly and duration of test is as short as possible. The instrument enables testing of all transformer windings, both primary and secondary. There is enough memory within the TWA30D instrument to store 500 measurements. All measurements are time and date stamped.

The set is equipped with thermal and overcurrent protection. The TWA30D 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 proprietary hardware and software.

On Load Tap Changers – all three phases simultaneously

The TWA30D can be used to measure the winding resistance of individual taps of a power transformer without discharging between tests. All three phases are recorded simultaneously with currents of up to 10 A per phase.

The unit also checks whether the on-load tap changer (OLTC) switches without an interruption. The moment a tap position is changed from one tap to another, the device detects a sudden, very short drop of the current. A properly working tap changer differs from a malfunctioning one. This is obvious from an interruption during the change, by the magnitude of the current ripple and also by the transition time. Malfunctioning behavior of Tap Changer will result in much higher current ripple

value and by transition time that differs from a properly functioning Tap Changer. Incorrect “make before break” tap changer performance results in 100% ripple value, which is easy to observe.

Dynamic resistance graphs are recorded for all three phases simultaneously, so the synchronization is verified, and all three phase traces are plotted on the same graph. The tap changer motor current is recorded, and displayed on the graph, while the UP-DOWN operation is controlled from the instrument keypad.

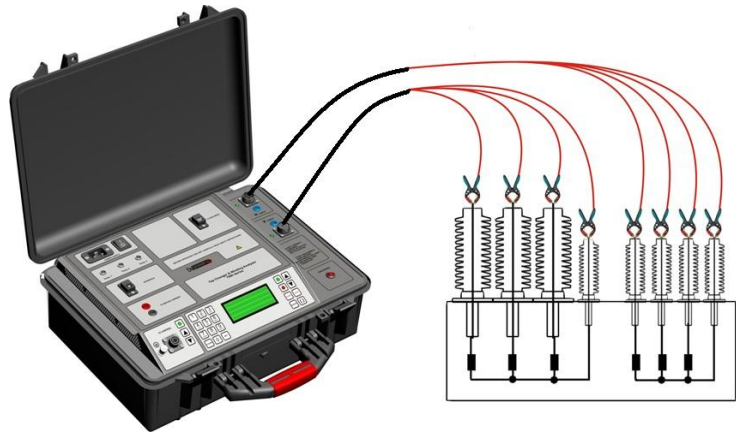
DV-Win software

The DV-Win software enables PC-controlled testing and obtaining results directly at the PC. The DV-Win software enables presenting of results in a standard report, arranged in an Excel spreadsheet, PDF, Word, or ASCII format. The software can control the TWA30D instrument, allowing a condition assessment of OLTC (tap changer) analyzing graphs which represent dynamic resistance during the tap change. The DV-Win measures and calculates OLTC transition time, ripple and resistance for each tap changing operation.

Connecting a Transformer to TWA30D

Using two sets of four-wire cables, all bushings of primary and secondary side are connected one time only. The connection is with two-contact clamps providing for the four-wire Kelvin test method.

Using the Tap Changer menu, the power transformer winding resistance of individual tap positions can be measured.



Also, you can check whether the on-load tap changer switches without an interruption and record a dynamic graph of this operation with overlaying motor current trace.

The TWA30D current output injects a controlled current into a power transformer. This current and voltage values are measured, and the winding resistance is calculated.

The figure above shows simultaneous testing of both windings (high side and low side) on a three-phase transformer. That way, the setup time is minimized and the test is performed very quickly. The speed is increased by saturating all three legs of the magnetic core at the same time, so the total test time is extremely short.

Accessories

Included:

DV-Win PC software
Mains power cable
Ground (PE) cable

Recommended:

Test cables 2 x 5 m with clamps
Extension cables 5 m
Cable bag
Current clamps 30/300A

Optional:

Test shunt 150 A / 150 mV
Test cables 2 x 10 m with clamps
Extension cables 10 m
Cable plastic case

Technical data

1 – Mains Power Supply

- Connection	according to IEC/EN60320-1; C320
- Voltage	90 V – 264 V AC, 50 / 60 Hz, single-phase
- Input power	1200 VA
- Fuse	12 A / 250 V, type F

2 – Output data

- Test current	10 mA DC – 30 A DC
- Measuring range / Resolution	
0,1 $\mu\Omega$ - 999,9 $\mu\Omega$	0,1 $\mu\Omega$
1,000 m Ω - 9,999 m Ω	1 $\mu\Omega$
10,00 m Ω - 99,99 m Ω	10 $\mu\Omega$
100,0 m Ω - 999,9 m Ω	0,1 m Ω
1,000 Ω - 99,99 Ω	10 m Ω
100,0 Ω - 999,9 Ω	0,1 Ω
1000 Ω - 2000 Ω	1 Ω
- Typical accuracy	\pm (0,1 % rdg + 0,1 % FS)

3 – Environmental conditions

- Operating temperature	-10 °C - +55 °C / 14 F - +131 F
- Storage and transportation	-25 °C - +70 °C / -13 F - +158 F
- Humidity	5 % - 95 % relative humidity, non condensing

4 – Dimensions and Weight

- Dimensions	410 mm x 180 mm x 320 mm 16,14 in x 7,08 in x 12,59 in (W x H x D) without handle
- Weight	12,8 kg / 28,3 lbs

5 – Warranty

three years

6 – Applicable Standards

- Installation/overvoltage:	category II
- Pollution:	degree 2
- Safety	LVD 2006/95/EC, (CE Conform) Standard EN 61010-1
- EMC	Directive 2004/108/EC (CE Conform) Standard EN 61326:2006

*All specifications herein are valid at ambient temperature of + 25 °C and standard accessories.

*Specifications are subject to change without notice.