


True 3-phase transformer turns ratio tester



3Phase

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The 3Phase is a true three-phase transformer turns-ratio tester designed to conform to the IEEE C57.12.90 measurement standard. The 3Phase generates and outputs a three-phase excitation test voltage to the three transformer primary windings. The induced three-phase secondary voltages are sensed, and the transformer turns-ratio is calculated. The 3Phase can measure turns-ratios from 0.8 to 15,000. The three-phase turnsratios, excitation current, and phase angle readings are displayed on the unit's LCD screen. Since a three-phase voltage is used to excite the transformer windings, the 3Phase can detect and measure turns-ratios of any transformer type, including phase-shifting transformers. The 3Phase can be used as a stand-alone unit or can be computer-controlled. It can be operated locally using its alpha-numeric keypad and rotary switch. Information is displayed on a back-lit LCD screen (64 x 128 dot graphic) that is viewable in both bright sunlight and low-light levels. Test reports can be printed in the field on the unit's built-in 4.5-inch wide thermal printer. The 3Phase can store up to 112 test records and 128 test plans in Flash EEPROM. Test records or test plans can be stored or transferred to and from a PC via the available interfaces (RS-232C port, USB port, USB Flash drive port).



Transformer Test Voltage

The 3Phase generates three-phase transformer test voltages from a single-phase AC or DC power source. Three test voltages (8 Vac, 40 Vac, 100 Vac) allow the 3Phase to test CT's and PT's, as well as power transformers.

Auto-Detect Transformer Configuration

The 3Phase can automatically detect 130 different transformer types defined by ANSI, CEI/IEC, and Australian standards, as well as phase-shifting transformers.

User Interface

The 3Phase features a back-lit LCD screen (64 x 128 dot graphic) that is viewable in both bright sunlight and low-light levels. The test results screen displays the transformer turns-ratio, excitation current, phase angle, and percentage error. The unit is controlled via a rugged, 16-key, membrane keypad and a digital rotary switch.

Transformer Test Plans

The 3Phase can store up to 128 transformer test plans in its Flash EEPROM. A test plan is comprised of the transformer nameplate voltages for each tap setting. The calculated turns-ratio based on the nameplate voltages is compared with the measured turns-ratio. By recalling a test plan, a transformer can be quickly tested and turns-ratio Pass/Fail reports can be reviewed. Test plans can be created with the included PC software and can be transferred to the 3Phase via the available interfaces (RS-232C port, USB port, USB Flash drive port).



Internal Test Record Storage

Up to 112 test records can be stored in the 3Phases's Flash EEPROM. Each test record may contain up to 33 turns-ratio, excitation current, phase angle, and nameplate voltage readings. Test records can be recalled locally or transferred to a PC via the available interfaces (RS-232C port, USB port, USB Flash drive port).

USB Flash Drive Interface

A built-in USB Flash drive interface provides a convenient method for transferring test plans and test records to or from a USB Flash drive. Up to 999 transformer test plans and test records can be stored on a USB Flash drive, and the supplied PC software can be used to view the test records. Test plans created on the PC can also be transferred to a Flash drive and then to the 3Phase's internal memory.



Computer Interface

The 3Phase can be computer-controlled via the RS-232C or USB port using the included PC Software (Transformer Turns-Ratio Analyzer application provided with each 3Phase). This Windows® XP/Vista-based software can be used to run a test and to store test results on a PC. Test results can also be exported to Microsoft® Excel.

Thermal Printer

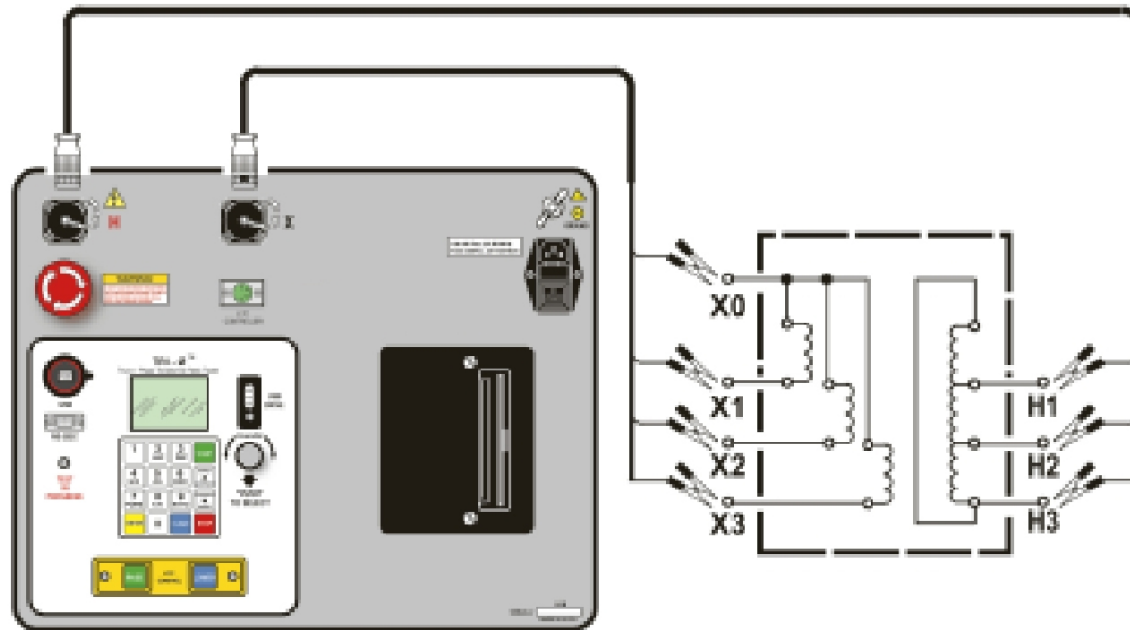
A built-in 4.5-inch wide thermal printer prints test results in a 14 point font for easy viewing. The printer and paper dispenser are mounted under the front panel for protection.

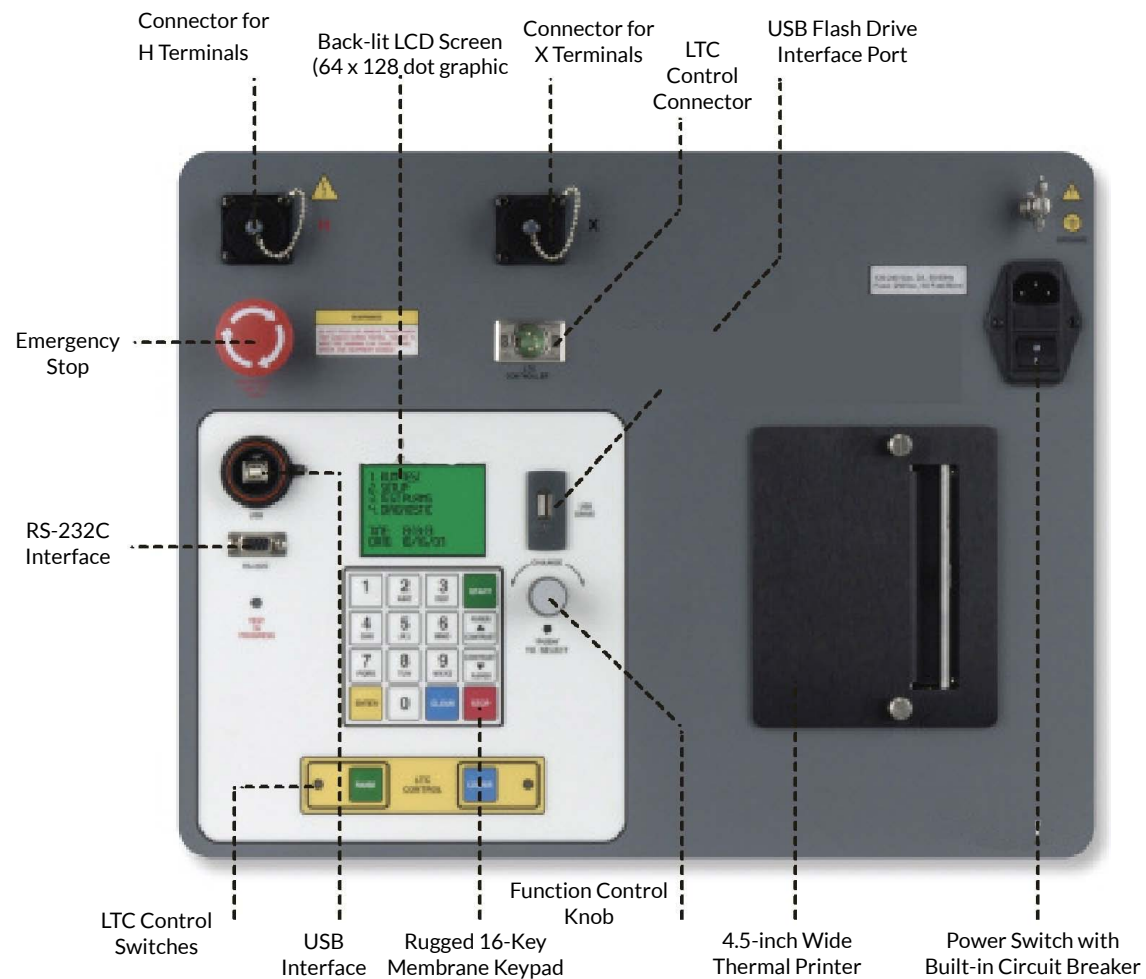
Transformer Load Tap Changer Control

Transformer tap positions can be changed remotely using the unit's built-in transformer load tap changer. This remote-controlled tap changer feature eliminates the need to manually change the transformer's step-up and step-down taps.

Input Power Sources

The 3Phase can be powered from a single-phase 100 – 240 Vac 50/60 Hz power source. A built-in safety ground detection circuit can detect and display any ground fault problems with the AC input source. Transformers Testing






SPECIFICTIONS

TYPE	True three-phase transformer turns-ratio tester
PHYSICAL SPECIFICATIONS	21"W x 9"H x 17"D (53 cm x 24 cm x 43 cm); Weight: 35 lbs (15.8 Kg)
INPUT POWER	3 amps, 100 – 240 Vac, 50/60 Hz
MEASUREMENT METHOD	ANSI/IEEE C57.12.90
URNS-RATIO MEASURING RANGE	0.8 – 15,000 (5-digit resolution)
URNS RATIO ACCURACY	0.8 – 999: ±0.1%, 1000 – 1599: ±0.2%, 1600 – 9999: ±1%, 10,000 – 15,000: 1.5% @ 8 Vac 0.8 – 999: ±0.1%, 1000 – 1599: ±0.2%, 1600 – 9999: ±1%, 10,000 – 15,000: 1.5% @ 40 Vac 0.8 – 999: ±0.1%, 1000 – 1599: ±0.2%, 1600 – 9999: ±1%, 10,000 – 15,000: 1.5% @ 100 Vac
TEST VOLTAGES	Three-phase, 8 Vac @ 1 Amp, 40 Vac @ 0.2 Amps, 100 Vac @ 0.1 Amp
EXCITATION CURRENT READING RANGE	0 – 2 Amperes; Accuracy: ±0.1 mA, ±2% of reading (±1 mA)
PHASE ANGLE MEASUREMENT	0 – 360 degrees; Accuracy: ± 0.2 degree (± 1 digit)
DISPLAY	Back-lit LCD screen (64 x 128 dot graphic display); Viewable in bright sunlight and low-light levels
PRINTER	Built-in 4.5-inch wide thermal printer
EXTERNAL DATA STORAGE	One USB Flash drive interface port; Up to 999 transformer test records can be stored on a USB Flash drive (not included)
COMPUTER INTERFACES	One RS-232C port, One USB port
PC SOFTWARE	Windows® XP/Vista-based Transformer Turns-Ratio Analyzer application is included with purchase price
INTERNAL TEST RECORD STORAGE	Stores up to 112 transformer test records. Each record holds the test record header and up to 33 readings
INTERNAL TEST PLAN STORAGE	Stores up to 128 transformer test plans. Test plans can be transferred to the unit from the PC via the RS-232C/USB port or via the USB Flash drive interface
LOAD TAP CHANGER CONTACT	240 Vac, 1 Amp
SAFETY	Designed to meet UL 61010A-1 and CAN/CSA C22.2 No. 1010.1-92 standards
ENVIRONMENT	Operating: -10° to 50° C (15°F to +122° F); Storage: -30° C to 70° C (-22°F to +158° F)
HUMIDITY	90% RH @ 40°C (104°F) non-condensing
ALTITUDE	2,000m (6,562 ft) to full safety specifications
CABLES	One 15-foot single-phase set, One 15-foot three-phase set, One 25- foot extension set, One ground cable, One USB cable, One RS-232C cable, power cord, cable bag
OPTIONS	Transportation case
WARRANTY	One year on parts and labor

Note: The above specifications are valid at nominal voltage and ambient temperature of +25°C (+77°F). Specifications are subject to change without notice.



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