TTR™20
Handheld TTR

- **Simple, one-button operation**
- **Lightweight, handheld**
- **Battery powered (AA or LR-6)**
- **Tests turns ratio, excitation current, and polarity**
- **Ability to record via optional printer**

DESCRIPTION

The Megger TTR20 is an automatic hand-held battery operated transformer turns ratio test set. It is used to measure the turns ratio, excitation current and polarity of windings in single- and three-phase distribution and power transformers (tested phase by phase), potential & current transformers, and tapped transformers.

The unique design of the TTR20 allows the user to operate the test set while holding it in one hand. It effectively eliminates the user from having to kneel or bend down to operate the instrument and speeds up testing time. Realizing the extreme environments in which the TTR20 must operate, special attention has been paid to making it extra rugged, with a high impact, shock resistant case, yet incredibly lightweight at a mere 870 g (1.9 lbs).

Its design makes this instrument well suited for use in a variety of harsh environments. The TTR20 is particularly suited for testing in substations, transformer-manufacturing environments, and meter shops. It features a high-contrast, backlit LCD screen which can be seen in bright or ambient light.

This unit measures a high turns ratio of 10,000:1 accurately with the lowest excitation voltage. It is designed for simple, one button operation with the measured results displayed directly on the easy to read LCD or printed to the optional printer. The TTR20 needs no additional software and comes ready to use complete out of the box.

APPLICATIONS

The proper operation of a transformer relies almost entirely on the electrical properties of its windings. To ensure continued proper operation, transformers are tested to verify that their electrical properties have not changed from design specifications. A TTR is an extremely useful instrument for testing transformer windings because it can help locate several types of problems within single- and three-phase transformers. This type of TTR is best suited for power transformers up to 1 MVA.

It it used to determine the no-load accuracy of CTs and PTs and also determine the need to further test faulty CTs and PTs. The TTR20 applies voltage to the high-voltage winding of a transformer and accurately measures the resulting voltage from the low voltage winding. The ratio of voltages is directly proportional to turns ratio. In addition, the unit measures excitation current and polarity.

Transformer Turns Ratio

A transformer turns ratio test set such as the TTR20 can directly measure the turns ratio of single-phase transformers as well as three-phase transformers. Deviations in these measurements will quickly indicate problems in transformer windings and in the magnetic core circuits. Transformer ratio can change due to several factors, including physical damage from faults, deteriorated insulation, contamination and shipping damage. If a transformer ratio deviates more than 0.5 percent from the rated nameplate ratio, it may have a fault, which reflects in inefficient or improper operation. To measure small ratio changes such as this, the accuracy of a Megger TTR20 is needed.

Transformer Polarity

Polarity of a distribution transformer becomes of interest in order to determine its proper connection within a power network. The Megger TTR20 will identify normal (in phase) and reverse polarity of the single-phase transformers.

FEATURES AND BENEFITS

- Fast, easy hand-held operation which allows testing in half the time of other units.
- Powered by six standard "AA" alkaline batteries; no charger needed. Provides up to 12 hours of field operation.
- Measures turns ratio range of 10,000:1, with a high accuracy (±0.2%, 0.8 to 4000) at a low excitation voltage.
- Records ratio and phase errors for bushing CTs to an accuracy of ±0.2% nameplate. This reduces the need for heavy test equipment and improves test time.
- Perfect for meter shops, the TTR20 can be used for inspection purposes to determine the no-load accuracy of most CTs and PTs. It also can be used to determine the need to test potentially faulty CTs and PTs.

SPECIFICATIONS

Type of Power
Six standard "AA" (IEC LR-6) alkaline batteries

Battery Life
Up to 12 hours of field operation

Excitation Voltage
8 V rms for testing distribution or power transformers and PTs; 0.5, 1.5, or 8 V ac rms for testing CTs

Test Frequency
55 Hz internally generated providing a universal 50/60 Hz test set

Excitation Current Range
0 to 100 mA, 4-digit resolution

Turns Ratio Range
0.8 to 10,000, 5 digit resolution

Transformer Polarity
Normal or reversed

Current (rms) Accuracy
±5% rdg ±0.5 mA

Turns Ratio Accuracy*
±0.20% (0.8 to 4,000)
±0.25% (4,001 to 10,000)
**For Excitation Current Values no greater than preset value.*

Display Full Graphics
LCD module, adjustable back-lighting, wide temperature range, 128 x 64 dots (21 characters by 8 lines)

Safety/EMC/Vibration
Meets the requirements of IEC-1010-1, CE and ASTM D999.75

Temperature Range
Operating: -20° C to 55° C (-5° F to 130° F)
Storage: -50° C to 60° C (-55° F to 140° F)

Relative Humidity
Operating: 0 to 90% noncondensing
Storage: 0 to 95% noncondensing

Protective Devices
High voltage side shorting relay, transient voltage suppressors and gas surge voltage protectors

Measuring Time
Less than 5 seconds

Measurement Method
ANSI/IEEE C57.12.90 and IEC 600076.1 (2000)

Dimensions
240 H x 115 W x 50 D mm (9.5 H x 4.5 W x 1.9 D in.)

Weight
Approximately 1.3 kg (2.8 lb), including leads

Item (Qty)	Cat. No.
Hand-held TTR20	TTR20
Included Accessories	
Combined test leads, "X/H" winding, 1.8 m (6 ft)	35938
Instruction manual	AVTMTTR20
Optional Accessories	
Combined test leads, "X/H" winding, 3.6 m (12 ft)	35942
Combined test leads, "X/H" winding, 6 m (20 ft)	36013
Combined test leads, "X/H" winding, 10 m (33 ft)	36042
Printer package including battery/line power serial thermal printer with paper, battery pack and charger, printer interface cable, 120V, 60Hz	35755-1
Semi-hard fabric transport case	35788

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ISO STATEMENT
Registered to ISO 9001:2000 Reg no. Q 09250
Registered to ISO 14001 Reg no. EMS 61597

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