

# TTR™25-1

## Handheld TTR



- **Simple, one-button operation**
- **Lightweight, handheld**
- **Battery powered (AA or LR-6)**
- **Tests turns ratio, excitation current, and polarity**
- **Rugged metal connectors on leads and unit**

### DESCRIPTION

The Megger TTR25-1 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 TTR25-1 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 TTR25-1 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 TTR25-1 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 20,000:1 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. The TTR25-1 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 is used to determine the no-load accuracy of CTs and PTs and also determine the need to further test faulty CTs and PTs. The TTR25-1 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 TTR25-1 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 TTR25-1 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 TTR25-1 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 20,000:1, with a high accuracy ( $\pm 0.2\%$ , 0.8 to 4000) at a low excitation voltage.
- Records ratio and phase errors for bushing CTs to an accuracy of  $\pm 0.2\%$  nameplate. This reduces the need for heavy test equipment and improves test time.
- Perfect for meter shops, the TTR25-1 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.
- User selectable languages: English, Spanish, German, French and Portuguese.
- Rugged metal connectors make the TTR25-1 durable even in the harshest conditions.

**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 20,000, 5 digit resolution

**Transformer Polarity**

Normal or reversed

**Current (rms) Accuracy**

5% rdg  $\pm 0.5$  mA

**Turns Ratio Accuracy\***

0.20% (0.8 to 4,000)  
0.25% (4,001 to 10,000)  
0.30% (10,001 to 20,000)

\*For Excitation Current Values no greater than preset value.



Leads shown with rugged metal connectors for durability

**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-61010, 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

**ORDERING INFORMATION**

Item (Qty)	Cat. No.
Hand-held TTR25-1	TTR25-1
<b>Included Accessories</b>	
Combined test leads, “X/H” winding, 1.8 m (6 ft)	2007-713-6
Instruction manual	AVTMTTR25-1
Electronic documents	AVTDTTR25-1
<b>Optional Accessories</b>	
Combined test leads, “X/H” winding, 3.6 m (12 ft)	2007-713-12
Combined test leads, “X/H” winding, 6 m (20 ft)	2007-713-20
Combined test leads, “X/H” winding, 10 m (33 ft)	2007-713-33
TRS1D calibration standard	TRS1D
Cable bag - backpack	1012-180
Quick-guide overlay in Spanish, French, German and Portuguese	35945

NOTE: For legacy product TTR25 (plastic connector):

Combined test leads, “X/H” winding, 2m (6 ft)	35938
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

**SALES OFFICE**

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