

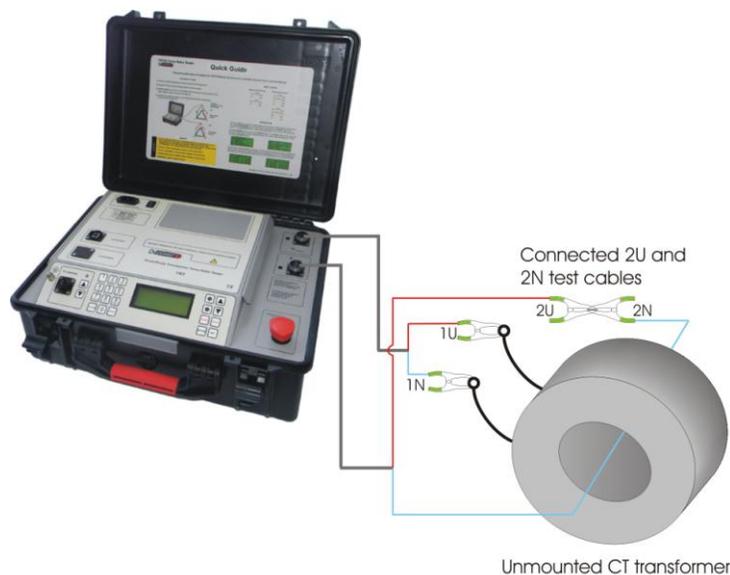
- Application Note -

Current Transformer Verification

Current Transformers (CT) are specially constructed transformers – they are instrument transformers with only one, or occasionally two primary turns. This means that the Turns ratio is very large, and the largest numbers of turns are on the “X” (secondary) side of the current transformer. The special construction of a CT requires various accuracy tests using current source, and this is not possible using our TRT instruments. The only tests that can be performed using TRT63 (TRT33) instrument are “Verification” of the CT turns ratio and of the CT polarity.

The TRT instrument applies test voltage to the side of a transformer with higher number of turns, and measures induced voltage on the side with the lower number. In this way, it calculates the turns ratio. In a case of CT, instrument applies test voltage (from 1 V to 80/100 V AC) from the “H” terminal, and the “H” test cables should be connected to the SECONDARY of a CT (the winding with higher number of turns – that may sometimes be marked as “x”).

The voltage measurement is performed through the “X” test cables and the X instrument terminal. For that reason, when verifying Current Transformers connect the “X” test cables to the PRIMARY of a CT. If there are no primary terminals as shown on the figure below, slide the “X” cable through the CT core and short them. Select the CT menu on the instrument panel. Select **1 V** or **10 V (8 V)** test voltage to allow maximum power output from the TRT33. Run the test. The “X” test cables must always be at a lower voltage than the “H” test cables, or an “Error” will be displayed by the instrument.



In certain cases where the impedance (inductance) of the CT is very low, and the power required is higher than the power available from the TRT33, a result indicating an “Excitation current too high” will be displayed. In that case try a test selecting a lower test voltage.

Tapped Secondary CT

Current transformers with multiple secondary taps, or several secondary windings are tested similar to a single secondary tap. After each specific ratio is tested, the H1 (or H0) test cable can be moved to the following position (next pair of secondary terminals), and the next CT’s tap turns ratio can be verified.

Checking polarity of a CT

Polarity of a CT can be checked using TRT devices. From the measured phase angle, we can see the polarity of a CT. If the phase angle is close to 0 degrees, polarity is correct. If the phase angle is close to 180 degrees, then the polarity is not correct.