

505

UTEC Transformer Analyzer

Overview



The MODEL 505 Transformer Analyzer is designed for testing CTs and PTs without interruption of the customer's service. This instrument measures CT admittance, CT ratio, CT primary-to-secondary phase angle and the voltage, current and phase angle of the service. With the 'Burden CT/PT Option', it determines the CT secondary burden capability, the regulation of the PT and its secondary burden capability and provides for CT core demagnetization.

The CT Admittance Test feature provides the capability of testing a CT with or without secondary current flow. It displays the admittance value of the CT loop which can be recorded and used as a reference value on future tests. Shorted turns, circuit shunts, minor deterioration in CT performance, defective watt-hour meter current coils, defective test switches, and high resistance connections are easily detected from the admittance value.

The CT Ratio Test feature provides for measuring the CT ratio as an 'Actual' ratio or a 'Best Fit' ratio. If the CT/PT Burden option is installed, ratios can be measured with and without burden applied. In addition, the phase angle between the primary and secondary is measured.

CT or PT Burden Tests can be performed using two methods. The first method allows the user to add an individual burden to the secondary. The second method allows the user to add a complete sequence of burdens to the secondary. The on-board microcontroller automatically applies the burden for 1 second to prevent resistive element burnout. The display provides for the recall of test values for each burden applied. The Before Burden, and After Burden currents are displayed together with the Percent (%) of change between Before and After Burden readings.

The measurement technique of the 505 eliminates the uncertainty of burden testing in services where continuous current changes are present. It reduces the interpretative requirements of the user since the reduction of CT secondary loop current due to the addition of the selected burden is displayed as a % of the original current. This new measurement method can respond to CT secondary loop currents as low as 0.2 amperes. When performing PT burden testing, both of the test methods can be performed with and without the meter voltage coil attached to the PT secondary.

A CT Demagnetization, or demag, can be done easily if the CT has at least 2.5 amperes in the secondary loop. A quick demag test on a CT that is saturated can save time and money by preventing the unnecessary change out of a good CT. This function applies a series of resistances in a smooth fashion from 0.1 ohm to 8 ohms and back down to 0.1 ohm again to the CT secondary loop. This over burden applied should drive the CT over the knee of the Bh curve (saturating the CT) and demagnetize the core.

Data collected during the test may be saved. Test records can be stored and downloaded to software provided for viewing and exporting the saved test results. Saved data may also be recalled for viewing from the 505.

The Model 505 Transformer Analyzer is the ultimate answer to in service CT and PT Testing!

Additional details provided on the back page of this bulletin.

Test CT Secondary Loop Integrity with or without secondary current

Tests CT's Admittance and Burden capability

Determines CT Ratio and Phase Angle

Demagnetizes CT cores

Tests PT's Secondary Burden capability

Test performed without interruption of service to customer

Operates with up to 20 amps of secondary current

Measures Voltage, Current and Phase Angle of service.

4 Line X 40 Character backlit display

Stores CT test results

Can upload Results to Computer for Data Analysis

Operates from 80-530 VAC or from internal battery pack

Built-in battery charger

Find Lost Revenue With or Without Current Flow

Technical Specifications

Input Power

Service Voltage: 10 – 530 VAC (600 VAC max.)
- OR -
Internal Battery Pack: Rechargeable (from service voltage or wall) Ni-Cad battery pack. Auto power off when unit is idle.

Measurement Inputs

Service Voltage: 10 – 530 VAC (600 VAC max.)
Primary CT Current: 10 – 3000 Amperes, 50 or 60 Hz (using probes; see below)
Secondary CT Current: 0.1 – 20 AAC, 50 or 60 Hz (25 AAC max.)
CT Primary Probe
Input Voltage: 3 VAC max.
CT Primary
Probe Scales: 1 mV/A, 2 mV/A, 5 mV/A, 10 mV/A, 100 mV/A and 1000 mV/A.

Measurement Resolution

Display: 4 line, 40 Character Backlit LCD
Voltage: $\pm 0.1V$
Primary CT Current: $\pm 0.1A$
Secondary CT Current: $\pm 0.01A$
Admittance: $\pm 0.01mS$
Phase Angle: $0 - 360^\circ, \pm 0.1^\circ$
Actual Ratio: 999.99:5, ± 0.01
Best Fit Ratio: 999.99:5, ± 1

Measurement Accuracy

Voltage: $\pm 1.0\%$ F.S.
Current: $\pm 1.0\%$ F.S.
Phase Angle: $\pm 1.0^\circ$

CT Admittance Testing

Test Frequency: 1575Hz
Measurement Ranges: 0-1mS; 1-10mS; and 10-125mS (Auto ranging)
Insertion Burden: 0.14 Ohms
Measurement Accuracy: $\pm 5\%$ F.S.

Note: The presence or absence of AC current in the CT primary is unlikely to affect the admittance readings by more than $\pm 1.5\%$ of F.S. value.

CT & PT Burden Testing

CT Burden Values: 0.1, 0.2, 0.5, 1.0, 2.0, 4.0 and 8.0 Ohms
PT Burden Values: 25, 50, 75, 100, 125, 150 and 175 VA
PT Secondary Voltage: 10 - 135 VAC (140 VAC max.)
Measurement Accuracy with Burden Added: $\pm 2\%$ F.S.
Resistive Element Tolerance: $\pm 5\%$
Insertion Burden: ± 0.04 Ohms

CT Demagnetization

Demag Burden: 8 Ohms max.

Memory

Flash Type - New Firmware can be installed without unit return

Temperature

Operating $0^\circ C$ to $+50^\circ C$, Storage $-20^\circ C$ to $+70^\circ C$.

Humidity

10 to 95% non-condensing @ $35^\circ C$

Case

Black ABS case with carry handle. Polycarbonate overlaid control panel.

Size

Approximately 10.00" (25.4 cm) L X 7.50" (19 cm) W x 8.50" (21.6 cm) H

Weight

Approximately 16 lbs. (7.3 Kg) with CT/PT Burden Option
Approximately 13 lbs. (5.9 Kg) without CT/PT Burden Option

Warranty

Two year limited warranty, excluding battery pack. Extended Warranty available.

Accessories

505-02 CT Test Leads

7½ foot lead terminated with Superior test switch safety probe. Weight 1 Lb. (.45 Kg)

505-03 CT Test Leads

7½ foot lead terminated with Westinghouse test switch safety probe. Weight 1 Lb. (.45 Kg)

Model 3000 Rope CT

Lightweight with a measurement range of 5 to 3000A rated at 1000 V max. Measurement accuracy is 1% of reading. Available in 24" (8" Dia), 36"(11" Dia), and 48" (15" Dia) lengths.

MR521 Current Probe

CT Clamp-on current probe. 1-150 / 1500 ampere range - 600 Volt. Maximum cable diameter, 1 each 1.18" or 2 each 0.98" (2 X 500MCM). Accuracy $\pm 2\%$ reading $\pm 1A$ from 1A to 100A at 60 Hz. $\pm 3\%$ reading $\pm 1A$ from 100 to 700A at 60 Hz. Working voltage 600 maximum. Dimensions 2.60 X 7.68 X 1.34". Weight 13 oz. (380g). Requires two 1.5V "AAA" batteries (supplied). Battery life 260 hours typical.

LW2000-15 AC Current Probe

Fiber optic coupled CT current probe for primary measurements. 0-2000 ampere range. Maximum cable diameter 1.8" Accuracy $\pm 1.5\%$ reading at 60 Hz. Working voltage 169kV maximum. Universal chuck adapter for hotstick mounting. Weight 13 Lbs. (5.9 Kg). Requires two 9V batteries (supplied). Battery life 8 hours of continuous operation, automatic power off.

LW2000-16 AC Current Probe

Fiber optic coupled CT current probe for primary measurements. 0-2000 ampere range. Maximum cable diameter 3.8" Accuracy $\pm 1.5\%$ reading at 60 Hz. Working voltage 169kV maximum. Universal chuck adapter for hotstick mounting. Weight 13 Lbs. (5.9 Kg). Requires two 9V batteries (supplied). Battery life 8 hours of continuous operation, automatic power off.