ETP-3

Winding resistance measurement unit

SMC EURO

ETP-3

MAIN FEATURES

- Performs the measurement of each phase, sequentially, without any change in the connection to the transformer, for each tap changer position.
- Uses a four wire measuring method to avoid any error from the connection cables.
- Automatic magnetization and de-magnetization of the iron core. This assures the accuracy and the repeatability of the resistance measurements and also the safety of the operator and the measuring unit in case of a sudden disconnection of the test leads.
- Auto range from 1 mΩ to 1 KΩ. The test current range from 5 mA to 20 A is automatically selected.
- Automatic calculus of the resistance per phase.
- The measured value is not affected by temperature variation or/and changes in the test current.
- High immunity to external perturbations
- Extremely fast measurement cycle.
- The connection to the transformer is guided from the computer to avoid connection errors.
- All the measurement process is automatic, and the results do not depend of the user personal criteria.
- All the result values are automatically corrected to a reference temperature value, to allow standard results along time.

DESCRIPTION

The measurement equipment ETP-3 is a unit that automatically performs the following measurements in all type of power, distribution, or instrument transformers:

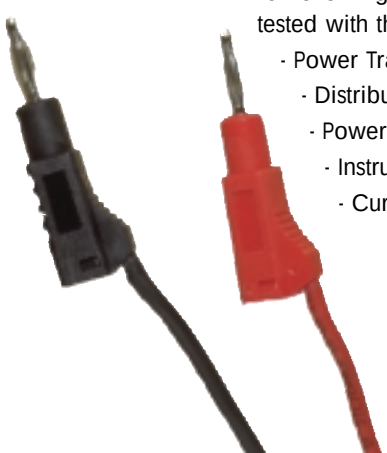
- Winding resistance value in single or three phases.
- Automatic correction of the resistance per phase to a predetermined reference temperature.
- Automatic calculus of the compound winding resistance, for different configurations Delta, Star, etc,

APLICATION

The user-friendly software, quick measuring speeds, and the ability to get instantaneous organized results (on the screen, recorded or printed), the ETP-3 has great advantages when performing the following tasks:

- Quality Control after the manufacturing process
- Reception of new or repaired transformers
- Detection of possible problems during the maintenance task itself
- Integrates the data inside a predictive maintenance program

The unit performs automatically, with a single connection, three phase measurements on each tap changer position previously selected. The unit measures the winding resistance per phase for each tap changer position and resistance values are automatically corrected for a previously selected reference temperature.



The software controls, accordingly with the type and group of connection that the transformer under test has, and delivers the connection instructions to the operator through a color code avoiding connection errors.

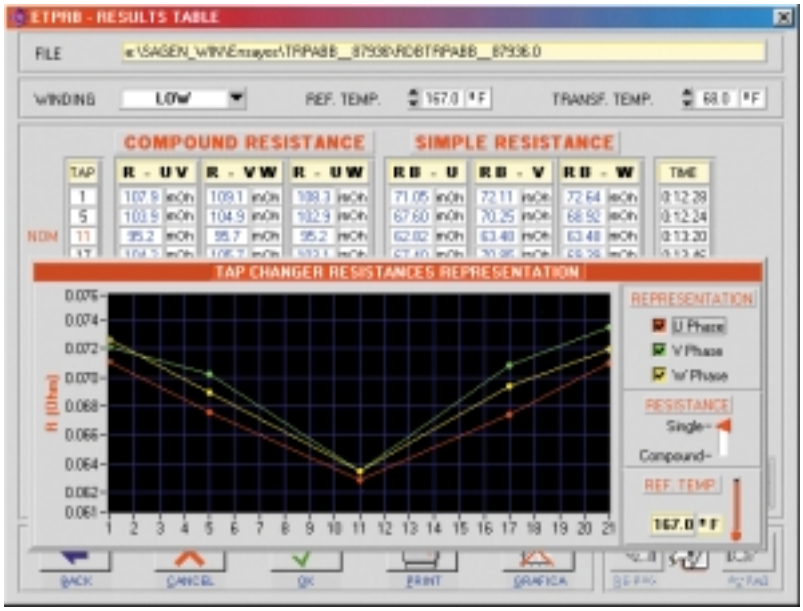
The software also allows selecting the type of tap changer, number of positions, and the number of taps to be tested. This selection configures a table filled with all the results per position. Also, automatically presents a comparative graphic between the theoretical and actual measured values for each tap changer position.

The proper magnetization of the iron core is the most critical factor in DC winding resistance measurement. In fact the reading needs to be stabilized to allow the accuracy desired. Not only this but the iron core needs to be demagnetized, to avoid personal or equipment damages, once the measuring is finished. The ETP-3 software selects the most suitable magnetization current range available and assures that the reading of the resistance value is always made with the same magnetization condition. This assures the validity of these measured values. Once the measurement is finished, the software does not allow to end the test until the iron core is completely demagnetized.

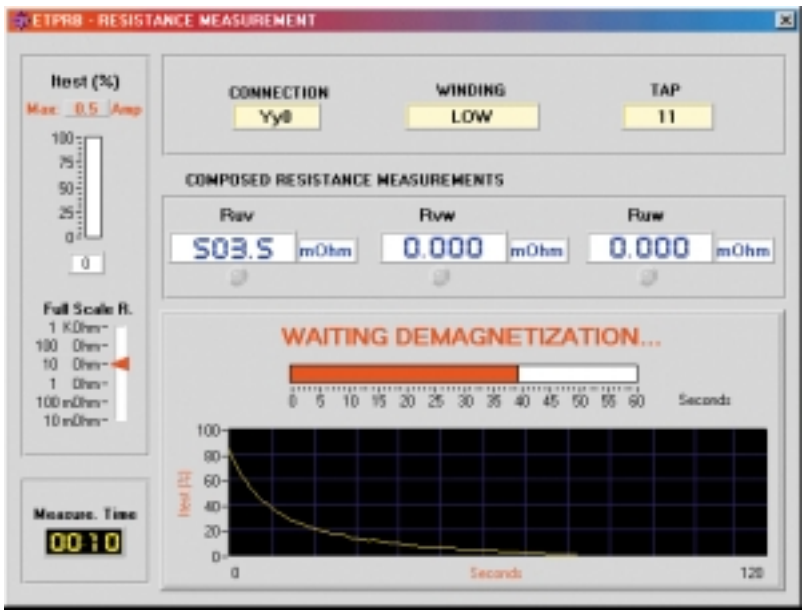
The following types of power transformers can be tested with the ETP-3, despite the size and power:

- Power Transformers (single or three phase)
- Distribution Transformers (single or three phase)
- Power Autotranformers (single or three phase)
- Instrument Voltage Transformers.
- Current Transformers

TEST RESULTS SCREENS OF THE ETP-3 UNIT



Phase per phase resistance for each Tap Changer Position



Demagnetization curve

Magnetization curve

TECHNICAL SPECIFICATION

The ETP-3 is a fully computer controlled unit and is supplied with its associated software. The software can be installed in any PC with an RS-232 serial com port, as are all the units which are composed in the ETP System.

TEST CURRENT SIGNAL

TEST CURRENT:	5mA to 20 A in 5 auto-selected ranges.
STABILITY:	Better than ±1% of the selected current

RESISTANCE MEASUREMENT

RANGES:	10μΩ, 100μΩ, 1Ω, 10Ω, 100Ω y 1000Ω. Autorange.
MINIMUM RESOLUTION:	1μΩ
ACCURACY:	±0,25% of the reading ±3 digits

MEASURING MODE

Four wires, three phase, including the magnetization and demagnetization cycles.
Winding Selection: HV, LV and Tertiary.

OTHER SPECIFICATIONS

- The ETP-3 is supplied with the necessary three phase test cables, for the primary and secondary connection. These are 8-meter lengths with an optional 12-meter extension lead, enabling to reach all transformer sizes.

DIMENSIONS. Rack 19" x 3U and 10,5 Kg

OTHER ASSOCIATED PRODUCTS

ETP-1	Transformer Turn Ratio Measurement Unit
ETP-2	Recovery Voltage and Insulation Measuring Unit
ETP-4	Short Circuit Impedance Measurement Unit
ETP SYSTEM	The total package of all 4 ETP Units.

DISTRIBUTED BY:

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