

# M4110



## THE M4110 LEAKAGE REACTANCE MODULE

The M4110 Leakage Reactance Module enables the M4100 Automatic Insulation Analyzer to measure the short circuit impedance of transformers, a vital tool for diagnosing winding deformation.

### A Reliable Indicator

Mechanical forces resulting from system condition such as over current or transportation can cause displacement of the transformer winding. Once a winding becomes distorted, its ability to withstand stress is severely limited and transformer failure is inevitable.

The M4110 Leakage Reactance test, also referred to as the short-circuit impedance test, is a reliable indicator of transformer winding deformation.

The leakage reactance within a transformer is sensitive to the geometrical changes in the leakage flux path. The leakage flux path is predominantly made up of space between the winding, space within the winding, and space between the winding and the tank wall.

The short-circuit impedance of a transformer is calculated by measuring the corresponding current of a voltage applied to the primary winding with the secondary winding short-circuited. With the secondary shorted, the current drawn by the primary is essentially due to the leakage flux.

### M4110 Features:

- **Assess Winding Deformation:** Verifies the geometric integrity of the winding by comparing test results to nameplate providing a quantitative evaluation of the winding deformation.
- **Repeatability:** All test results are independent of the transformer's temperature, deterioration or contamination levels.

- **Simple to use:** Simply enter the nameplate information and the M4100 will recommend a test potential and perform all of the necessary calculations
- **Automated Data Analysis:** The application automatically calculates any changes in impedance and reactance, based on the benchmark/nameplate values

### M4110 Technical Specifications

<b>Impedance Measurements:</b>	0.1 to 700 ohms
<b>Inductance:</b>	250 uH to 1.8 H(50/60 Hz at less than 10% Power Factor)
<b>Accuracy:</b>	1% of reading or +/- 10 uH
<b>Resistance:</b>	0.1 to 700 ohms (greater than 90% Power Factor)
<b>Accuracy:</b>	1% of reading or +/- 10 milliohms
<b>AC Input:</b>	120 or 240 V at 10 A(50/60 Hz)
<b>120 Input:</b>	0-280 Output Voltage 1.2 kVA Output VA Continuous
<b>Short time overload current:</b>	25 A rms 4-8 minutes
<b>Physical Dimensions:</b>	12 in. H x 10 in. D x 13.5 in. W (31 cm H x 25 cm D x 34 cm W)
<b>Weight:</b>	35 lbs. 15.9 kg

*Specifications are subject to change without notice.*

For more information, contact  
M4000@doble.com

**Doble is certified ISO 9001:2000**

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**Doble Engineering Company**  
85 Walnut Street  
Watertown, MA 02472 USA  
tel +1 617 926 4900  
fax +1 617 926 0528