Transformer loss measuring system type 7000 series

Transformer measuring devices

transformer loss measuring bridge

The MLS 7100 transformer loss measuring bridge was especially designed to greatly simplify the determination of transformer core and copper losses – an ideal choice when working on site. The measuring bridge features open circuit as well as short circuit measuring. Many transformers can be directly connected to the MLS 7100 without needing further transducers.

Core losses are an important transformer quantity when talking about electrical efficiency, operating expenses and the overall transformer value. Core losses mainly emerge from steel losses (eddy currents and hysteresis losses) and also from the core losses.

Steel losses are typically determined using open circuit measurement, as a relatively small magnetizing current is flowing. Using this technique, the copper losses are minimized due to the square correlation of power and current.

Copper losses are determined using short circuit measurement, as the magnetizing modulation of the steel core should be minimized. In addition the short circuit voltage is determined this way, which is also an important quantity. In practice, the test voltage is inputted at the h.v. side (l. v. side shortened), as at least many mid power transformers reach their nominal current in between the voltages that are easily available in industrial power networks (e. g. 3 x 400 V → 4 % of 10 kV).

During open circuit measurements, the steel core has to be fully modulated to reach the nominal transformer voltage. Using the h. v. side, the voltage would be quite too high, so the test voltage is typically inputted at the l. v. side (e. g. 3 x 400 V) and the results are recalculated accordingly.

Features

- **Open circuit measurements**
- **Short circuit measurements**
- **free selectable voltage and current dividers**
- **max. 1000 kV** with transducer
- **max. 1000 kA** with transducer
- **550 V (chained) 6 A directly connectable**
- **Measures and displays:**
  - **voltages**
  - **currents**
  - **power**
  - **short circuit values**
  - **frequency**
- **Centronics printer port**
- **RS232C port for external control**

For more information contact:
mti@multitekintl.com

MLS 7100

Technical Data

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Available accessories

- **Cable** various length, with Kelvin lugs or Kelvin clamps
- **Certificate**

Transformer loss measuring

Transformer loses	100 - 2500 VA
Frequency	40 - 70 Hz
Test voltages	1000 kV AC max. with transducer
	100 - 500 V AC directly connectable
Open circuit current	1000 kA max. with transducer
	1 - 5 A directly connectable

Short circuit measuring

Short circuit losses	100 - 2500 VA
Frequency	40 - 70 Hz
Short circuit voltage	1000 kV AC max. with transducer
	100 - 500 V AC directly connectable
Measuring current	1000 kA max. with transducer
	1 - 5 A directly connectable

Display of Results Version 2.0

Star Connection Chained or unchained with connected Neutral

Delta Connection Chained or unchained with virtual Neutral

Measuring inputs

Secondary transducer current	5 A
Secondary transducer voltage	500 V (chained)

Measuring errors NV / MV = Nominal / Measuring Value

Current	+/-(0.25 % of NV + 1 Digit)
	For MV > 5 % of NV
Voltage	+/-(0.25 % of NV + 1 Digit)
Power	+/-(0.5 % of NV + 1 Digit)
Powerfactor	+/- 0.02 with Current / Voltage > 15 % of NV
Frequency	0.02 Hz

Display LC-Display 110 x 60 mm with backlight

Character height	3 mm and 6 mm
LC contrast:	selectable by keys

Transducer options

Primary transducer current	5 - 1.000.000 A (default: 5 A)
Primary transducer voltage	500 - 1.000.000 V (default: 500 V)

Transformer preferences

Vectorgroup	Y / D / N y / d / z / n 0 - 11
Nominal transformer power	1 - 1000 MVA
Nominal transf. voltage (hv, lv)	500 - 1.000.000 V
Nominal transformer current	1 - 1.000.000 A
Short circuit voltage:	1 - 30 % of nominal voltage
Frequency:	40 - 70 Hz

Connectors

Ports:	RS232C, Centronics printer port
Warning light:	shows device activity
Limit lamp:	shows set point voltage status

Dimensions 19“ rack, 4 HE

Weight approx. 9 kg