

# TOR-80 & TOR-100

Testing Device for Transformer Oil



The TOR-80 and TOR-100 are automatic portable unit designed for the breakdown voltage testing of transformer oil and other liquid dielectrics according to IEC 60156, VDE 0370, ASTM D877, ASTM D1816, IRAM 2341 as well as according to user procedures defined in the corresponding section of the unit menu. The standards list can be supplemented and modified according to customer requests as well as new versions of the standards become available.

## FEATURES

- » Automated and accurate measurement of breakdown voltage up to 80 kV and 100 kV.
- » Instantaneous (4  $\mu$ s) disconnection of the test voltage upon breakdown;
- » Can work autonomously or in a network with transferring results to a PC, creating a local database, generating reports, plotting graphs and printing results;
- » There is software for the implementation of standard and custom measurement procedures – the device can be used for research purposes;
- » Simple and easy to operate and maintain.

## OPERATING PRINCIPLE

The core of the unit is the high voltage transformer and electronic modules. The unit operates by gradually increasing the voltage on the secondary winding of the high voltage transformer from zero to the maximum voltage, or to the voltage at which an electric breakthrough occurs in the dielectric fluid in the measuring cell installed on the high voltage contacts of the transformer.

The voltage in the secondary winding of the transformer occurs due to gradual increase of voltage in the primary winding supplied with sinusoidal voltage from the control inverter, one of the electronic modules. Voltage increase is managed by a microcontroller through the control inverter. The control inverter is commanded by the unit control module.

During operation, AC (50-60Hz) voltage is supplied from the secondary winding terminals through the cell electrodes into the dielectric fluid in the measuring cell. The breakthrough occurs between the electrodes in the space filled with the dielectric fluid.



## TECHNICAL SPECIFICATIONS

	TOR-80	TOR-100
Max voltage output	80 kVrms (sinusoidal)	100 kVrms (sinusoidal)
Resolution of output voltage indication	0.1 $\mu$ V	0.1 $\mu$ V
Output voltage measurement accuracy	$\pm 1 \%$	$\pm 1 \%$
Voltage increase rate	0.1...5 kV/s	0.1...5 kV/s
High voltage timeout after breakthrough	10 $\mu$ s (max.), 4 $\mu$ s (typical)	10 $\mu$ s (max.), 4 $\mu$ s (typical)
Temperature measurement range	0...100 °C	0...100 °C
Temperature measurement resolution	1 °C	1 °C
Measuring cell volume	500 cm <sup>3</sup>	500 cm <sup>3</sup>
Test standards supported	IEC 60156, ASTM D877, ASTM D1816, ГОСТ 6581	IEC 60156, ASTM D877, ASTM D1816, ГОСТ 6581
Connection interface	USB	USB
Inbuilt printer	yes	yes
<b>General data</b>		
Operating AC voltage	85...264 V	85...264 V
Power frequency	48...63 Hz	48...63 Hz
Power requirement	250 VA	250 VA
Dimensions	490×320×300 mm	510×350×300 mm
Weight	25 kg	29.6 kg
<b>Operating conditions</b>		
Operating temperature	from 0 to 50 °C	from 0 to 50 °C
Storage temperature	from -20 to +60 °C	from -20 to +60 °C
Relative humidity	up to 90% (non-condensing)	up to 90% (non-condensing)