



*GlobeCore*

CATALOG

TRANSFORMER OIL  
TESTERS AND ANALYZERS



# INTRODUCTION

Monitoring transformer oil quality plays a vital role in overall evaluation of transformer condition. In addition to its role as insulation and cooling fluid, oil also serves as an information carrier. This information may be related to the condition of another critical component: cellulose, which is essential to transformer operation and long service life.

GlobeCore testing and analysis equipment provides important and timely information needed to maintain reliable and safe operation of the entire transformer fleet.

## MAIN ADVANTAGES OF EQUIPMENT



low power consumption



automatic and semi-automatic



fast and accurate testing and analysis



exclusiveness



continuous monitoring



transformer care



competitive price



reliability



ease of operation

# TOR-1

TOR-1 is an express tester designed to determine the moisture content and the temperature of transformer oil. Even under the most favorable conditions, standard laboratory tests take at least one day, require high labor and financial resources, take too long and can be expensive.

TOR-1 allows testing and analyzing transformer oil within the shortest possible time, and provides the capability to make quick and relevant decisions in the field.



# TOR-1

Item	Value
Operating range, aw (active water (aw))	0..1
Operating range of dissolved water content measurement, ppm	0...500
Precision at 20 °C	±0.02 aw (0..0.9 aw) ±0.03 aw (0.9..1 aw)
Temperature measurement	Yes
Operating medium temperature, °C	0..55
Required power, W	10
Single phase 50Hz AC power supply voltage, V	220
Dimensions, mm, not more than	
- length	180
- width	180
- height	380
Weight, kg, not more than	6

# TOR-2

TOR-2 transformer oil express tester is designed to determine the moisture content, the temperature, and the hydrogen content in insulating oils. TOR is an express tester. Even under the most favorable conditions, standard laboratory test take at least one day, require high labor and financial resources, take too long and can be expensive.

TOR-2 allows testing and analyzing transformer oil within the shortest possible time, and provides the capability to make quick and relevant decisions in the field.



# T O R - 2

Item	Value
<b>Moisture Measurement Data</b>	
Operating range, aw (active water (aw))	0..1
Precision at 20 °C	±0.02 aw (0..0.9 aw) ±0.03 aw (0.9..1 aw)
Temperature measurement	Yes
Operating medium temperature, °C	0..55
<b>Hydrogen Measurement Data</b>	
Measurement range, ppm	25-5000
Precision	20% of indication, or 25 ppm
Repeatability	10% of indication, or 15 ppm
Response time	<60 minutes (90% of step change)
Cross-sensitivity	Less than 2% cross-sensitivity to other gases (CO, CO <sub>2</sub> , hydrocarbons)
Operating medium temperature, °C	0..55
Required power, W	60
Single phase 50Hz AC power supply voltage, V	220
Dimensions, mm, not more than	235
- length	
- width	265
- height	350
Weight, kg, not more than	10

# TOR-3

TOR-3 is designed to determine the dielectric loss tangent and the dielectric permittivity of transformer oils and other liquid dielectrics in accordance with IEC 60247 and equivalent national standards.

It is a fully automated device, which performs the test according to the specifications of these standards. It is also possible to select user-specified test parameters through the control menus.



# TOR-3

Item	Value
Operating AC voltage, V	85 - 264
Power frequency, Hz	48 – 63
Power requirement, VA	Not more than 250
Applied measuring voltage AC, kV	Sinusoidal, 500 – 2,000 V actual
Measurement range, Tan $\delta$	0,00001 – 1
Measurement resolution, Tan $\delta$	1x10 <sup>-5</sup>
Measurement accuracy, Tan $\delta$	+/- 1% of measurement + 0,00008
Measurement range of dielectric constant, $\epsilon$	1,0 – 15,0
Measurement accuracy, $\epsilon$	+/- 2%
Measurement range of electrical capacitance, C	20 – 1000 pF
Measurement accuracy, C	+/- 1% + 1 pF
Oil temperature measurement range, °C	20 – 110
Measuring cell volume, cm <sup>3</sup>	42
Electrical capacitance of empty cell	65 – 85 pF
One measurement duration, min, not more than	5
AC frequency setting range, Hz	45 – 65
Temperature measurement resolution, °C	0,5
Inbuilt printer	No
Operating temperature, °C	0 - 50
Storage temperature, °C	From – 20 to + 60
Relative humidity, %	Up to 90 without condensation
Dimensions, mm	40x45x30*
Weight, g, not more than	5300**

\*With installed and connected cell

\*\*With installed and connected cell



# TOR-80

TOR-80 measures the breakdown voltage of transformer oils and other liquid dielectrics in accordance with IEC 60165, ASTM D877, ASTM D1816.

It is a fully automated device, which performs the test according to the specifications of these standards. It is also possible to select user-specified test parameters through the control menus.



# TOR-80

Item	Value
Operating AC voltage, V	85 - 264
Power frequency, Hz	48 – 63
Power requirement, VA	Not more than 250
Max output voltage, kV	Sinusoidal, Up to 80 kV actual
Output voltage measurement tolerance, %	±2
Voltage increase rate, kV/sec	From 0.1 to 5*
Resolution of output voltage indication, V	100
High voltage shutoff time after breakdown, ms	10 max, 4 typical
Measuring cell volume, cm <sup>3</sup>	500
Oil sample temperature range, °C	0 – 100
Temperature measurement resolution, °C	1
Integrated printer	Yes
Operating temperature, °C	0 – 50
Storage temperature, °C	From – 20 to + 60
Relative humidity, %	Up to 90 without condensation
Dimensions, mm	490X320X300
Weight, kg, not more than	25

\*Adjustable

# TOR-4



This is a comprehensive system for continuous monitoring and treatment of transformer oil in energized transformers.

The unit consists of three sections in one enclosure.

The monitoring and data collection section monitors the condition of oil and informs the operator when oil processing is required. It is equipped with an array of sensors and can be optionally upgraded with a data processing and transmission module, as well as a Web interface with controlled access.

The oil processing section removes moisture from transformer oil. It consists of 3 adsorbers with aluminosilicate media, a transfer pump, a filter with an air trap and an air release valve.

The TSS section allows the option of safely connecting oil purification equipment to the transformer tank. It removes air from pipes and hoses and keeps track of oil level inside the transformer during oil treatment operations.

# T O R - 4

Item	Value
Capacity, L/h	30
Water adsorption capacity, L	9
Adsorbent load per one adsorber, kg	21
Output pressure, bar	2
Oil output head, m	20
Max power requirement, V, not more than	500
<b>Power Supply</b>	
Number of phases	3p+1N+PE
Voltage, V	380
AC frequency, Hz	50
<b>Attachment Dimensions</b>	
Oil inlet, DN	20
Oil outlet, DN	20
<b>Dimensions, not more than</b>	
Length, mm	1180
Width with/without underframe, mm	350/550
Height with/without underframe, mm	2035/2085
Weight, kg, not more than	500