

Insulating oil testing unit Online Breakdown Voltage sensor

BDVB TrafoStick TS4x

1. Application

The BDVB TrafoStick TS4x sensor was specially developed for permanent use in the field at the transformer and is used exclusively for continuous real-time measurement of breakdown voltage, water content and temperature of a mineral oil based transformer oil.

2. Description

The main measuring module is located in a robust metal housing. The measuring chamber consists of anodized aluminum. Through the perforation in the measuring chamber the internal sensors can be filled with insulating oil. The BDVB sensor is equipped with a Parker RI1EDX3 / 471 connector which allows the device to be screwed on at the target location. The sensor can be mounted in any orientation, but a free oil flow through the measuring chamber must be guaranteed. The connection for the cable is located at the top of the sensor. The connection between the TrafoStick and the control unit is established with the WEiPU ST1210 / S9 connection using the cable supplied. The sensor is connected to a computer, router, modem or similar device using the TCP-IP cable supplied.



3. Technical specification

Measured parameters	
Breakdown Voltage (BDV)	10kV to 120kV (± 2.5%)
Watercontent (W _c)	2 ppm to 80 ppm (± 2%)
Temperature	-40 to 120 ± 0,2°C
Measurement intervall	max. 0.1s
Operating enviroment	
Ambient temperature	-20°C to 70°C
Oil temperature range	-20°C to 85°C
Operating pressure	Up to 3bar
Inputs and Outputs	
Power supply	4.5V to 7.5V (5.0V recommended)
Output	Digital Protokoll
Interface	MODBUS TCP/IP
Internal data logging capacity	dynamic latch buffer cache chains (64-256-1024)
General information	
Cabel	Standard MODBUS (variable length)
Housing material	EN-AW-6063

General information	
Mechanical connection	Parker RI1EDX3/471
Measuring zone material	EN-AW-7075
Housing classification when assembled	IP68
Control software (Windows 7 oder höher)	Ver. 2.0
Absolute maximum ratings	
Maximum of operating voltage	9.0V
Operating temperature	-40°C to 100°C
Maximum pressure	5bar
Storage temperature (without MODBUS-Kabel)	-65°C to 150°C

We recommend using the power supply system 787-1020 - from Wago Kontakttechnik GmbH & Co. KG to ensure compliance with EU directives. Alternatively products of Mean-Well Enterprises Co., Ltd. - DR-30-5 or HDR-15-5 can be used.



ATTENTION: Loads that exceed the values listed under "Absolute maximum ratings" can permanently damage the sensor system!

The BDVB TrafoStick Basic has been tested by accredited test centres according to EN61326-1 as a class A measuring device. The accredited test centres confirms that the following standard requirements are fulfilled:

- EN 61000-4-2: 2011
- EN 61000-4-3: 2014
- EN 61000-4-4: 2013
- EN 61000-4-5: 2014
- EN 61000-4-6: 2014
- EN 61000-4-11: 2007
- CISPR11: 2015 + AMD1: 2016, EN55011: 2016 + A1: 2017, EN55011: 2016 + A1: 2017-06
- EN 60950-1: 2007 + A11: 2009 + A1: 2011 + A12: 2011

[kV]											
100			+/- 4%						+/- 5%		>5%
90											
80			+/- 2%								
70											
60											
50									+/- 3%		
40			+/- 1%								
30											
20											
10											
	10	20	30	40	50	60	70	80	90	100	[°C]

Table 1 Breakdown voltage measurement range accuracy v. temperature