

Insulating oil testing - Breakdown Voltage Sensor

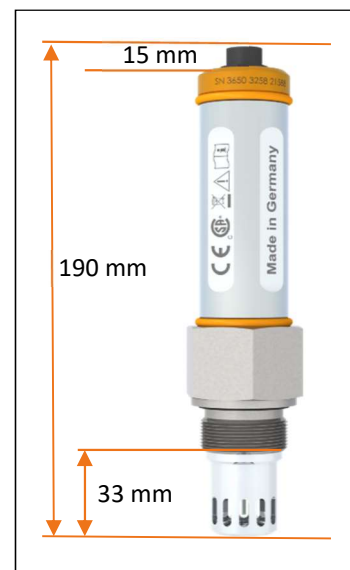
BDVB Oil-Stick TS4x

1. Application

The BDVB Oil-Stick TS4x sensor is developed especially for on-line use in the field and exclusively designed to repeatedly measure the breakdown voltage, water content and temperature in a mineral transformer oil.

2. Description

The main measurement module is located in the robust metal housing. The measurement zone is made of anodized aluminium. The holes in the measuring zone allow filling the internal sensors with mineral transformer oil. The BDVB device is equipped with a Parker RI1EDX3/471 Connector which lets the device assembling at the target place. The sensor can be mounted in any position, but a free oil flow in the measuring zone must be guaranteed. The cable plug socket is placed on the top of the unit. The link between the device and the host is provided by the delivered cable with the WEiPU ST1210/S9 connector. The user should connect the device to a computer, router, modem or a similar device, via provided TCP-IP Cable.



3. Technical specifications

Performance	
Breakdown voltage (BDV)	10kV to 120kV (± 2.5%)
Water Content (W _c)	2 ppm – 80 ppm (± 2%)
Temperature measurement range	-40°C to 120°C
Accuracy	±0,2°C typical
Measurement interval (selectable)	0.1s (via MODBUS)
Operating environment	
Ambient temperature range	-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 – 7.5V (5.0V recommended) 24V/DC with 900.AKxx - Cable
Digital output	Digital protocol
PC interface	MODBUS TCP/IP
Internal data logging capacity	dynamic latch buffer cache chains (64-256-1024)

Performance	
General	
MODBUS cable	2.5m length (other length are possible)
Housing material	EN-AW-6063
Mechanical connection	Parker RI1EDX3/471
Measuring zone material	EN-AW-7075
Housing classification when assembled	IP68
Control software (Windows 7 or later)	Ver. 2.0
Absolute maximum ratings	
Maximum operating voltage	9.0V
Operating temperature	-40°C to 100°C
Maximum pressure	5bar
Storage temperature (without MODBUS cable)	-65°C to 150°C

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



Stress above those listed under "Absolute maximum ratings" may cause permanent damage to the device.

BDVB Oil-Stick Basic has been tested by an accredited unit according to EN61326-1, a Class A measuring instrument. The accredited unit confirm the complies with the following regulatory requirements:

- 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