FIEDLER

ELECTRONICS FOR ECOLOGY

ORP485

redox probes with digital output RS485 / Modbus RTU

- ***Basic element for creating RS485 sensor network for dataloggers and on-line IoT systems (Lora, Sigfox, NB, GPRS)***
- ***Accurate REDOX potential measurement without additional transducers and other electronics***
- ***Platinum measuring electrode with a diameter of 4 mm and a gel electrolyte with a diaphragm***
- ***Calibration coefficients stored in the probe***
- ***Measuring ranges -2000 mV to +2000 mV; -5 to +60 °C***
- ***Lifespan 3 to 5 years with extended recalibration interval***
- ***Galvanically separated communication and power supply circuits from the measuring electrode***
- ***Wide supply voltage range from 5 to 24 V DC, low current consumption***

Characteristic properties

The ORP485 probe is intended for measuring the redox potential. The mechanical design of the probe combines into one compact unit a platinum measuring electrode, a reference argent chloride electrode separated from the measured solution by a diaphragm and a measuring electronics controlled by a microprocessor.

In order not to influence the measured quantity by the action of earth currents and induced interfering potentials, the measuring circuits, including the electrode itself, are galvanically separated from the communication and power supply cable of the probe.

The self-cleaning design of the used reference electrode ensures a stable and reproducible signal even in the environment of emulsions, suspensions and other adhering impurities of various origins as well as impurities caused by a chemical reaction. The electrode thus largely eliminates, for example, the negative effect of rust, hard water (Ca, Mg compounds in both carbonate and sulphate forem), oil emulsions, adhering organic and inorganic impurities.

Mechanical design

The ORP485 probe body contains a G 3/4 "mounting thread on the electrode side (for mounting the probe in the piping system) and on the cable outlet side (mounting the probe in a holder or sensor).

The cable terminated with an M12 connector on the ORP485-KxM12 probe facilitates mounting of the probe in the TS1700 rod holder and allows quick calibration of the probe or its easy replacement at the end of life.

Modbus RTU on RS485

The probe output signal uses the widely used RS485 bus under the Modbus RTU protocol. Via this bus, the probes can be connected to a control system or data logger at a distance of up to 500 m. In addition to the magnitude of the redox potential, the measured water temperature can also be read from the probe.

The four-core connection and power cable allows easy creation of a sensor network thanks to the possibility of addressing each probe. Multiple probes of one type or several similar probes for monitoring several quantities can be connected to one RS485 bus - eg PH485 probes for pH measurement or ISE485 type probes for measuring the potential of an ion-selective electrode.

ORP485 probes can also be calibrated using the RS485 communication bus. The calibration coefficients stored in the probe allow the probes to be calibrated in the laboratory, and in the field all you have to do is connect the probe back to the measuring network.

Examples of use

The compact ORP485 probe with digital data output represents a modern solution for accurate measurement of the oxidation-reduction potential in many water supply industries and industries:

- ☑ Wastewater treatment plants
- ☑ Chemical and food industry
- ☑ Swimming pools
- ☑ Research and development projects
- ☑ Environmental monitoring, soil measurement

Enviromonitoring
Water industry
Laboratory

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Full range of products, demo access to the data server and complete price list on
www.fiedler.company

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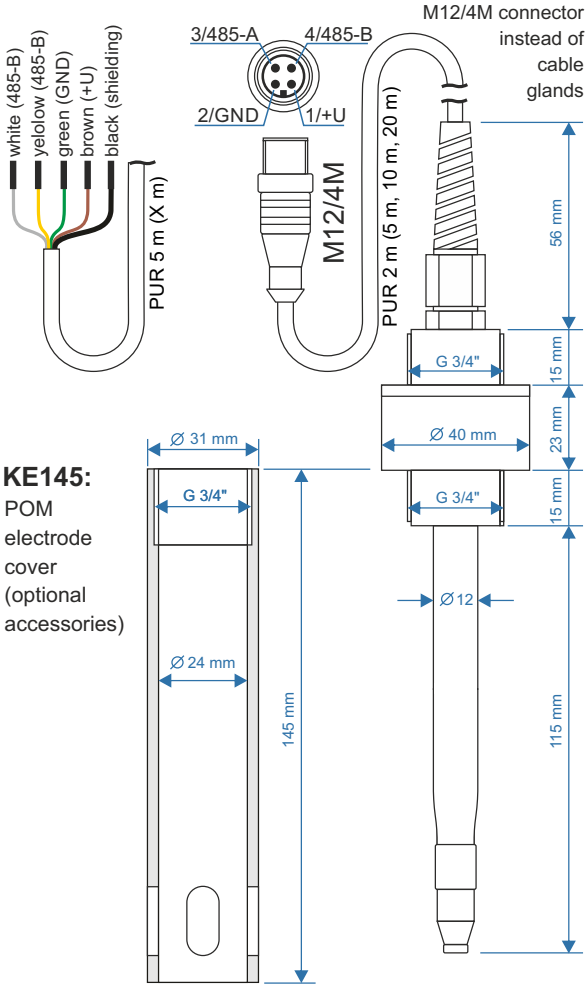
Mechanical dimensions and connections

ORP485-K5M **ORP485-K2M12** **ORP485-M12**



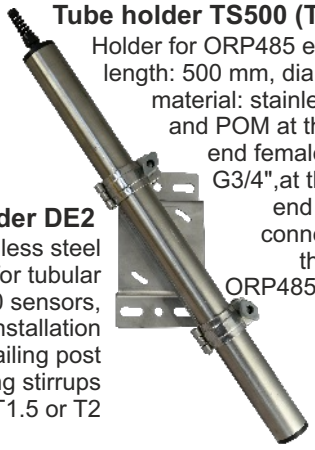
KE145:
POM electrode cover (optional accessories)

Optional accessories

Cap KE145
Electrode cap
Length: 145 mm
material: POM
thread: G 3/4 "

Holder DE2
Stainless steel holder for tubular TS500 sensors, TS1700, installation on a railing post using stirrups T1.5 or T2

Tube holder TS500 (TS1700)
Holder for ORP485 electrode length: 500 mm, dia. 40 mm material: stainless steel and POM at the lower end female thread G3/4",at theupper end M12/4F connector for the probe ORP485-K2M12 or cable gland



Connecting cable M12/4F-xM (-PUR)
PUR or PVC cable in lengths of 2 m, 5 m, 10 m and 20 m is equipped with an M12/4F connector (female), the other end of the cable is free.

Pin konektoru	1	2	3	4
Signál	+Unap	GND	485-A	485-B
PUR - black	brown	green	yellow	white
PVC - gray	brown	white	blue	black

WE PREPARE:

RS485/4-20 mA converters MAV431, MAV432
Converter of one or two quantities from RS485 (Modbus RTU) to 4-20 mA output. Input and output equipped with M12 connector. Automatic range adjustment. Power supply of the converter and the probe from the analog side output.

Technical parameters

ORP electrode:	platinum electrode with gel electrolyte, increased mech. endurance
Measuring electrode:	platinum target with a diameter of 4 mm
Measuring range ORP (K1):	-2000 mV to +2000 mV
Measurement accuracy:	± 2 mV
Measuring range temperature:	-5.0 °C to +60.0 °C
Measurement accuracy:	± 0.7 °C
New probe rise time:	<15 sec
ORP485-KxM connection:	shielded PUR cable 4x0.25 length x m, socket end without connector
ORP485-KxM12 connection:	PUR cable x m terminated with M12 connector; 4 Pins (male),
Interface:	RS485, Modbus RTU protocol (FINET), com. address 7, 19200 Bd / *
Supply voltage:	5 to 24 V DC / Imax <20 mA; galvanic isolation, Up> 500 V
Service life:	3 to 5 years depending on the composition of the measured medium
Storage temperature:	-5 °C to +60 °C
Maximum working pressure:	1 bar (up to 10 bar in agreement with the manufacturer)
Dimensions:	diameter 40 mm, length 115 mm (shortened electrode can be supplied)
Housing mounting threads:	G3/4” on the electrode side, G3/4” on the cable outlet side
Housing material / Protection:	POM / IP68
Weight including cable:	150 g

/ An overview of the Modbus RTU registers for the ORP485 probe can be found in the application notes at www.fiedler.company*

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