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ELEKTRONIKA PRO EKOLOGII

ISE485

ion selective probes with RS485 / Modbus RTU output

- ***Basic element for creating RS485 sensor network for PLCs, data loggers and online IoT systems (Lora, Sigfox, NB, GPRS)***
- ***Accurate measurement of ion-selective potential without additional transducers***
- ***Combination electrodes with a reference electrode in one body***
- ***Electrodes with plastic membrane with ionophore or inorganic membrane.***
- ***Calibration coefficients stored in the probe***
- ***Measuring ranges -2000 mV to +2000 mV; -5 to +50 °C***
- ***Galvanically separated communication and power supply circuits from the measuring electrode***
- ***Wide supply voltage range from 5 to 24 V DC, low current consumption***
- ***Low purchase price***
- ***Variant design of probes for measuring pH (PH485) and redox potential (ORP485)***

Characteristic properties

The ISE485 probe combines an ion-selective electrode with a reference electrode and measuring electronics controlled by a microprocessor into one compact unit.

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

Overview of available ISE electrodes

The ISE485 probe may contain one of the following ion-selective electrodes:

☑ Ammonium	NH_4^+	☑ Cyanide	CN^-
☑ Barium	Ba^{2+}	☑ Lithium	Li^+
☑ Bromide	Br^-	☑ Cooper	Cu^{2+}
☑ Potassium	K^+	☑ Lead	Pb^{2+}
☑ Nitrate	NO_3^-	☑ Rhodanide	SCN^-
☑ Fluoride	F^-	☑ Sulfide	S^{2-}
☑ Fluoroborate	BF_{+4}^-	☑ Sodium glass	Na^+
☑ Chloride	Cl^-	☑ Silver	Ag^+
☑ Perchlorate	ClO_4^-	☑ Calcium	Ca^{2+}
☑ Iodide	J^-		

The combined ISE electrodes listed use a plastic membrane with an ionophore or an inorganic membrane. Only the sodium electrode uses a glass membrane sensitive to sodium ions.

The corresponding type of calibration solution can be ordered together with the ISE485 probe.

Mechanical design ISE485

The body of the ISE485 probe 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 ISE485-KxM12 probe facilitates mounting of the probe in the TS500 (1700) rod holder and allows quick calibration of the probe or easy replacement at the end of life.

Modbus RTU na RS485

The probe output signal uses the widely used RS485 bus on the Modbus RTU protocol. Via this bus, the probes can be connected at a distance of up to 500 m directly to the control system, display or data logger. In addition to the magnitude of the measured ion-selective voltage on the 1st internal channel, the measured water temperature on channel 2 can 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. Thus, several 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 ORP485 type probes for oxidation-reduction potential measurement.

ISE485 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.

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

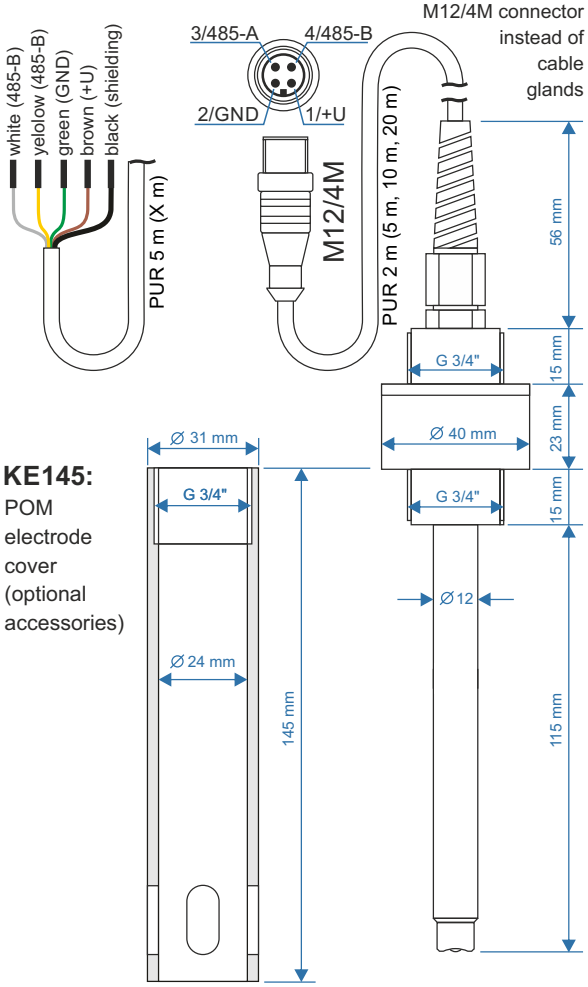
ISE485

Ion selective probes with digital output RS485 / Modbus RTU

Mechanical dimensions and connections

ISE485-K5M **ISE485-K2M12** **ISE485-M12**

M12/4M connector instead of cable glands



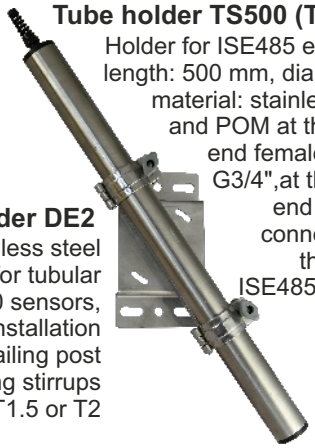
KE145:
POM electrode cover (optional accessories)

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 ISE485 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 ISE485-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

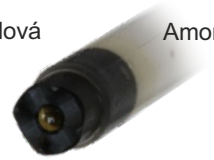
Converter of one or two quantities from RS485 (Modbus RTU) to 4-20 mA output. Input and output equipped with M12 connector. Automatic range adjustment. Power supply of the converter and the probe from the analog side output.

PROBE RS485 →  → 4-20 mA

Technical parameters

ISE electrode: combined electrode with plastic or inorganic membrane

Chloridová Cl^-



Amoniová NH_4^+

Measuring range (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
ISE485-KxM connection:	shielded PUR cable 4x0.25 length x m, socket end without connector
ISE485-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
Shelf life:	2 to 3 years depending on the composition of the measured medium
Storage temperature:	0 °C to +60 °C
Maximum working pressure:	1 bar (up to 10 bar in agreement with the manufacturer)
Dimensions:	largest diameter 40 mm, length 115 mm
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

/ For an overview of Modbus RTU registers for ISE485 probes, see the application notes at www.fiedler.company*

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