Conductivity transmitter LF-TR-MOD

Conductive conductivity measurement with Modbus RTU over RS-485

Three measuring cell versions - one common electronics platform

LF-TR-MOD ZK 0.01

Cell constant 0.01



0.001 µS/cm to 10 mS/cm

LF-TR-MOD ZK 0.1

Cell constant 0.1



0.01 µS/cm to 100 mS/cm

LF-TR-MOD ZK 1

Cell constant 1



0.1 µS/cm to 1 S/cm

Wide measuring range without manual range selection

The LF-TR-MOD combines a measuring cell mounted directly on the housing with automatic five-range electronics. Depending on the measuring cell, the conductivity range extends from ultrapure water to highly conductive liquids. Conductivity, temperature, cell resistance, active range and device status are available digitally.

Measurement

- Five automatic ranges with conductivity-dependent excitation
- Verified measurement deviation within ±1 %
- Cell constant configurable; stainless-steel correction below K 0.8
- No measuring-cell cable between cell and electronics

Communication and operation

- Modbus RTU via galvanically isolated RS-485 interface
- Temperature compensation: off, TC nat or TC lin 0...6 %/K
- Optional SHT30A enclosure-humidity monitoring with alarm
- Windows monitor with device scan, configuration, calibration and CSV logging

Achievable overall accuracy also depends on the measuring cell, installation, medium and temperature conditions.

LF-TR-MOD - Technical data

Measurement and configuration

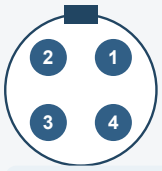
Measurement principle	Conductive, bipolar-polarised measurement
Measuring cell versions	ZK 0.01 / ZK 0.1 / ZK 1
Measuring range	0.001 µS/cm to 1 S/cm, depending on measuring cell
Range switching	Automatic, five internal measuring ranges
Electrode correction	0.443 Ω for stainless-steel cells below K 0.8; active in all ranges
Measurement accuracy	±1 % after fine adjustment
Value output	Three significant digits; additional Float32 raw value
Cell constant	0.0025...5.0000 configurable via Modbus
Temperature compensation	Off / TC nat / TC lin 0.00...6.00 %/K
Reference temperature	-50.0...150.0 °C configurable; factory setting 25.0 °C
Temperature sensor	NTC 2 kΩ or Pt1000, selectable via Modbus
Temperature calibration	One point at 0...100 °C; maximum correction ±5 °C
Temperature acquisition	Interval 2...600 s; input released for approx. 10 ms per reading
Enclosure monitoring	Optional SHT30A; humidity alarm at 30 % RH, cleared at 28 % RH

Electrical data and interface

Supply voltage	12/24 VDC ±10 %
Current consumption	< 50 mA
Galvanic isolation	Measuring input galvanically isolated
Interface	RS-485, 2-wire, Modbus RTU
Factory settings	9600 baud, 8N1, address 10
Selectable baud rates	9600 / 19200 / 38400 / 57600 / 115200; safe confirmation
Address range	1...247
Modbus functions	FC03/04, FC06, FC16
Process values	Conductivity, temperature, cell resistance, status, range; optional humidity

Connection and RS-485 bus

Mating-face view · key up



Device plug

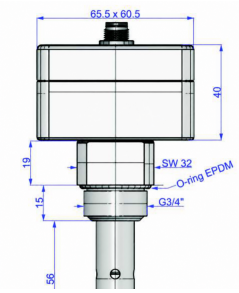
1 · BN brown · +12/24 VDC
2 · WH white · D1 / B(+)
3 · BU blue · 0 V / Common
4 · BK black · D0 / A(-)

Terminate the bus only at its two physical ends. Active bus biasing must be provided only once on the entire bus, usually at the master.

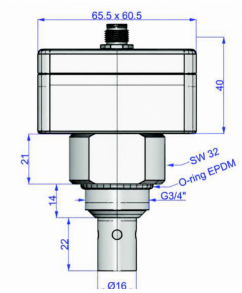
Housing, measuring cells and environmental conditions

Ambient temperature	-20...50 °C	**Degree of protection**	IP65
Cell housing	PP / PVDF	**Cable connection**	4-pin connector
Wetted materials	ZK 0.01 / 0.1: 1.4404, EPDM	**ZK 1**	Titanium, graphite, EPDM
Measuring surfaces	ZK 0.01 / 0.1: 1.4404	**ZK 1**	Graphite
Media temperature	PP 0...60 °C	**PVDF**	0...110 °C
Pressure rating	PP: 16 bar up to 60 °C	**PVDF**	16 bar up to 110 °C

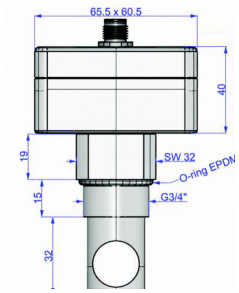
Dimensions of the measuring cell versions



ZK 0.01



ZK 0.1



ZK 1

Subject to technical changes. Version 11/2026. Firmware 1.12; PC monitor 1.16.