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Technical Datasheet

LIQUID ANALYSIS MEASUREMENTS | DATA SHEETS | DS-WKEC100-EN- REV.A-23

TDS / CONDUCTIVITY TRANSMITTER WKEC100

pH | ORP | TDS | CONDUCTIVITY | DO | TURBIDITY | TSS | BOD | COD

Measurement made easy
The low-power, high-performance transmitter

Modular design for strategic flexibility

- common universal design for analog pH, ORP, conductivity and digital
- plug-and-play sensor and communication modules minimize stock holding and maximize operation uptime
- wall-, panel- or pipe-mountable

Easy to use

- 'Easy Setup' sensor configuration menus provide step-by-step guidance
- multi-level security access prevents unauthorized modifications to transmitter configuration and calibration
- One-Button sensor calibration saves time and money spent on routine maintenance

Robust and reliable

- available in both corrosion-resistant polycarbonate or durable aluminium enclosures

Features

- Direct change over to
- Conductivity (µScm)
- TDS measurement (ppm)
- Automatic temperature compensation
- 4-20 mA Isolated Output
- Large LCD display with background lighting
- IP54 water resistant and corrosion proof enclosure
- Using the setup program: user-friendly
- programming
- RS485 communication
- Relay output
- Affordable
- Ease of operation
- Low maintenance
- Ensures product quality

The model **WKEC100** is used for the conductive measurement/control of electrrolytic conductiv, resisistivity or the value. Conductivity is a function of ion oncentraration, ionic c ge, and ion mobility.
Ions in water conduct current when an electrical potential is applied acoss electrodes immersed in the solution. A ontroller system consists of a microprocessor-based controller and a cconductivity obe. 3 Electrode cells (K=0.01,0.1 and 1.0) can be connected to the device. Temperature serves as the second input variable, measured by a NTC10K/ PT1000 probe. Depending on the measured variable, it is therefore possible to implement specific, automaaticemperature compensasation. All adjustments to the current outputs, alarm relays, and calibration of the conductivity andemperature inputs can be made using the controller's .

WKEC100
Conductivity/Hadness/Resisstivity Online analyzer, an intelligent Online chemical analyzer, is widely applied for continuous monitoring and measurement of EC value or TDS value or ER value and temperature in the solution in the indutry of thermal power, chemical fertilier, environmental prottection, metallurgy, pharmacy, biochemistry, food and water, etc.

Multi-point calibration

To achieve the best possible accuracy, the calibration should cover the range of the desired measurement values. If the readings go beyond the calibrated range, the pH meter assumes linearity and simply extrapolates the value to be displayed. The true value may be slightly different. More advanced pH meters will let the user calibrate at three, four or five and even higher numbers of pH values. A multi-point calibration mean, in comparison to a two-point calibration, that you can calibrate your pH tester on both sides of the zero point (pH 7.00). This will expand your pH .measurement range without the need of re-calibrating.

Conductivity Measurement Basics For The Process Industry

The ability of a medium to oxidise or reduce another medium is measured by its “oxidation-reduction potential,” or EC .

When an oxidizer takes an electron from another molecule, it is said to be oxidising, and when a reducer gives an electron to another molecule, it is said to be reducing. A single mV value, which can be positive or negative, can be monitored by an EC sensor to identify whether oxidation or reduction is taking place. The mV value is positive when a medium is oxidising. The mV reading will be negative when it is displaying reduction. Additionally, an EC measurement known as “Redox” is frequently used. Reduction and oxidation are combined to form the word redox.

Creating Conductivity Sensors

Both an EC electrode and a reference electrode are parts of an ORP sensor. When considering the design of an EC sensor, the transfer of electrons is crucial. Platinum, which is frequently used in ORP electrode fabrication, has low resistance. The electrode is able to exchange electrons with both oxidizers and reducers. Until a potential is formed, the electrode will continue to take or release electrons. After then, it produces millivolts. The reference electrode in an EC sensor is commonly constructed of Ag/AgCl and submerged in a KCl reference substance, making it very similar to a pH reference electrode.

Using the Conductivity Measurement to Interpret

Chemical media that act as oxidizers or reducers come in a wide variety. Instead of receiving a precise indication of the chemical you are measuring when monitoring EC , you instead receive a signal that an oxidizer or reducer is present. For instance, EC sensors are frequently used in Pulp and Paper mills to regulate the injection of chlorine, which is employed as a disinfectant in the mill. A measurement of EC is one that can only be inferred. However, when done appropriately and in conjunction with knowledge of the process medium being studied, EC measurements can be a useful tool for detecting specific compounds in a processing environment.

Summary

In process applications across many sectors where managing chemical compositions is crucial, we deploy EC sensors. You may control the process in an effective and efficient manner by grasping the fundamentals of EC measures.

Technical specifications

Measurement performance

Measuring range	0.00~2000μS/cm(max.20000μS/cm)
Power supply	AC:220VAC±10% or 110VAC 50Hz/60Hz DC:24VDC±20% Input power≥6W
Temperature range	-10~130℃
Serial communications	Rs485
Output	4-20 mA + relay
Measurement Accuracy	
EC/TDS/Resistivity	±1%FS
NTC10K:	±0.3℃
Pt1000	±0.3℃
Relati e humidity	5 ~ 95%RH(No condensation)
Operating Temperature	0℃~60℃
Storage	-15℃~ 65℃
Screen size	2.8inch
Dimension	Overall dimension: 100mm*100mm*150mm(H*W*D) Cutout dimension：92.5mm*92.5mm(H*W)
Weight	0.65Kg
Ingress protection	IP 54
Type	NTC10K/PT1000
Model	Manual/automatic
Output	Overall dimension: 100mm*100mm*150mm(H*W*D) Cutout dimension：92.5mm*92.5mm(H*W)
Relay	2 relays Ac250

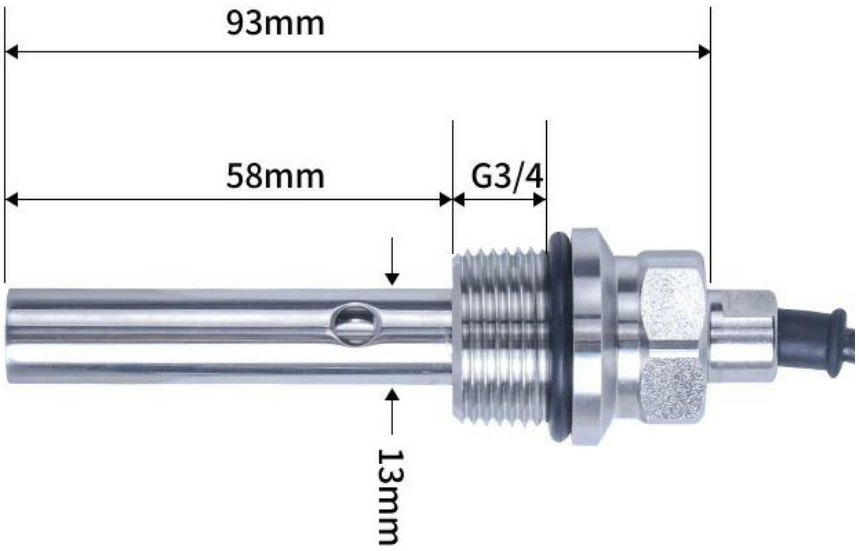
Parameters

Electrode selection

Cell constan	Corrosion Resistanc
K=0.01	Suitable for pure water ultrapure water testin
K=0.1	Suitable for conventional ater tessting
K=1.0	Suitable for industrial water and recycling ring tes

The device offers a dynamic range on the input side, the range must be matched to the operaating range of the cell. The standard temp range for WEL-TDS-10 0℃~50℃,the high temp range for WEL-TDS10-A:0℃~100℃

Electrode selection						
Cell constant	**Material**	**Length**	**Diameter**	**Hole size**	**Thread**	**Recommended/practi al measuring span(depending on the conductivity cell)**
0.01	SS316L	93mm	13mm	6mm	G3/4	0.01 ~ 20 µS/cm
0.1	SS316L	93mm	13mm	6mm	G3/4	0.1~ 200.0 µS/cm
1.0	SS316L	93mm	13mm	6mm	G3/4	1.00 ~ 2000 µS/cm
A measurement is to be carried out in the 0.01 µS/cm to 1µS/cm range. A conductivity cell with the cell constant K = 0.01 0.1 1 is chosen.						



Display

1. Temperature：Compensation emperature

2. Analog output：Analog output

3. Measured value：Real-time measuements value

4. High alarm：High alarm

5. Low alarm：Low alarm

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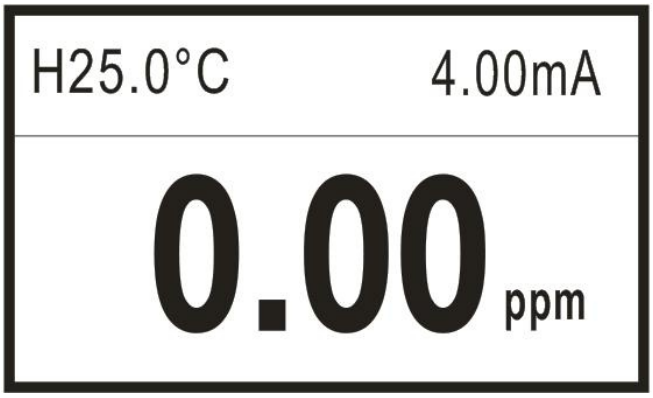
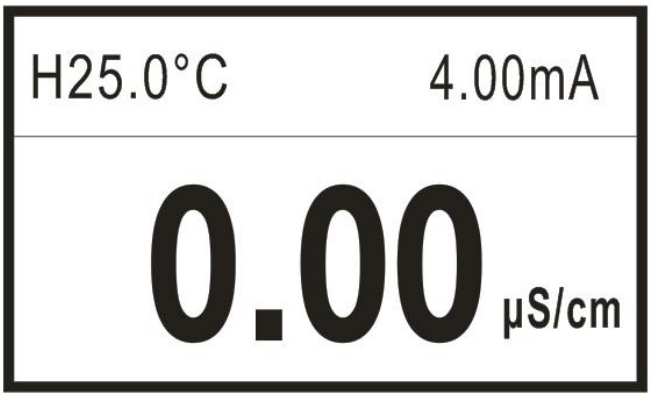
Sign		Name of the key	Function description
7	MENU	MENU	Enter the MENU on the “monitoring page ” Exit the MENU on the “menu page ”
6	ESC	EXIT	Check related warning status on the “monitoring page ” ; Return to previous level page in the up& down level page linked to “menu page ”
8	▶	RIGHT	Enter the menu under “monitoring interface ” Exit the menu under “monitoring interface ”
8	▼	DOWN	Relevant menu is selected under the “menu interface ” Relevant numerical value is modified under the setup status
9	ENT	ENTER	Enter the sub-menu or confirm modificaationon the “menu Page ”

Monitor page

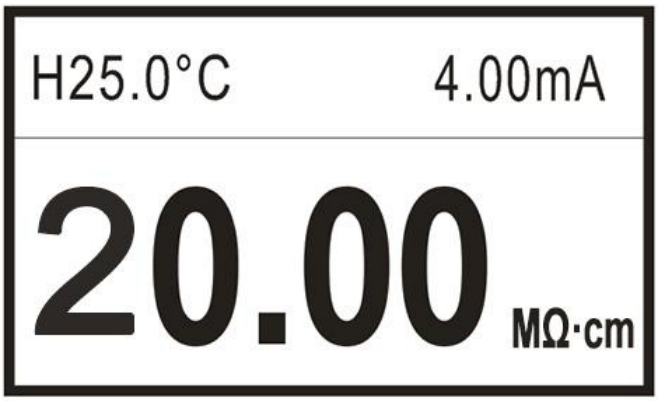
TDS monitor page



EC monitor page

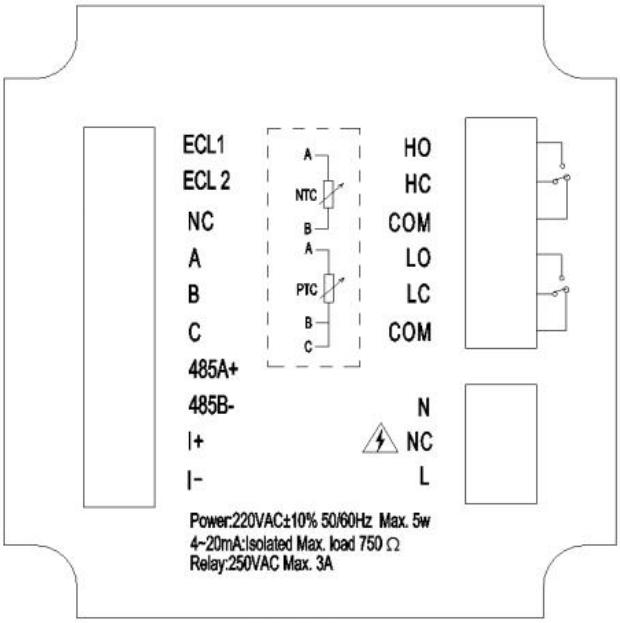


Resistivity monior Page

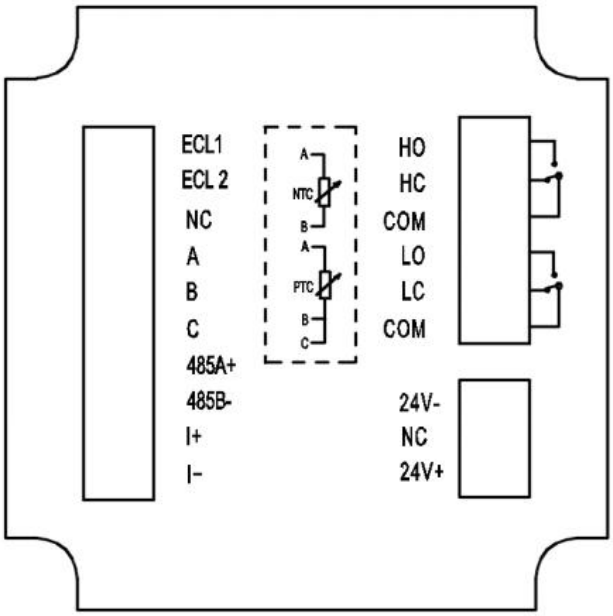


Monitor page

- ECL1：Measuring terminal of the electrode
- ECL2：Reference terminal of the electrode
- NC：Unidentified
- A：Temperature compensation terminal A,NTC10K and PT1000 connect here
- B：Temperature compensation terminal B, NTC10K and PT1000 connect here
- I+：4-20mA output end+
- I-：4-20mA output end -
- HO：High alarm normally open relay
- HC：High alarm normally closed relay
- COM：high alarm common
- LO：Low alarm normally open relay
- C：Temperature compensation terminal C, PT1000 three-wire temperature grounding, PT1000 two-wire need to be short-connected to TEMPB, not NTC10K.
- 485A+：RS485 communication interface A+
- 485B-：RS485 communication interface B-
- LC：Low alarm normally closed relay
- COM：low alarm common
- N：AC220V/AC110V neutral wire
- L：AC220V/AC110V live wire
- 24V+: 24VDC +
- 24V-: 24VDC -



220VAC wiring diagram



24VDC wiring diagram

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DS/WK100-EN Rev. A 03.2023

For more information
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