Zirkon® DIS Sea Water
(Measuring of disinfectants)

Sensor for measuring Free Chlorine

Zirkon® DIS are potentiostatic sensors, measuring parameter and range are defined by the connected instrument.

- Low maintenance
- Automatic cleanining by ASR® or mechanically
- Zero point stable

Applications

Sea Water

Description

Zirkon® DES are potentiostatic sensors, measuring parameter and range are defined by the connected instrument. A defined potential is applied to the measuring electrode resulting in an electrical charge. Disinfectant molecules remove part of the charge in an ORP reaction. The salt reservoir of the reference .electrodes leads to a longer life time

Technical data

Measuring Parameter

	0.. 1000 µg/l
	0.. 5.00/10.00 mg/l
	0.. 20.00 mg/l

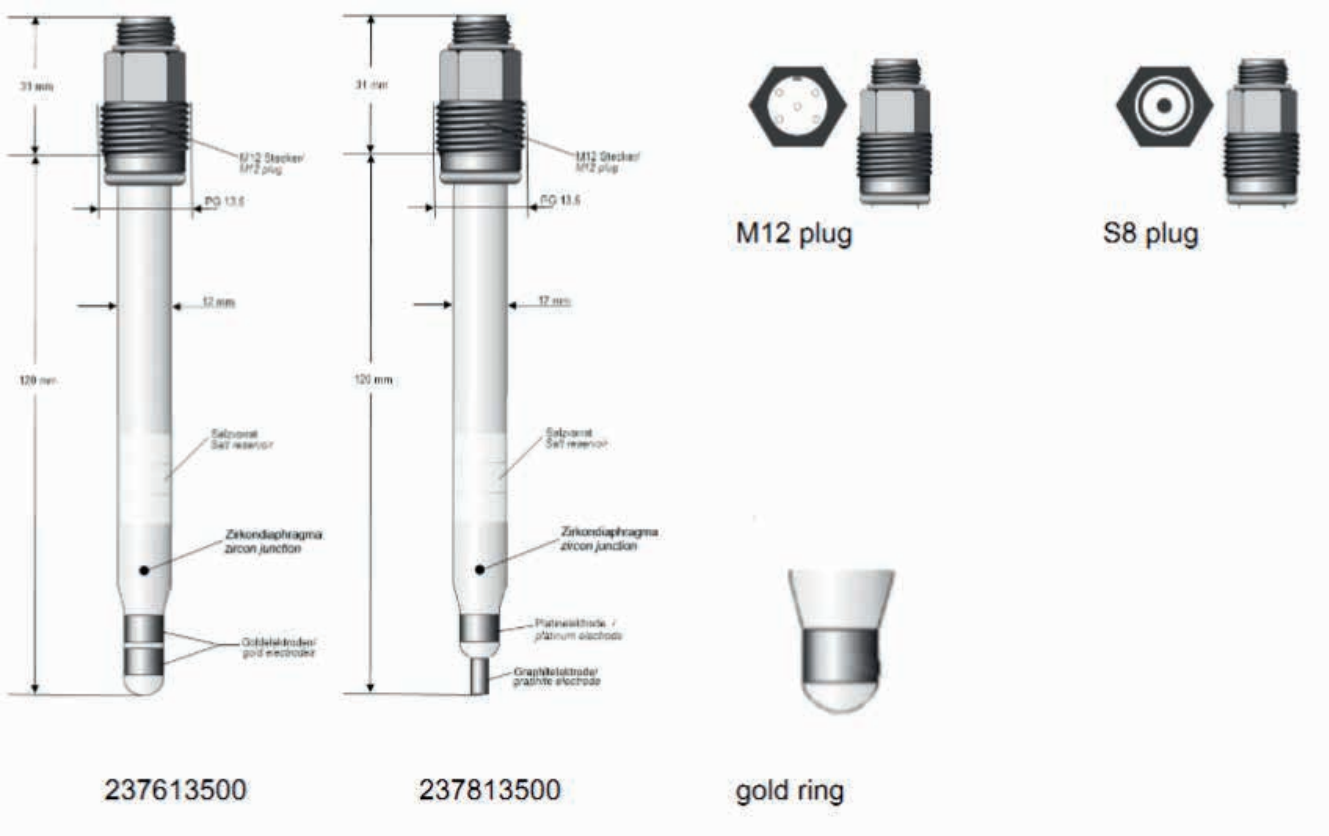
Ambient conditions

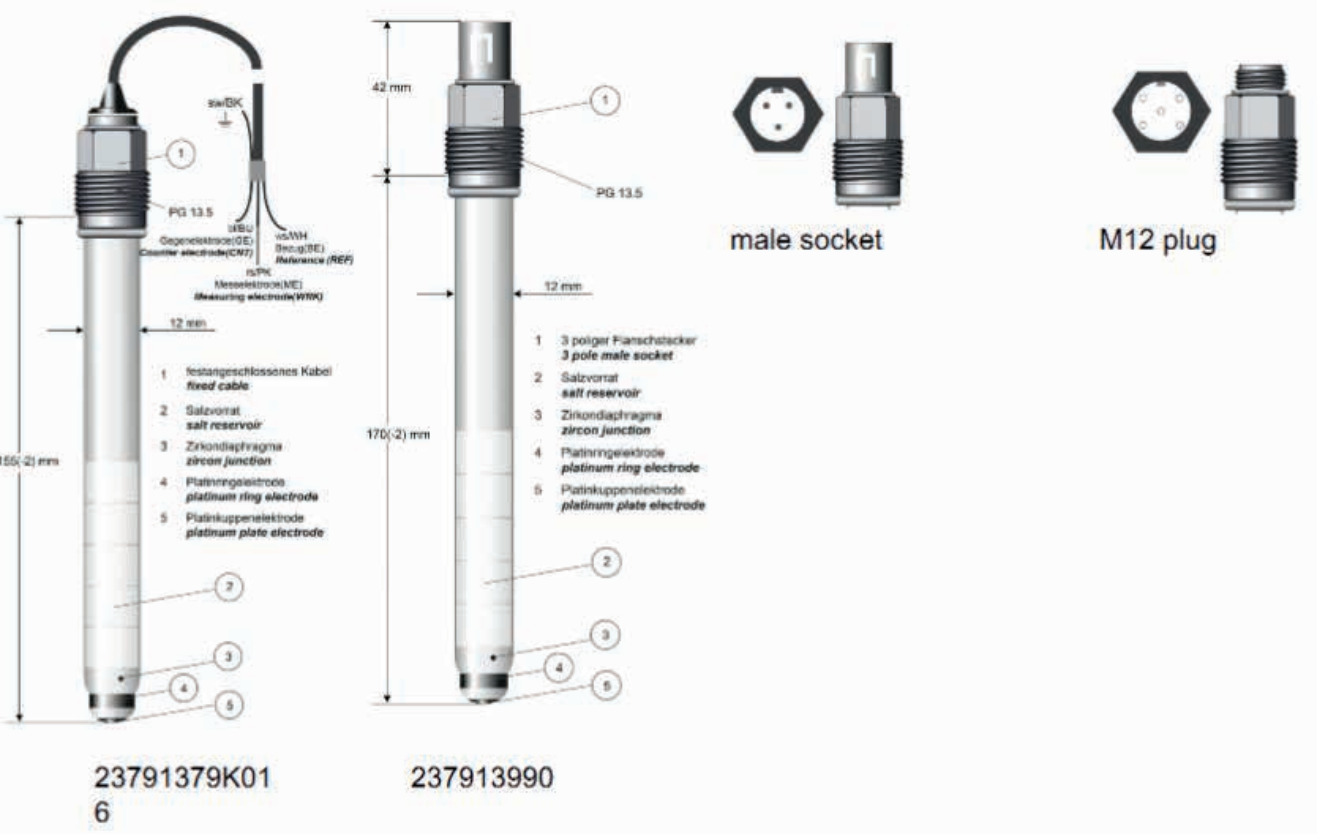
Max. pressure	< 10 bar at 20°C
Min. conductivity	> 150 µS/cm ,with ASR > 200 µS/cm
Temperature	-5.. +70 °C

Mechanical construction

Junction	Zircon
Shaft material	Glass
Mechanical Construction	80 mm, 120 mm
Electrode material	platinum ring, platinum plate, gold ring, 2 gold rings, 2 platinium rings, platinum ring and plate platinum ring graphite pin
Reference system	Ag/AgCl/saturated KCL
Process connection	S8 plug (swivel PG 13.5), M12 plug (swivel PG 13.5) male socket (swivel PG 13.5) fixed cable (swivel PG 13.5)

Maßzeichnung





Storage version

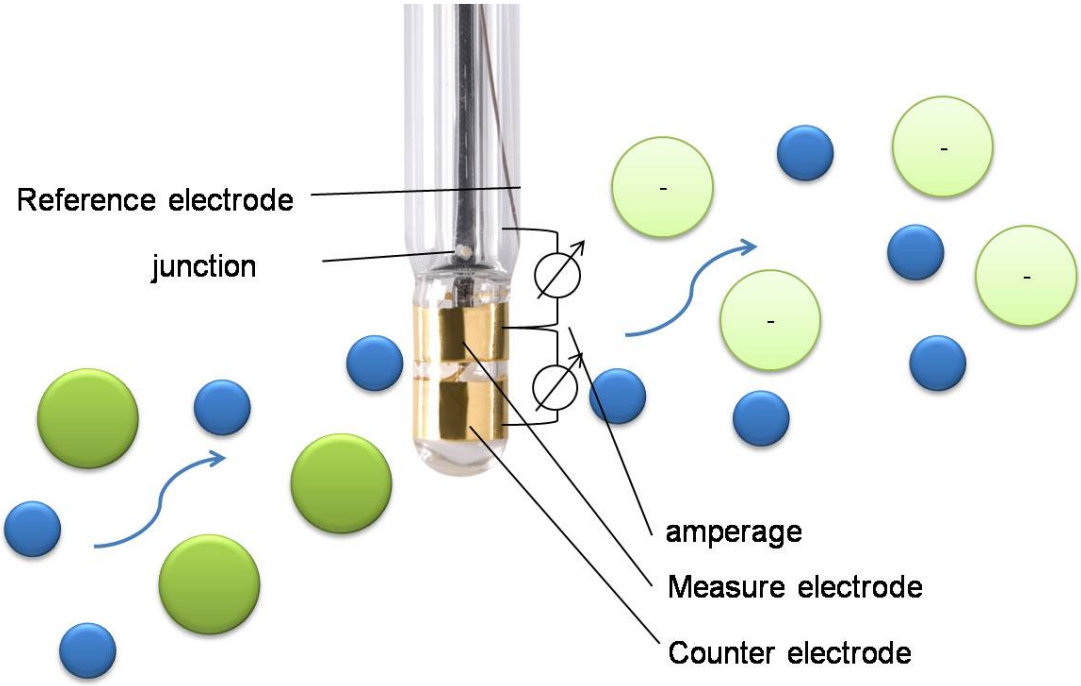
Article number	type/configuration	Description
24135145K	237613500	DES sensor: 2 gold rings, zircon junction, saturated KCl, M12 plug (swivel PG 13.5), 120 mm
24135288K	237513100	DES sensor: 1 gold ring, zircon junction, saturated KCl, S8 plug (swivel PG13.5), 80 mm
24135156K	23791379K016	DES-Sensor: 1 platinum ring and -plate, zircon junction, saturated KCl, 1.6 m fixed cable (swivel PG13.5), 160 mm
24135155K	24135156K	DES-Sensor: 1 platinum ring and -plate, zircon junction, saturated KCl, male socket (swivel PG13.5), 160 mm

Assembly version

Article number	type/configuration	Description
24135150K	237813500	DES sensor for brine: Platinum ring graphite pin,zircon junction, saturated KCl, M12 plug (swivel PG 13.5), 120 mm

Dr. A. Kuntze measurement

The disinfectants measurement by Dr. A. Kuntze is a potentiostatic measurement with gold measuring and counter electrodes and reference, that measures specific disinfectants selectively. A defined potential is applied to the measuring electrode resulting in an electrical charge. Disinfectant molecules remove part of the charge in an Oxidation reduction potential reaction. The measuring and control instrument measures the potential between measuring and reference electrode and readjust the potential. The resulting current is a direct measure for the concentration of the disinfectant.



The electrodes of the sensors are made from very high-quality, chemically inert materials such as glass, carbon, and precious metals. These electrodes are in direct contact with the water to be measured. Compared with membrane-covered sensors, this design has several advantages:

Stable zero-point and quick response
The measurement is selective for the disinfectant to be measured. In absence of disinfectant it drops to zero. Due to the direct contact with the water the sensor reacts fast to any concentration change – without memory effect.

Pressure-proof and robust
The measuring systems can work under pressure of up to 6 bar and is not affected by long periods without disinfectant. The sensors contain no pressure-sensitive membrane that might tear or get blocked.

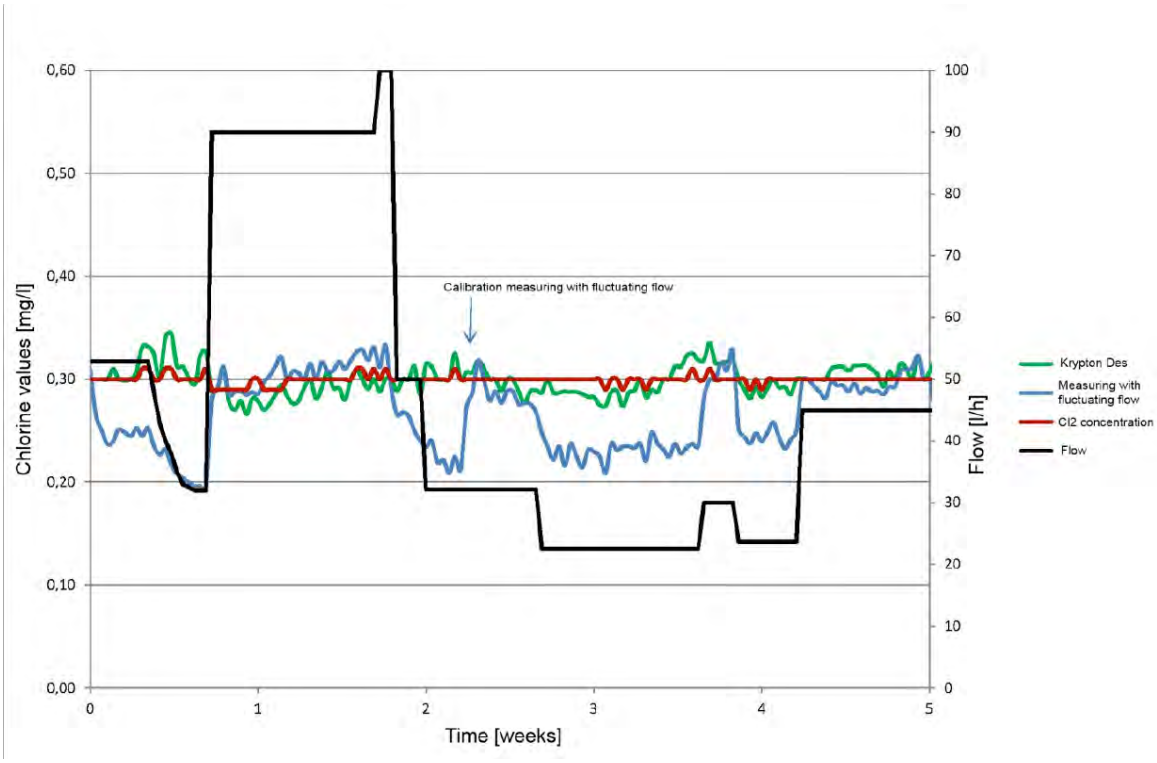
Low-maintenance
The sensor design minimizes adhesion of dirt particles and fibers. Additionally, coatings on the electrode surfaces can be prevented with the automatic sensor cleaning ASR®.

DR. A. KUNTZE | GUTES WASSER MIT SYSTEM
info@abmoli.com
WWW.ABMOLI.COM

Hanagar 3 Kfar saba הנגר 3 כפר סבא
P.O.B 1397 ת.ד.
Tel 09-7434264 טל.
Fax 09-7440681 פקס

Influence of the flow rate
All molecules of the measured disinfectant that hit the electrode surface contribute to the measured signal. Therefore the signal strength does not only depend on the concentration but also on the flow rate: The higher the flow rate, the more molecules can hit the electrode.
This influence is most noticeable below 15 l/h. In particular, an interruption of the water flow will immediately cause signal loss. Please make sure that the sensor is continuously supplied with water, and that a constant flow rate is maintained.
Above 20l/h the influence of flow rate is less pronounced. A change from 50l/h to 40l/h for example reduces a measured value of 0,3mg/l to 0,28mg/l. The switch point of the flow sensor in our GDM flow cell is at 30l/h. This makes sure that you always work in a flow range where flow changes of 10l/h hardly make any difference.

In our new assembly Argon® Stabiflow, which is part of the new system Krypton® Des, the flow rate is kept constant at 30 l/h as long as the inlet flow rate does not drop below 35 l/h.



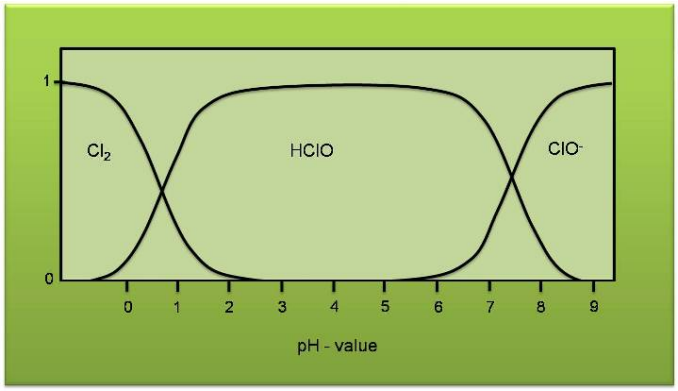
DR. A. KUNTZE | GUTES WASSER MIT SYSTEM
info@abmoli.com
WWW.ABMOLI.COM
Hanagar 3 Kfar saba הנגר 3 כפר סבא
P.O.B 1397 ת.ד.
Tel 09-7434264 טל.
Fax 09-7440681 פקס

Influence of the conductivity
The potentiostatic disinfectant measurement is an electrochemical measurement, it requires a minimum conductivity to ensure a closed electrical circuit. In deionized water a complete breakdown of the measured signal is possible, discernible as extreme fluctuations of the measured values. However above approx. 150microS/cm the conductivity influence has vanished.

Influence of the temperature
With increasing temperature, the signal gets stronger. However, the temperature influence is moderate. During test measurements with concentrations of 0.3mg/l, a sensor with a signal output of 25mV/0,1mg showed a temperature dependency of 0.004mg/l per degree Celsius. For most applications, such temperature influence is irrelevant. Anyway in all our measuring systems provide automatic temperature compensation.

Influence of the pH-value on the measurement of...

... free Chlorine
The expression „free Chlorine“ represents Chlorine dissolved in water, and that covers three different Chlorine compounds that form depending on pH: Chlorine as Cl2 gas can only be found in acidic solutions. With increasing pH Chlorine reacts with water to form Hypochloric acid - HOCl. At pH 2 and higher almost all Cl2 has reacted to HOCl.



At approx. pH 6, neutralisation starts, and the Hypochloric acid is transformed into Hypochlorite ion - ClO-. At pH 9 and higher almost all Hypochloric acid has turned into Hypochlorite salt. Our Chlorine measurement measures only hypochloric acid.
The influence is strongest between pH 7 and 8. In this pH range, even small pH changes will strongly change the signal strength. To avoid such deviations, pH must either be kept constant, or measured simultaneously and the measurement used for compensation. If pH is kept constant, the influence is compensated during calibration. It shows only in a slope higher or lower than the ideal value. If not, the Chlorine instrument must offer pH measurement as well.
However, compensation is only possible as long as there is still a noticeable signal. So, even with compensation, the pH range is limited. Above pH 8, only higher concentrations can be detected.

Hanagar 3 Kfar saba הנגר 3 כפר סבא
P.O.B 1397 ת.ד.
Tel 09-7434264 טל.
Fax 09-7440681 פקס
DR. A. KUNTZE | GUTES WASSER MIT SYSTEM
info@abmoli.com
WWW.ABMOLI.COM

disinfectants
Things to know

Influence of the pH-value on the measurement of...

...Total Chlorine
Total Chlorine is the sum of free and organically bound Chlorine. Apart from Chlorine, hypochloric acid and hypochlorite, it covers various organic Chlorine compounds that may have formed in the reaction of Chlorine with organic pollutants.
The total Chlorine measurement is not as pH-sensitive as the free Chlorine measurement and can be used over a broad pH range (pH 4..12). The measurement includes a chemical oxidation of Iodide in a defined environment to ensure simultaneous detection of all Chlorine-containing substances. At the electrodes, the Iodine produced in the oxidation is reduced.

Hanagar 3 Kfar saba הנגר 3 כפר סבא
P.O.B 1397 ת.ד
Tel 09-7434264 טל.
Fax 09-7440681 פקס

… of Chlorine Dioxide, Ozone, Peroxide
In the range pH 6..9 the influence of pH changes on the measurement of Chlorine dioxide, Ozone, and Hydrogen peroxide, is negligible.

Do you want to measure Free Chlorine by unsteady pH-values

Select our Krypton K Multi with integrated automated sensor cleaning and take advantage of the automatic pH compensation, the pH controller priority function, and the log book that shows the calibration results.

Hanagar 3 Kfar saba הנגר 3 כפר סבא
P.O.B 1397 ת.ד.
Tel 09-7434264 טל.
Fax 09-7440681 פקס

ASR

Patented automatic sensor cleaning

- **Add-on for Kuntze disinfectant measurement**
- **No refill of chemical or physical agents**
- **Strongly reduced calibration demand**
- **Without manual cleaning**
- **www.automatische-sondenreinigung.de**

Description

The cleaning is carried out electrochemically by electrolysis of water: H2O --> 1/2 O2 + H2 The electrochemical cleaning acts threefold: The generated gases Hydrogen and Oxygen blast away even persistent coatings. Oxygen oxydises organic compounds, and Hydrogen reduces rust and Manganese oxide and likewise destroys organic coatings. The produced gas volumes are small and unused gas molecules recombine automatically to the water they stem from. The cleaning is activated in the menu of the measuring and control instrument. The starting time of cleaning can be defined by the user. The cleaning cycle lasts approx. 20 seconds. The measuring value is locked for five minutes, in the display, in the output signal, and also for the controller, to give the electrode time to polarize. The cleaning can be set from weekly to daily. ASR aims at keeping the sensor clean from the beginning. It was not meant to clean already coated sensors, since with those sensors the signals will be higher after cleaning, making a recalibration necessary.

Information

The ASR can only be used in combination with our sensors AuAu-600-OO-2-1-PG, PtPt-600-OO-2-1-PG and measuring and control instruments for Free Chlorine, Chlorine Dioxide, Ozone and Peroxide .

info@abmoli.com
WWW.ABMOLI.COM

DR. A. KUNTZE | GUTES WASSER MIT SYSTEM
הנגר 3 כפר סבא Hanagar 3 Kfar saba
ת.ד. 1397 P.O.B
טל. 09-7434264 Tel
פקס 09-7440681 Fax