

NEULOG SALINITY LOGGER SENSOR GUIDE



NeuLog salinity logger sensor NUL-228 Part# NL-2280

The NeuLog salinity sensor can be used for any science experiment which utilizes solutions with a saline (salt) component such as in the fields of Chemistry, Biology, Earth Science, Environmental Science, Biochemistry, Physics, etc.

The sensor comes pre-calibrated so you can start experimentation right out of the box using this guide.

Among hundreds of possible experiments that can be performed with the NUL-228 sensor are: Monitoring of ecological systems, chemical analysis and identification, environmental health testing, water quality testing, chemical properties, properties of electricity, etc.

The NeuLog salinity sensor's measurement units are:

- Percentage (%): The total saline percentage out of the whole sample
- Parts per million (ppm): The number of salt molecules per million molecules
- Milligrams per liter (mg/L): The total mass of dissolved salts per liter of volume.

Probe usage and care:

The probe has two flat electrodes with known surface areas and distance between them. A signal is supplied to the electrodes and by testing the signal behavior, the salinity of the solution is calculated.

General care:

- During measurements, make sure that the electrodes (in the shape of a circle with a dot inside) are covered with the liquid.
- Avoid touching the probe's flat surface, if possible.
- Never submerge the probe's or sensor's plastic body in any liquid.
- Gently rinse the electrodes with distilled water after each use and between samples to avoid damage and contamination.
- Handle and store with care to avoid damaging or chipping the electrodes.

Included with the sensor:

- NeuLog General Guide
- Salinity probe which is directly attached to the sensor's plastic body

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Sensor's specifications:

Range and operation modes	ADC resolution	Resolution	Max sample rate (S/sec)
0 to 6.4%	17 bit	0.0002%	100
0 to 64,000 mg/L		1 mg/L	
0 to 64,000 ppm		1 ppm	

Experiment Duration: 1 second to 31 days.

Sensor's features:

- Fully digital data
- Rugged plastic ergonomic case
- Push button switch for Start/Stop experiments in off line mode
- LED indicator of experiment status (blinks while collecting data)
- Pre-calibrated sensing equipment
- Salinity sensing electrodes located on the probe attached directly to the sensor's plastic body

Note: NeuLog products are intended for educational use.

Videos and experiment examples:

- Videos, literature and other probes can be found at www.NeuLog.com.
- In order to access the salinity sensor's page, choose "Products" on the main menu and then "Salinity logger sensor".
- In order to access the salinity sensor's experiments, choose "Example Labs":
 - Properties of Sea water and Fresh water (E-1)

Technical background:

The philosophy behind NeuLog's plug and play technology is based on each sensor's ability to store its own data due to an internal flash memory chip and micro-controller in each plastic NeuLog body. This technology allows the sensor to collect and then store the digital data in the correct scientific units ($^{\circ}\text{C}$, $^{\circ}\text{F}$, Lux, %, ppm, for example).

The sensor is pre-calibrated at the factory. The built-in software in the logger can be upgraded for free at any time using the provided firmware update.

On the salinity probe, there are two electrodes of known surface area with a known distance between them; this allows for the sensor to determine the salinity of solutions.

An electrical potential difference is applied to the electrodes located on the salinity probe to generate a current through the solution. If ions are present, the current flows between the electrodes. Current flows through solutions via ion transport therefore; the higher number of ions present in a solution the easier an electrical current can flow so a higher salinity value is measured.

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The electrodes alternate polarities to prevent a total ion migration to either pole which could cause polarization and electrolysis.

Maintenance and storage:

- Never submerge the NeuLog plastic body in any liquid.
- Do not allow liquid into either the sensor's or probe's plastic body.
- After using the probe, rinse it with distilled water and then blot or let air dry.
- Store in a box at room temperature out of direct sunlight.
- Temperature working range is 0°C - 80 °C.
Temperature compensation range (where temperature does not affect the reading) is 0°C - 50 °C.
- Never place the probe in viscous heavy oils, glycerin, ethylene glycol, acetone or organic solvents such as pentane or hexane.

Warranty:

We promise to deliver our sensor free of defects in materials and workmanship. The warranty is for a period of 3 years from the date of purchase and does not cover damage of the product caused by improper use, abuse, or incorrect storage. Sensors with a shelf life such as ion selective probes have a warranty of 1 year. Should you need to act upon the warranty, please contact your distributor. Your sensor will be repaired or replaced.

Thank you for using NeuLog!

NeuLog

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