

HI 96822

## Digital Refractometer for Natural or Artificial Seawater Analysis

- **Dual-level LCD**  
The dual-level LCD displays measurement and temperature readings simultaneously
- **Automatic Temperature Compensation**  
For accurate measurements
- **Easy measurement**  
Place a few drops of the sample in the well and press the READ key
- **BEPS**  
(Battery Error Prevention System) alerts the user in the event that low battery power could adversely affect readings.
- **IP65 water protection**  
The HI 96822 is built to perform under the harsh field conditions associated with environments containing seawater.
- **Quick, accurate results**  
Readings are displayed in approximately 1.5 seconds.
- **Single point calibration**  
Calibrate with distilled or deionized water
- **Small sample size**  
Sample size can be as small as 2 metric drops.
- **Automatic shut-off**  
After three minutes of non-use
- **Stainless steel sample well**  
Easy to clean and corrosion resistant
- **ABS thermoplastic casing**



HANNA's HI 96822 Digital Refractometer is a rugged, portable, water resistant device that utilizes the measurement of the refractive index to determine the salinity of natural and artificial seawater, ocean water or brackish intermediates. The HI 96822 reflects HANNA's years of experience as a manufacturer of analytical instruments. This digital refractometer eliminates the uncertainty associated with mechanical refractometers and is durable and compact enough to be used at home, in the lab and out in the field.

The HI 96822 is an optical device that is quick and easy to use. After a simple user calibration with distilled or deionized water, a seawater sample can be introduced into the sample well.

Within seconds, the refractive index and temperature are measured and converted into one of 3 popular measurement units: Practical Salinity Units (PSU), salinity in parts per thousand (ppt), or specific gravity (S.G. (20/20)). All conversion algorithms are based upon respected scientific publications using the physical properties of seawater (not sodium chloride).

### The Importance of Salinity Measurement Throughout a Variety of Applications

Salinity is a critical measurement in many applications, such as aquaculture, environmental monitoring, aquariums, desalination plants, well water, and many more. Until now, the available technology to measure salinity has relied on mechanical instruments, such as hydrometers and ocular refractometers, or on high-tech conductivity meters. While easy to use, ocular refractometers can be difficult to get an accurate reading from and are highly susceptible to changes in temperature. Hydrometers, though inexpensive, are clumsy and inaccurate. Conductivity meters that convert to salinity can be cost-prohibitive.

The HANNA HI 96822 is the solution to all these issues. It is lightweight, easy to use, cost-efficient, and is extremely accurate. With the ability to read in all the three of the most widely used salinity units (PSU, ppt, and specific gravity), it is the ideal instrument for any application.

## Easy Operation

### Start-up screens

When the HI 96821 is turned on, test screens then the percentage of battery life remaining is shown on the LCD followed by the ready status.

### Unit selection

Just press the RANGE key to cycle through the HI 96822's units of measurement. PSU, ppt, specific gravity (20/20).

Temperature selection can also be easily changed.

### Calibration

Perform a quick and easy calibration after start-up:

1. Using a plastic pipette, completely cover the prism in the sample well with distilled or deionized water.
2. Press the ZERO key

### Measurement

Achieve fast, professional results:

1. Using a plastic pipette, drip sample onto the prism surface until the well is full.
2. Press the READ key and the results are display in the selected units.

## Some specific examples of the importance of salinity:

**Aquaculture:** Young salmon start their lives in fresh water. As they mature, they reach a stage ("smoltification") when the transition to salt water. When farming salmon, it is critically important to maintain proper salinity levels at each life stage to prevent unnecessary stress that could negatively affect growth and development.

Salinity is a vital parameter to monitor accurately when raising eggs and larval fish, optimizing juvenile and adult growth, and culturing live food such as rotifers and artemia.



**Aquariums:** Whether it is the world renowned, eight million gallon Georgia Aquarium, or a 20 gallon reef tank at home, salinity is a crucial parameter to measure. In closed systems such as these, salinity is easily affected. As water evaporates, it leaves the salt behind, raising the salinity. When evaporated water is replaced with fresh water, the salinity is lowered. The potential for disaster is inherent in both situations. Use HANNA's digital refractometer to accurately measure salinity will help prevent any mishaps.

**Environment:** Salinity is almost always a required measurement when doing any kind of environmental monitoring or pollution studies. Salinity has the ability to affect many processes, such as respiration, reproduction, and growth development. If monitoring for the effect of pollution, it is important to make sure a salinity variation is not having an additional influence.

**Well Water:** In coastal areas, the freshwater aquifer (or water table) is adjacent to salt water. This aquifer often supplies the drinking water for the local population. If too many wells are sunk, or too much water is drawn from the aquifer, the water table may sink so low that salt water incursion occurs and the water table has become contaminated.

## Making a standard sodium chloride solution

Sodium Chloride solutions can be used to check the accuracy of the meter. The table below lists several Sodium Chloride solutions and there expected ppt Seawater value.

To make a Standard NaCl Solution (g/100 g), follow the procedure for the HI 96821.

	g of NaCl	g of Water	Total Weight	Expected ppt Seawater Value
5% NaCl	5.00	95.00	100.00	48
10% NaCl	10.00	90.00	100.00	96
15% NaCl	15.00	85.00	100.00	145

SPECIFICATIONS		HI 96822
Range	PSU	0 to 50
	ppt	0 to 150
	Specific Gravity (20/20)	1.000 to 1.114
	Temperature	0 to 80°C (32 to 176°F)
Resolution	PSU	1
	ppt	1
	Specific Gravity (20/20)	0.001
Accuracy (@20°C/68°F)	Temperature	0.1°C (0.1°F)
	PSU	±2
	ppt	±2
	Specific Gravity (20/20)	±0.002
Temperature Compensation		±0.3°C (0.5°F)
Temperature Compensation	automatic between 10 and 40°C (50 to 104°F)	
Measurement Time	approximately 1.5 seconds	
Minimum Sample Volume	100 µL (to cover prism totally)	
Light Source	yellow LED	
Sample Cell	stainless steel ring and flint glass prism	
Auto-off	after three minutes of non-use	
Enclosure Rating	IP65	
Battery Type / Life	9V / approximately 5000 readings	
Dimensions	192 x 104 x 69 mm (7.6 x 4.1 x 2.7") / 420 g (14.8 oz.)	
Weight	420 g	

### ORDERING INFORMATION

HI 96822 is supplied with battery and instruction manual.