

## HI 981504

### pH, TDS, Temperature Monitor



#### WARRANTY

These instruments are guaranteed for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Probes are guaranteed for one year. This warranty is limited to repair or replacement free of charge. Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

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Dear Customer,

Thank you for choosing a Hanna product.

Please read carefully this instruction manual before using the meter. If you need additional technical information, do not hesitate to e-mail us at [tech@hannainst.com](mailto:tech@hannainst.com).

These instruments are in compliance with the CE directives.

#### PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- HI 1286 pH electrode
- HI 7634 TDS probe & temperature probe (fixed)
- pH 4 & pH 7 buffer sachets, 1 pc. each
- HI 70032 (1382 ppm) sachet for HI 981504/5 or HI 70442 (1500 ppm) sachet for HI 981504/7
- HI 700661 cleaning solution sachet, 2 pcs
- Screwdriver, 12 Vdc power adapter & instructions

**Note:** Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

#### GENERAL DESCRIPTION

HI 981504 has been designed for continuously and simultaneously monitoring pH, TDS and temperature.

Simply install the HI 981504 above the sample to be tested, plug the instrument to the mains and immerse the probes. pH, TDS and temperature measurements will be simultaneously displayed on three backlit LCDs.

The user can easily select the temperature unit (°C or °F) through a switch on the rear panel.

The HI 1286 gel-filled pH electrode is provided with a water-proof sheath to protect the BNC connector. The unique design of the electrode provides longer life even in aggressive solutions.

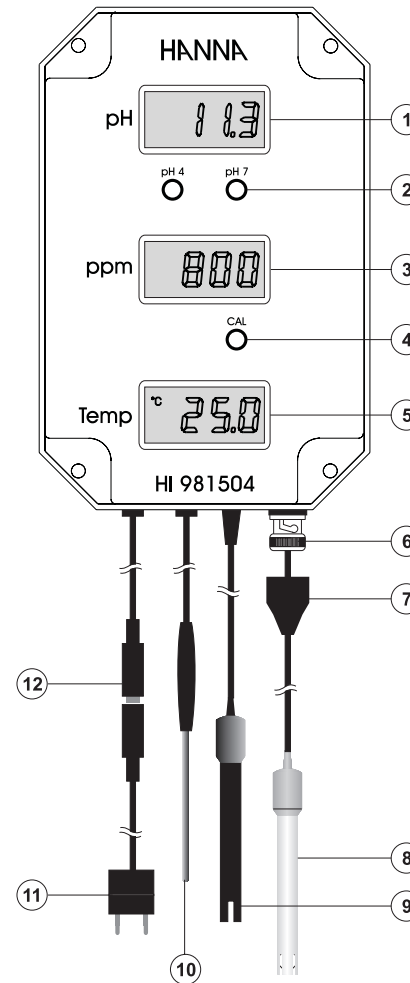
The HI 7634 TDS probe is easy to clean and requires little maintenance.

Measurements are accurate and the meter can be calibrated at one or two points for pH, and at a single point for TDS. Temperature range is factory calibrated.

Two models are available:

- HI 981504/5 with 0.5 TDS factor
- HI 981504/7 with 0.7 TDS factor

#### FUNCTIONAL DESCRIPTION



1. Backlit LCD for pH readings
2. pH calibration trimmers
3. Backlit LCD for TDS readings
4. TDS calibration trimmer
5. Backlit LCD for temperature readings
6. BNC connector (pH electrode)
7. Protective sheath for BNC connector
8. HI 1286 pH electrode
9. HI 7634 TDS probe (fixed)
10. Temperature probe (fixed)
11. 12 Vdc power adapter
12. Power supply connector

#### SPECIFICATIONS

Range	pH	0.0 to 14.0 pH
	TDS	0 to 1990 ppm
	Temperature	-10.0 to 60.0°C / -14.0 to 140.0°F
Resolution	pH	0.1 pH
	TDS	10 ppm
	Temperature	0.1°C / 0.1°F
Accuracy	pH	±0.2 pH
	TDS	±2% f.s.
	Temperature	±0.3°C / ±0.5°F
TDS Factor		0.5 (HI 981504/5) or 0.7 (HI 981504/7)
Calibration	pH	Manual, 2 point, through trimmers
	TDS	Manual, 1 point, through trimmer
	Temperature	Factory calibrated
Probes	pH	HI 1286 (included)
	TDS	HI 7634 (fixed)
	Temperature	Stainless steel, 2 m cable (fixed)
Temperature Compensation		Automatic, 5 to 50°C (41 to 122°F), for TDS readings only
Environment		0 to 50 °C (32 to 122°F); RH max 95%
Power Supply		12 Vdc power adapter (included)
Dimensions		160 x 110 x 35 mm (6.3x4.3x1.4")
Weight		560 g (1.2 lb.)

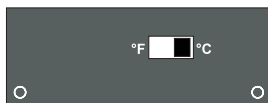
#### Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which it is used. Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment. The glass bulb at the end of the electrode is sensitive to electrostatic discharges. Avoid touching the bulb at all times. During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges. Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance. To avoid electrical shock, do not use this instrument when voltage at the measurement surface exceeds 24 Vac or 60 Vdc. To avoid damage or burns, do not perform any measurement in microwave ovens.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

## °C/°F SELECTION

- The user can easily select the temperature unit, in degrees Celsius (default) or Fahrenheit through a switch on the rear panel.
- Remove the label and set the switch to the desired position. Replace the label for better protection against humidity.



## pH ELECTRODE CONNECTION

In order to protect the instrument against vapors and humidity, the BNC connector is protected with a waterproof sheath.

- Slide the protective sheath down. Connect the pH electrode to the BNC socket and then slide the protective sheath back up. For maximum waterproof protection, make sure the connector is completely covered.
- Do not be alarmed if white crystals appear around the electrode protective cap. This is normal with pH electrodes and they dissolve when rinsed with water.



## pH CALIBRATION

Pour small quantities of pH 7 (HI 7007) and pH 4 (HI 7004) or pH 10 (HI 7010) buffer solutions into two clean beakers. For accurate calibration use two beakers for each buffer solution, the first one for rinsing the electrode tip, and the second one for calibration.

- Turn the meter on.
- Remove the electrode protective cap, rinse and immerse the electrode in the pH 7 buffer solution together with the TDS probe (working as matching pin). Stir gently and wait for the reading to stabilize.

**Note:** The electrode should be submerged approximately 4 cm (1½") in the solution.

- Adjust the "pH 7" trimmer with the supplied calibration screwdriver until the LCD shows pH "7.0".
- Rinse and immerse the pH electrode and the TDS probe in the pH 4 (or pH 10) buffer. Stir gently.
- Wait for a stable reading and then adjust the "pH 4" trimmer to read pH "4.0" (or pH "10.0").

The pH calibration is now complete.

## TDS CALIBRATION

- Turn the meter on.
  - Pour a small quantity of the proper calibration solution (HI 7032 for HI 981504/5 or HI 70442 for HI 981504/7) in a beaker. If possible, use plastic beakers to minimize any EMC interference.
  - Immerse the TDS probe in the solution, making sure that the metal pins are completely submerged.
- Note:** For best accuracy, the probe body should not touch nor stand close to the side walls of the beaker.
- Wait for a couple of minutes for thermal equilibrium to be reached and the temperature to be compensated.
  - Tap the probe gently on the bottom and shake it, to make sure no air bubbles have remained trapped inside.
  - Adjust the calibration trimmer with the supplied screwdriver until the display shows "1380" ppm (HI 981504/5) or "1500" ppm (HI 981504/7)

Calibration is now complete.

## TAKING MEASUREMENTS

- Turn the meter on by connecting the supplied 12 Vdc power adapter to the meter and then to the mains.
- Remove the protective cap from the pH electrode.
- Immerse the tips of pH electrode (at least 4cm/1½"), TDS and temperature probes into the solution to be tested. For best accuracy, the probes should not touch or stand close to the vessel's walls or bottom.
- The three backlit LCDs will show the pH, TDS and temperature values, respectively. Any initial variation in readings may be due to the pH electrode conditioning and to the temperature compensation of TDS measurements. Allow the readings to stabilize.



## pH ELECTRODE MAINTENANCE

- When not in use, rinse the electrode with water and store it with a few drops of HI 70300 storage solution in the protective cap. Always replace the protective cap after use. DO NOT USE DISTILLED OR DEIONIZED WATER FOR STORAGE PURPOSES.
- If the electrode has been left dry, soak the tip in HI 70300 storage solution overnight to reactivate it.
- To minimize clogging and provide longer life for the pH electrode, it is recommended to clean it at least once a week. Immerse the tip of the electrode in the HI 700661 cleaning solution supplied with the instrument, for half an hour and then rinse it with tap water.

## TDS PROBE MAINTENANCE

It is recommended to clean the probe at least once a month, by following this procedure:



- Immerse the tip of the probe in the HI 700661 cleaning solution supplied with the instrument, for half an hour.
- If a more thorough cleaning is required, brush the metal pins with very fine sandpaper.
- After cleaning, rinse the probe with tap water and recalibrate the instrument.

## ACCESSORIES

HI 1286	Double junction, plastic body pH electrode with 2 m (6.6') cable and BNC connector
HI 7634*	TDS probe with 2 m (6.6') cable
HI 70004P	pH 4.01 solution, 20 mL sachet (25 pcs)
HI 7004M	pH 4.01 solution, 230 mL bottle
HI 70007P	pH 7.01 solution, 20 mL sachet (25 pcs)
HI 7007M	pH 7.01 solution, 230 mL bottle
HI 70010P	pH 10.01 solution, 20 mL sachet (25 pcs)
HI 7010M	pH 10.01 solution, 230 mL bottle
HI 70032P	1382 ppm solution, 20 mL sachet (25 pcs)
HI 7032M	1382 ppm solution, 230 mL bottle
HI 70442P	1500 ppm solution, 20 mL sachet (25 pcs)
HI 70442M	1500 ppm solution, 230 mL bottle
HI 70300M	Storage solution, 230 mL bottle
HI 700661P	Cleaning solution, 20 mL sachet (25 pcs)
HI 7061M	Cleaning solution, 230 mL bottle
HI 710005	115 Vac / 12 Vdc power adapter
HI 710006	230 Vac / 12 Vdc power adapter
HI 731326	Calibration screwdriver (20 pcs)

\* To be replaced by authorized technical personnel only

## CE DECLARATION OF CONFORMITY

 <b>CE</b> DECLARATION OF CONFORMITY	
We Hanna Instruments Italia Srl viale delle Industrie, 12/A 35030 Ronchi di Villafranca - PD ITALY	
herewith certify that the pH/TDS/temperature monitors: <b>HI 981504/5 and HI 981504/7</b>	
have been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normative: <b>EN 61000-6-1</b> : Electromagnetic Compatibility - Generic Immunity Standard <b>IEC 61000-4-2</b> : Electrostatic Discharge <b>IEC 61000-4-3</b> : RF Radiated <b>IEC 61000-4-4</b> : Fast Transient <b>EN 61000-6-3</b> : Electromagnetic Compatibility - Generic Emission Standard <b>EN 55022</b> : Radiated, Class B	
<b>EN 61010-1</b> : Safety requirements for electrical equipment for measurement, control and laboratory use	
Date of Issue: 18.3.2005	 A. Marsilio - Technical Director On behalf of Hanna Instruments S.r.l.