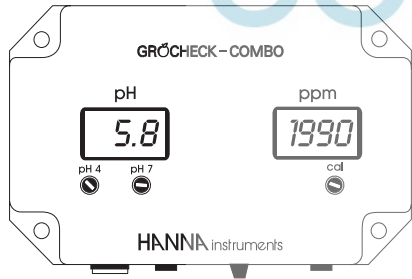


Instruction Manual

GRÖCHECK - COMBO

(HI 981404N and HI 981405N)

pH & TDS/EC Monitors



Dear Customer,
Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct operation of the meter. Please read it carefully before using the meter. If you need additional technical information, do not hesitate to e-mail us at 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.

The meter is supplied with:

- HI 1286 pH electrode
- HI 1283 grounding probe
- HI 7634 TDS probe (for HI 981404N)
- HI 7632 EC probe (for HI 981405N)
- Calibration screwdriver
- 12 VDC power adapter

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 981404N (pH and TDS) and HI 981405N (pH and EC) are specially designed to meet the needs of simple continuous monitoring.

You can simply install the meter above the sample to be tested for continuous measurement.

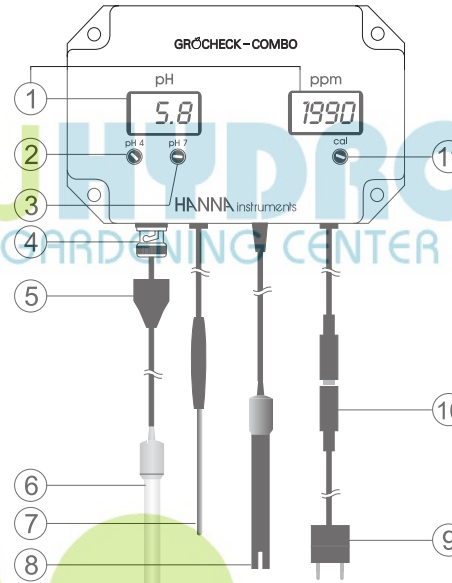
The HI 1286 gel-filled pH electrode is replaceable and the BNC connector is protected behind a waterproof sheath. The unique design of the electrode provides longer life in aggressive solutions.

The meter is equipped with two large LCDs which make easy to read measurements from distance at any time.

Measurements are accurate and the meter can be calibrated at one or two points for pH and at a single point for TDS and EC.

You no longer need to worry about battery changes either: the unit runs without interruption on 12 VDC supplied adapter.

FUNCTIONAL DESCRIPTION



1. Liquid Crystal Displays
2. pH 4.0/10.0 calibration trimmer
3. pH 7.0 calibration trimmer
4. BNC connector
5. Protective sheath
6. HI 1286 pH electrode
7. HI 1283 grounding probe
8. HI 7632 TDS probe or HI 7634 EC probe
9. 12 VDC power adapter
10. Power supply connector
11. EC/TDS calibration trimmer

SPECIFICATIONS

HI 981404 and HI 981405	
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@ 25°C/77°F)	±0.2 pH
Calibration	Manual at 1 or 2 points
Probes	HI 1286 replaceable pH electrode and HI 1283 grounding probe (included)
Power supply	External 12 VDC (adaptor included)
Dimensions	165 x 110 x 35 mm (6.5 x 4.3 x 1.4")
Weight	300 g (10.6 oz.)
HI 981404 only	
Range	0 to 1990 mg/L (ppm)
Resolution	10 mg/L (ppm)
Accuracy (@ 25°C/77°F)	±2% f.s.
TDS Factor	0.7 ppm = 1 µS/cm
Temp. Compensation	Automatic from 5 to 50°C (41 to 122°F, TDS only)
Calibration	Manual at 1 point
Probe	HI 7634 TDS probe (included)
HI 981405 only	
Range	0.00 to 9.99 mS/cm (EC)
Resolution	0.01 mS/cm (EC)
Accuracy (@ 25°C/77°F)	±2% f.s.
Temp. Compensation	Automatic from 5 to 50°C (41 to 122°F, EC only)
Calibration	Manual at 1 point
Probe	HI 7632 EC probe (included)

Recommendations for Users

Before using this product, make sure that it is entirely suitable for the environment in which it is used. Operation of this instrument 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 instrument's 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
 These Instruments are in Compliance with the CE Directives
<http://www.hannainst.com>

WARRANTY

HI 981404N and HI 981405N are warranted for one year against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. The probes are warranted for a period of six months. This warranty is limited to repair or replacement free of charge.

Damages due to accident, 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.

To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase.

All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner, Hanna Instruments Inc., Woonsocket, Rhode Island, 02895, USA.

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

OPERATIONAL GUIDE

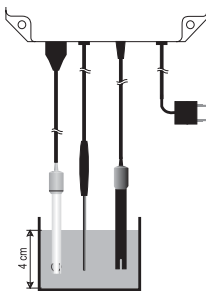
pH ELECTRODE CONNECTION

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

- Slide the protective sheath down. Connect the pH electrode to the BNC connector and then slide the protective sheath back up all the way up to the casing. 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.

TAKING MEASUREMENTS

- Turn the meter on by connecting the 12 VDC power adapter to the meter and the mains.
- Remove the protective cap from
- Immerse the tips (4cm/1½") of pH electrode, EC/TDS probe and grounding probe inside the sample. In order to ensure better accuracy of measurements, probes should not touch or stand close to the vessel's walls or bottom.
- The two LCDs will show the pH and EC (or TDS) values. Any initial variation in readings may be due to the pH electrode conditioning and EC/TDS temperature compensation. Allow the readings to stabilize.



pH ELECTRODE MAINTENANCE

- When not in use, rinse the electrode with water to minimize contamination and store it with a few drops of storage (HI 70300) or pH7 (HI 7007) solution in the protective cap. Always replace the protective cap when not in use.
DO NOT USE DISTILLED OR DEIONIZED WATER FOR STORAGE PURPOSES.
- If the electrode has been left dry, soak the tip in a storage (HI 70300) or pH7 (HI 7007) 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 month. Immerse the tip of the electrode in HI 7061 cleaning solution for half an hour and then rinse it with tap water.

EC/TDS PROBE MAINTENANCE

The following cleaning procedure is recommended at least once a month:

- Immerse the tip of the electrode in HI 7061 Cleaning Solution 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.

CALIBRATION

The instrument must be recalibrated whenever:

- a) After cleaning or replacing the probe.
- b) Where high accuracy is required.
- c) At least once a month

pH CALIBRATION

Pour small quantities of pH 7.0 (HI 7007) and pH 4.0 (HI 7004) solution into two clean beakers.

For accurate calibration use two beakers for each buffer solution, the first one for rinsing the tip of the electrode and the second one for calibration.

- Turn the meter on.
- Remove the protective cap from the electrode, rinse and immerse it in a pH 7.0 buffer solution. Stir gently and wait for the reading to stabilize.

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

- Adjust the right hand trimmer (pH 7) with the calibration screwdriver until the LCD shows pH 7.0.
- Rinse and immerse the pH electrode in pH 4.0 buffer and stir gently.
- Wait a couple of minutes and then adjust the left hand trimmer (pH 4) until the LCD shows the value of the second buffer.

The pH calibration is now complete.

EC/TDS CALIBRATION

- Turn the meter on.
- Pour a small quantity of the proper calibration solution in a beaker (HI 70031 for HI 981405N and HI 70442 for HI 981404N). If possible, use plastic beakers to minimize any EMC interference.

- Immerse the EC/TDS probe in the solution, making sure that the metal pins are completely submerged.

Note: in order not to affect the accuracy of measurements, it is important that probe body does 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, then shake it while rotating to make sure no air bubbles have remained trapped.
- Adjust the calibration trimmer with a screwdriver until the display shows 1.41 mS/cm (HI 981405N) or 1500 ppm (HI 981404N).

Calibration is now complete.

CE DECLARATION OF CONFORMITY

HANNA
instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E. Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the meters:

HI 981404N and HI 981405N

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:

EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated
IEC 801-4 Fast Transient

EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

Date of Issue: 02.08.2000

A. Marsilio
A. Marsilio - Technical Director
On behalf of
Hanna Instruments S.r.l.

ACCESSORIES

- HI 1286 Double junction, plastic body pH electrode with 2 m (6.6') cable and BNC connector
- HI 1283* Stainless steel grounding probe with 2 m (6.6') cable
- HI 70004P pH 4.01 solution, 20 mL sachet (25 pcs)
- HI 70007P pH 7.01 solution, 20 mL sachet (25 pcs)
- HI 70031P 1.41 EC (mS) solution, 20 mL sachet (25 pcs)
- HI 70442P 1500 ppm solution, 20 mL sachet (25 pcs)
- HI 7004M pH 4.01 solution, 230 mL bottle
- HI 7007M pH 7.01 solution, 230 mL bottle
- HI 7031M 1.41 EC (mS/cm) solution, 230 mL bottle
- HI 70442M 1500 ppm solution, 230 mL bottle
- HI 7061M Electrode cleaning solution, 230 mL bottle
- HI 710005 12 VDC power adapter, US plug
- HI 710006 12 VDC power adapter, European plug
- HI 710012 12 VDC power adapter, Australian plug
- HI 710013 12 VDC power adapter, Southern Africa plug
- HI 710014 12 VDC power adapter, UK plug

* To be replaced only by authorized service technicians