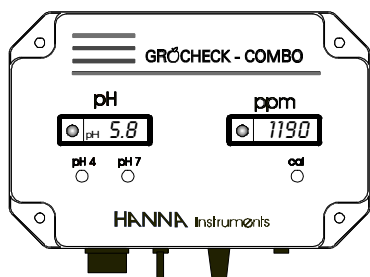


Instruction Manual

GRÖCHECK - COMBO

(HI 981404, HI 981405)

pH & TDS/EC Monitors with Visual Alarm



WARRANTY

HI 981404 and HI 981405 are warranted for two years 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 one year. 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.

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

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 techserv@hannacan.com.

These instruments are in compliance with the CE directives EN 50081-1 and EN 50082-1.

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 (HI 981404)
- HI 7632 EC probe (HI 981405)
- 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 981404 (pH and TDS) and HI 981405 (pH and EC) are specially designed to meet the needs of simple continuous monitoring.

The housing has an IP54 rating.

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

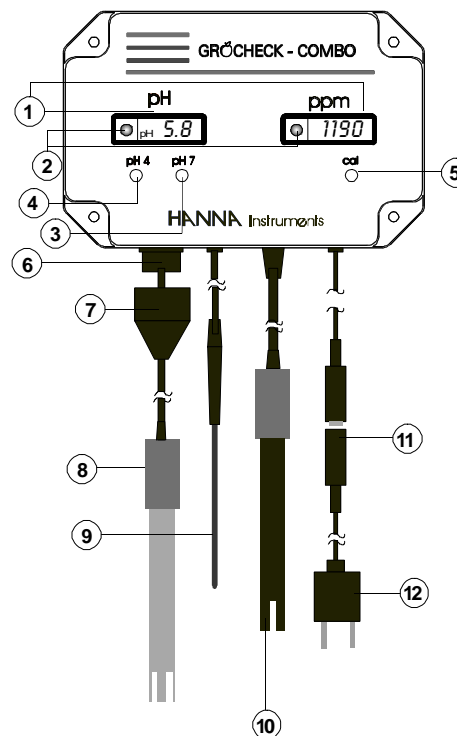
The HI 1286 gel-filled pH electrode is replaceable and the BNC connector is protected behind a waterproof sheath. The unique design of the electrode provides longer life in aggressive solutions.

You can select your own setpoint and be informed when a dosage is required by a flashing LED alarm.

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. Alarm LED for pH and PPM / EC
3. pH 7.0 calibration trimmer
4. pH 4.0/10.0 calibration trimmer
5. EC / TDS calibration trimmer
6. BNC connector
7. Protective sheath
8. HI 1286
9. HI 1283 - Grounding probe
10. HI 7632 / HI 7634
11. Power supply connector
12. 12 VDC power adapter

SPECIFICATIONS

HI 981404 / HI 981405

Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@ 25°C/77°F)	±0.2 pH
Setpoint	3.0 to 7.0 pH
Alarm	LED blinks when pH is higher than setpoint
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 5 to 50° C (41 to 122° F, TDS only)
Setpoint	500 to 1600 mg/L (ppm)
Alarm	LED blinks when TDS is lower than setpoint
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 5 to 50° C (41 to 122° F, EC only)
Setpoint	1.00 to 3.50 mS/cm (EC)
Alarm	LED blinks when EC is lower than setpoint
Calibration	Manual at 1 point
Probe	HI 7632 EC probe (included)

OPERATIONAL GUIDE

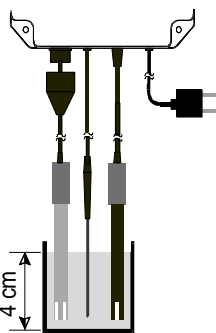
pH ELECTRODE CONNECTION

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 the pH electrode.
- Immerse the tips (4cm/1½") of pH electrode, EC/TDS probe and ground probe inside the sample. In order to ensure accuracy of measurements, probes should not touch or stand close to the sample vessel's walls or bottom.
- The 2 LCD's will show the pH and EC/TDS value. Any initial measuring variation maybe due to pH electrode conditioning and EC/TDS temperature compensation. Allow the readings to stabilize.

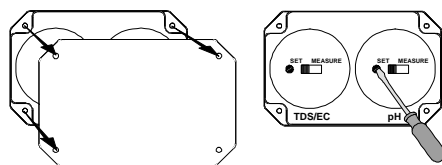


ADJUSTING THE SETPOINT

With HI 981404 and HI 981405 you can select your own setpoint and be alerted with the pH or EC/TDS LED alarm when an abnormal situation arises.

- Unscrew and remove the rear panel and gasket seal to access the MEASURE/SET switch and move it to the left (SET).
- With a small screwdriver adjust the setpoint trimmer to display the desired value on the LCD. You can choose to adjust one or both setpoints at once inside the following ranges:

pH: from 3.0 to 7.0
EC: from 1.00 to 3.50 mS/cm
TDS: from 500 to 1600 ppm
pH LED blinks when measurement exceeds the setpoint.
TDS/EC LED blinks when measurement falls below the setpoint.



- Move the switch to MEASURE mode and secure back the rear panel properly replacing the gasket.

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 pH 7 (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 pH 7 (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 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:

- After cleaning or replacing the probe.
- Where high accuracy is required.
- 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 and make sure that the MEASURE/SET switch is on the MEASURE mode.
- Remove the protective cap from the electrode, rinse and immerse it in a pH 7.0 buffer. Stir gently and then 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 and make sure that the MEASURE/SET switch is on the MEASURE mode.
- Pour a small quantity of calibration solution* in a beaker. If possible, use plastic beakers to minimize any EMC interference.

* 1.41 mS/cm for HI 981405; 1500 ppm for HI 981404.

- 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 981405) or 1500 ppm (HI 981404).
- Calibration is now complete.

ACCESSORIES

HI 1286	Double junction, plastic body pH electrode with 2 m (6.6') cable and BNC connector
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 7004L	pH 4.01 solution, 460 mL bottle
HI 7007L	pH 7.01 solution, 460 mL bottle
HI 7031L	1.41 EC (mS/cm) solution, 460 mL bottle
HI 70442L	1500 ppm solution, 460 mL bottle
HI 7061L	Electrode cleaning solution, 460 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

CE DECLARATION OF CONFORMITY

HANNA Instruments

DECLARATION OF CONFORMITY

CE

HI981404 HI981405

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

herewith certify that the pH meters:

have been tested and found to be in compliance with the following regulations:

IEC 801-2	Electrostatic Discharge
IEC 801-3	RF Radiated
IEC 801-4	Fast Transient
EN 55022	Radiated, Class B
EN 61010-1	User Safety Requirement

Date of Issue: 14-7-1998

Dr. Volpato - Engineering Manager
On behalf of
Hanna Instruments S.r.l.

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.