**Instruction Manual**

TDS GRO'CHEK & EC GRO'CHEK

**(HI 981409)** **(HI 981410)**

# TDS & EC Testers for Fertigation Solutions

HANNA instruments

www.hannainst.com

## WARRANTY

**These meters are warranted for one year** against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. **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.

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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 a correct operation. 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.

Each meter is supplied complete with:

- **HI 1220** conductivity probe with DIN connector
- calibration solution, 20 mL sachet (1500 ppm for **HI 981409**; 5.00 mS/cm for **HI 981410**)
- batteries (2 x 1.5 V AA), already installed

**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 981409** and **HI 981410** TDS and EC meters have been specially designed to address the needs of operators in hydroponics, greenhouses and nurseries.

The housing has been completely sealed against vapors and humidity. They also float so that they can be quickly retrieved if accidentally dropped in the tank.

The supplied **HI 1220** probe incorporates a fast responding temperature sensor and is made with a rugged body ideal for measurements in fertilizer mix. It measures 24 cm (9.4") and can even be used to mix the solution!

The DIN connector is protected against humidity and spills by a rubber sheath.

- Ideal for hydroponics and greenhouses
- Waterproof housing floats for quick retrieval
- Automatic calibration
- Auto shut-off for longer battery life
- Fertilizer mixer (long and rugged probe)

## FUNCTIONAL DESCRIPTION

1. Molded eye
2. Liquid Crystal Display
3. ON/OFF button, to switch the meter ON and OFF, and to enter the calibration mode
4. DIN connector
5. Protective sheath
6. **HI 1220** replaceable conductivity probe
7. Air-vent hole

## SPECIFICATIONS

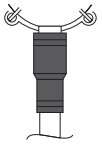
| TDS GRO'CHEK – HI 981409 | |
|---|---|
| **Range** | 0 to 1999 mg/L (ppm) |
| **Resolution** | 1 mg/L (ppm) |
| **Accuracy (@20°C/68°F)** | ±2% f.s. |
| **Typical EMC Deviation** | ±2% f.s. |
| **Temperature Compensation** | Automatic, 5 to 50°C (41 to 122°F), with β=2%/°C |
| **Calibration** | Automatic at 1500 ppm |
| **Probe** | **HI 1220** replaceable EC/TDS probe, 240 mm (9.4") long, with DIN connector (included) |
| **Battery Type / Life** | 2 x 1.5V AA / approx. 300 hours of use; auto-off after 5 minutes of non-use |
| **Dimensions** (meter only) | 86 x 94 x 33 mm (3.4 x 3.7 x 1.3") |
| **Weight** | 150 g (5.3 oz.) |

| EC GRO'CHEK – HI 981410 | |
|---|---|
| **Range** | 0.00 to 10.00 mS/cm |
| **Resolution** | 0.01 mS/cm |
| **Accuracy (@20°C/68°F)** | ±2% f.s. |
| **Typical EMC Deviation** | ±2% f.s. |
| **Temperature Compensation** | Automatic, 5 to 50°C (41 to 122°F), with β=2%/°C |
| **Calibration** | Automatic at 5.00 mS/cm |
| **Probe** | **HI 1220** replaceable EC/TDS probe, 240 mm (9.4") long, with DIN connector (included) |
| **Battery Type / Life** | 2 x 1.5V AA / approx. 300 hours of use; auto-off after 5 minutes of non-use |
| **Dimensions** (meter only) | 86 x 94 x 33 mm (3.4 x 3.7 x 1.3") |
| **Weight** | 150 g (5.3 oz.) |

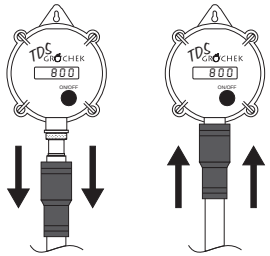
# OPERATIONAL GUIDE

## PROBE CONNECTION & MAINTENANCE

In order to protect the DIN connector against vapors and humidity, the meter is provided with a waterproof sheath.



- Slide the protective sheath down, connect the **HI 1220** probe to the DIN connector and then slide the protective sheath back up. To ensure maximum protection, make sure the connector is completely covered.




- If the meter is not used for a long time, it is recommended to clean the internal sensitive pins with alcohol. Immerse the tip of the probe up to the air-vent hole in alcohol for a few minutes.
- After use, clean the probe with tap water and dry it.
- After prolonged use, clean the probe by immersing it in **HI 7061** cleaning solution for 30 minutes.

## TAKING MEASUREMENTS

- Turn the meter on.
- Immerse the tip (5 cm/2") of the probe in the sample.

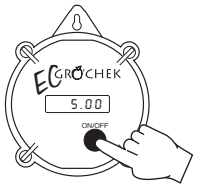
**Note:** For better accuracy, allow the reading to stabilize. Any initial variation may be due to temperature compensation and the fact that the probe is adjusting itself to the new sample.

# CALIBRATION

For better accuracy, a frequent calibration is recommended.

Moreover, the instrument should be recalibrated at least once a month, after cleaning the probe or replacing the batteries.

- Turn the meter on.
- Press and hold the ON/OFF button for approx. 3 seconds. The display will start blinking "1500 ppm" for **HI 981409** and "5.00 ms" for **HI 981410** to indicate that the calibration mode has been entered.




- Immerse the probe in the proper calibration solution: use **HI 70442** (1500 ppm) for **HI 981409**, or **HI 70039** (5.00 mS/cm) for **HI 981410**.
- Stir gently and wait for approximately 20 seconds for the meter to perform the automatic calibration.

**Note:** The probe should be submerged approximately 5 cm (2") in the solution.

- Once the display stops blinking, the instrument is calibrated and ready to use.

# ERROR CODES

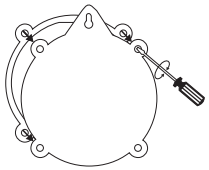
| | |
|---|---|
| Ec | Error in calibration, wrong buffer solution or probe requiring cleaning or replacing. |
| --- | Over range |
| Eb | Low battery indication |

# BATTERY REPLACEMENT

When the batteries are weak, EC and TDS GRÖCHEK will display the warning symbol "Eb".

To replace the batteries, remove the rear panel and replace both batteries, while paying attention to their polarity.

Batteries should only be replaced in a safe area and using 1.5V AA alkaline batteries.



**Note**: Once the batteries have been replaced, turn the meter OFF and then ON again. Wait for 30 seconds to allow the meter to complete the selftest before performing a new calibration.

# ACCESSORIES

| | |
|---|---|
| **HI 1220** | Spare probe for HI 981409 and HI 981410, 240 mm (9.4") long, with DIN connector and built-in temperature sensor |
| **HI 70039P** | 5.00 mS/cm calibration solution, 20 mL sachet (25 pcs) |
| **HI 70442P** | 1500 ppm calibration solution, 20 mL sachet (25 pcs) |
| **HI 7039M** | 5.00 mS/cm calibration solution, 230 mL bottle |
| **HI 70442M** | 1500 ppm calibration solution, 230 mL bottle |
| **HI 7061M** | Probe cleaning solution, 230 mL bottle |

# CE DECLARATION OF CONFORMITY

HANNA instruments

CE

***DECLARATION OF CONFORMITY***

We

Hanna Instruments Srl
Via E.Fermi, 10
35030 Sarmeola di Rubano (PD)
ITALY

herewith certify that the EC / TDS meter

**HI 981409 HI 981410**

has 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** | Electrical Safety |

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D.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 instruments in residential areas could cause unacceptable interference to radio and TV equipment.

The metal band at the end of the probe is sensitive to electrostatic discharges. Avoid touching this metal band at all times. During operation, ESD wrist straps should be worn to avoid possible damage to the probe 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 exceed 24 Vac or 60 Vdc.

Use plastic beakers to minimize any EMC interferences.

To avoid damage or burn, do not perform any measurement in microwave ovens.