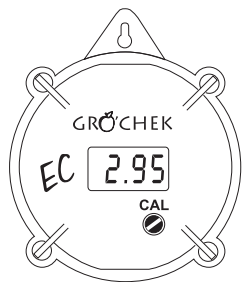


Instruction Manual

EC GRÖCHEK & TDS GRÖCHEK
 HI 983302N HI 983301N
 HI 983301N/5

**On-line, Waterproof
 EC-TDS meter with large LCD**



HANNA
 instruments

<http://www.hannainst.com>



These Instruments are in
 Compliance with the CE Directives

WARRANTY

EC and TDS GRÖCHEK 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.

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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.

The meters are supplied with:

- HI 7632 EC probe (HI 983302N);
- HI 7634 TDS probe (HI 983301N and HI 983301N/5);
- 1413 $\mu\text{S}/\text{cm}$ calibration solution (20 mL) for HI 983302N;
- 1500 ppm calibration solution (20 mL) for HI 983301N;
- 1382 ppm calibration solution (20 mL) for HI 983301N/5;
- 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

EC and TDS GRÖCHEK are instruments specially designed to meet the needs of growers in greenhouses hydroponic applications. They are equipped with a large Liquid Crystal Display for an easy reading also from distance.

You can simply hang the meter right above the sample to be tested for continuous measurement and the unit will run without interruption on 12 VDC power supply.

The housing has been completely sealed against vapors and humidity.

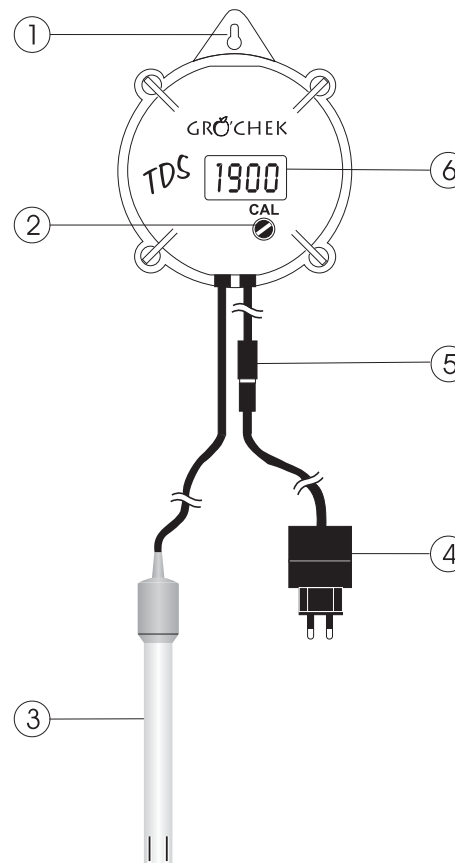
The meters are supplied with a probe that automatically compensates for the temperature variation. The probe is easy to clean and requires little maintenance.

Measurements are highly accurate and the meters can be calibrated at one point.

In addition, the two TDS GRÖCHEK use a specially devised formula which perfectly reflects the needs of growers. In fact, the common method of measuring Total Dissolved Solids by multiplying the conductivity by a converting value is far off the mark in horticulture with high concentrations of phosphate, nitrogen, etc.

In the HI 983301N model the TDS factor is 0.7 while in the HI 983301N/5 is 0.5.

FUNCTIONAL DESCRIPTION



1. Molded eye
2. Calibration trimmer
3. EC or TDS probe
4. 12 VDC power adapter
5. Power supply connector
6. Liquid Crystal Display (LCD)

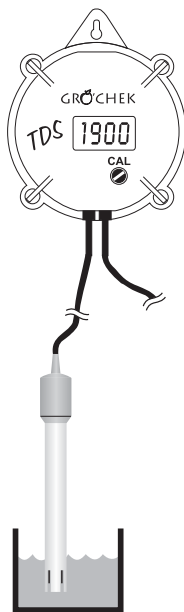
SPECIFICATIONS

EC GRÖCHEK – HI 983302N	
Range	0.00 to 9.99 mS/cm (EC)
Resolution	0.01 mS/cm (EC)
Accuracy (@ 25°C/77°F)	±2% f.s.
Typical EMC Deviation	±2% f.s.
Temp. Compensation	Automatic 5 to 50°C (41 to 122°F)
Calibration	Manual with one trimmer
Probe	HI 7632 EC probe (included)
Casing	IP54
Power supply	External 12 VDC (included)
Dimensions	86 x 94 x 33 mm (3.4 x 3.7 x 1.3")
Weight	150 g (5.3 oz)
TDS GRÖCHEK – HI 983301N and HI 983301N/5	
Range	0 to 1990 mg/L (ppm)
Resolution	10 mg/L (ppm)
Accuracy (@ 25°C/77°F)	±2% f.s.
Typical EMC Deviation	±2% f.s.
TDS Factor	HI 983301N 0.7 HI 983301N/5 0.5
Temp. Compensation	Automatic 5 to 50°C (41 to 122°F)
Calibration	Manual with one trimmer
Probe	HI 7634 TDS probe (included)
Casing	IP54
Power supply	External 12 VDC (included)
Dimensions	86 x 94 x 33 mm (3.4 x 3.7 x 1.3")
Weight	150 g (5.3 oz)

OPERATIONAL GUIDE

TAKING MEASUREMENTS

- Turn the meter on by connecting the 12 VDC power adapter to the meter and to the mains.
- Immerse the tip (4 cm - 1½") of the EC or TDS probe in the sample.



Note: in order not to affect the accuracy of measurements, it is important that the probe body does not touch nor stand close to the side walls of the vessel. The tip may lay on the bottom of the beaker.

- The LCD will show the EC or TDS value. Any initial variation of reading may be due to temperature compensation and to the fact that the probe is adjusting itself to the new sample. Allow the reading to stabilize and the meter will start continuous monitoring.

PROBE MAINTENANCE

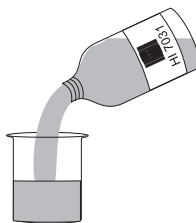
To minimize clogging and provide longer life for the probe, it is recommended to clean it often or at least once a month.

- Immerse the tip of the probe in **HI 7061** cleaning solution for one hour or clean it with detergents used to wash irrigation pipelines and fertilizer vessels.
- If a more thorough cleaning is required, brush the metal pins with very fine sandpaper.
- After cleaning or before storing the probe, rinse it with tap water.

CALIBRATION

For the greatest accuracy, frequent calibration of the instrument is recommended.

- Pour a small quantity of the indicated calibration solution in a beaker: 1413 $\mu\text{S}/\text{cm}$ for **HI 983302N**, 1500 ppm for **HI 983301N** or 1382 ppm for **HI 983301N/5**.



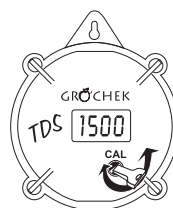
If possible, use plastic beakers to minimize any EMC interference.

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



Note: the probe should be submerged approximately 4 cm (1½") in the solution and it does not touch nor stand close to the side walls of the beaker. The tip can lay on the bottom of the beaker.

- Wait for a couple of minutes for thermal equilibrium to be reached.
- 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 the supplied screwdriver until the display shows 1.41 (mS) for **HI 983302N**, 1500 (ppm) for **HI 983301N** or 1380 (ppm) for **HI 983301N/5**.



- The calibration is now complete and the instrument is ready for use.

The meters should be recalibrated at least once a month and after performing probe cleaning procedure.

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential areas could cause unacceptable interferences 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 these instruments when voltages at the measurement surface exceed 24 VAC or 60 VDC.

Use plastic beakers to minimize any EMC interferences.

To avoid damages or burns, do not perform any measurement in microwave ovens.

ACCESSORIES

- HI 7632 *** EC probe with Automatic Temperature Compensation and 2m (6.6") cable
- HI 7634 *** TDS probe with Automatic Temperature Compensation and 2m (6.6") cable
- HI 70031P** 1413 $\mu\text{S}/\text{cm}$ (EC) calibration solution, 20 mL sachet (25 pcs)
- HI 70442P** 1500 ppm (TDS) calibration solution, 20 mL sachet (25 pcs)
- HI 70032P** 1382 ppm (TDS) calibration solution, 20 mL sachet (25 pcs)
- HI 7031L** 1413 $\mu\text{S}/\text{cm}$ (EC) calibration solution, 460 mL bottle
- HI 70442L** 1500 ppm (TDS) calibration solution, 460 mL bottle
- HI 7032L** 1382 ppm (TDS) calibration 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

* To be replaced only by authorized service technicians

CE DECLARATION OF CONFORMITY

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DECLARATION OF CONFORMITY

We

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ITALY

herewith certify that the EC and TDS meters:

HI 983302N - HI 983301N - HI 983301N/5

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

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