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 techserv@hannacan.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 70031 1413 µS/cm calibration solution, for HI 993301;
- HI 70030 12.88 mS/cm calibration solution, for HI 993302;
- Hanna 12 VDC power adapter;
- Instruction manual.

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

FUNCTIONAL DESCRIPTION

EC/TDS GRÖCHEK is a combined EC/TDS/temperature meter specially designed to meet the needs of growers in greenhouses and hydroponic applications.

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

The EC/TDS/Temperature probe has been molded with pipe thread (1/2'' NPT), which allows the user to attach it to an in-line system.

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

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

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Instrument</th>
<th>HI 993301</th>
<th>HI 993302</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC/TDS Range</td>
<td>0 to 3999 µS/cm - 0 to 2000 ppm</td>
<td>0.00 to 20.00 mS/cm - 0.00 to 10.00 ppt</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 µS/cm - 1 ppm</td>
<td>0.01 mS/cm - 0.01 ppm</td>
</tr>
<tr>
<td>Accuracy (@ 20ºC/68ºF)</td>
<td>±2% f.s.</td>
<td>±2% f.s.</td>
</tr>
<tr>
<td>Typical EMC Deviation</td>
<td>±2.5% f.s.</td>
<td>±2.5% f.s.</td>
</tr>
</tbody>
</table>

Common specifications:
- Temperature Range: 0 to 60ºC (32 to 140ºF)
- Resolution: 0.1ºC or 0.1ºF
- Accuracy (@ 20ºC/68ºF): ±0.5 ºC or ±1ºF
- Typical EMC deviation: ±1 ºC or ±2 ºF
- Temp. Compensation: β = 0.0 to 2.4%/ºC
- TDS Conversion factor: 0.45 to 1.00 (CONV)
- Calibration: Automatic at 1 point
- Power supply: 12 VDC power adapter (included)
- Environment: 0 to 50ºC (32 to 122ºF); RH 95% non-condensing
- Dimensions (meter only): 160 x 105 x 31 mm (6.2 x 4.1 x 1.2’’)
- Weight (meter only): 190 g (6.7 oz.)
OPERATIONAL GUIDE

To turn the meter on
Connect the 12VDC adapter to the meter and to the mains; the display will lit. Press and hold the MODE button for 2-3 seconds. All the used segments on the LCD will be visible for a few seconds.

To change the temperature unit
To change the temperature unit (from °C to °F), from measurement mode, press and hold the MODE button until TEMP and the current temperature unit are displayed on the lower LCD. Eg. TEMP °C.

Use the SET/HOLD button to change the temperature unit, and then press MODE button twice to return to normal measurement mode.

To freeze the display
Press and hold the SET/HOLD button for 2-3 seconds until HOLD appears on the secondary display. Press either button to return to normal mode.

Taking measurements
Select either EC or TDS mode with the SET/HOLD button.

Immerse the probe in the solution to be tested. In order to ensure better accuracy, probe should not touch or stand close to the walls or bottom of the sample vessel.

The EC or TDS value automatically compensated for temperature is shown on the primary LCD while the secondary LCD shows the temperature of the sample.

The measurements should be taken when the stability symbol ( ) on the top left of the LCD disappears.

To change the EC/TDS conversion factor (CONV) and the temperature compensation coefficient β (BETA)

• From measurement mode, press and hold the MODE button until *TEMP and the current temperature unit are displayed on the lower LCD. Eg. *TEMP °C.

• Press the MODE button again to show the current conversion factor. Eg. 0.50 CONV.

• Press the SET/HOLD button to change the conversion factor.

• Press the MODE button to show the current temperature compensation coefficient β. Eg. 2.1 BETA.

• Press the SET/HOLD button to change the temperature compensation coefficient β.

• Press the MODE button to return to normal measuring mode.

To turn the meter off
Press the MODE button while in normal measurement mode. OFF will appear on the lower part of the display. Release the button. The display still lit, until the power supply is connected.

Notes
• Before taking any measurement make sure the meter has been calibrated.

• To clear a previous calibration, press the MODE button after entering the calibration mode. The lower LCD will display ESC for 1 second and the meter will return to normal measurement mode. The CAL symbol on the LCD will disappear. The meter will be reset to the default calibration.

• If measurements are taken in different samples successively, rinse the probe thoroughly to eliminate cross-contamination; and after cleaning, rinse the probe with some of the sample to be measured.

• From measurement mode, press and hold the MODE button until CAL is displayed on the lower LCD.

• Release the button and immerse the probe in the proper calibration solution: HI 70031 (1413 µS/cm) for HI 993301 and HI 70030 (12.88 mS/cm) for HI 993302.

• Once the calibration has been automatically performed, the LCD will display OK for 1 second and the meter will return to normal measurement mode.

• Since there is a known relationship between EC and TDS readings, it is not necessary to calibrate the meter in TDS mode.

Note: for storing calibration data in the non-volatile memory, turn the meter OFF and then ON again through the MODE button.

The CAL symbol on the LCD means that the meter is calibrated.

ACCESSORIES

HI 70300P 12.88 mS/cm @ 25°C cal. solution, 20 mL sachet (25 pcs)
HI 70031P 1413 µS/cm @ 25°C cal. solution, 20 mL sachet (25 pcs)
HI 70032P 1382 ppm @ 25°C cal. solution, 20 mL sachet (25 pcs)
HI 70033P 6.44 ppt @ 25°C cal. solution, 20 mL sachet (25 pcs)
HI 70442P 1500 ppm @ 25°C cal. solution, 20 mL sachet (25 pcs)
HI 7061M Electrode cleaning solution, 230 mL bottle
HI 70300M Electrode storage solution, 230 mL bottle
HI 710005 12VDC power adapter, US plug
HI 710006 12VDC power adapter, European plug
HI 710012 12VDC power adapter, Australian plug
HI 710013 12VDC power adapter, Southern Africa plug
HI 710014 12VDC power adapter, UK plug

HI 7061M Electrode cleaning solution, 230 mL bottle
HI 70300M Electrode storage solution, 230 mL bottle
HI 710005 12VDC power adapter, US plug
HI 710006 12VDC power adapter, European plug
HI 710012 12VDC power adapter, Australian plug
HI 710013 12VDC power adapter, Southern Africa plug
HI 710014 12VDC power adapter, UK plug