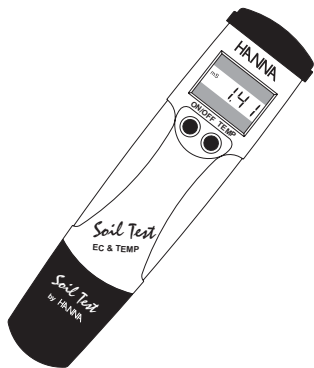


Instruction Manual

HI 98331

Direct Soil Conductivity & Temperature Meter



WARRANTY

HI 98331 is warranted for one year against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. **The probe is warranted for a period of six months.** This warranty is limited to repair or replacement free of charge.

Damage due to accidents, misuse, tampering or lack of prescribed maintenance is 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 packed for complete protection.

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.

This instrument is in compliance with 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 with:

- HI 73331 Penetration conductivity probe
- 4 x 1.5V batteries
- Calibration screwdriver

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

US DESIGN PATENT
D462,024

GENERAL DESCRIPTION

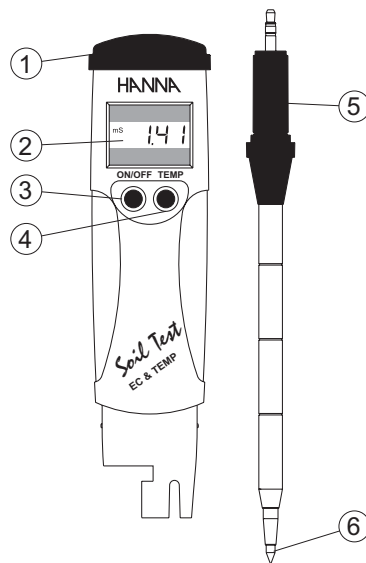
HI 98331 is a special pocket meter expressly designed to directly measure soil conductivity. The meter also measures temperature, and the conductivity readings are compensated for temperature with a sensor incorporated in the HI 73331 penetration probe.

The probe is interchangeable, and it can be easily replaced by the user.

The conductivity range can be calibrated at one point, and the meter has been designed to be calibrated in liquid.

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

FUNCTIONAL DESCRIPTION



1. Battery compartment
2. Liquid Crystal Display (LCD)
3. ON/OFF button
4. TEMP button
5. HI 73331 Direct soil conductivity penetration probe
6. Incorporated temperature sensor in tip of probe

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SPECIFICATIONS

| | |
|--------------------------|--|
| Range | Conductivity: 0.00 to 4.00 mS/cm (dS/m)* Temperature: 0.0 to 50.0 °C |
| Resolution | Conductivity: 0.01 mS/cm Temperature: 0.1 °C |
| Accuracy (@ 20 °C) | Conductivity: ±0.05 mS/cm (0.00 to 2.00 mS/cm) ±0.30 mS/cm (2.00 to 4.00 mS/cm) Temperature: ±1 °C |
| Temperature Compensation | Automatic, temperature coefficient (β) fixed @ 2%/°C |
| Calibration | 1 point manual |
| Battery Type | 4 x 1.5V button type |
| Probe (included) | HI 73331 122 mm (4.5") penetration |
| Environment | 0.0 to 50.0 °C |
| Dimensions | 163 x 40 x 26 mm (6.4 x 1.6 x 1.0") 150 mm for probe |
| Weight | 100 g (3.5 oz.) |

* The meter gives indicative readings with lower accuracy between 4mS/cm and 10 mS/cm.

OPERATIONAL GUIDE

Taking measurements

Connect the **HI 73331** probe. The meter requires the probe in order to do any measurement. Press the ON/OFF button to turn the meter ON. Place the probe to the desired depth and saturate the soil if needed. The conductivity value, automatically compensated for temperature, will be shown on the LCD. The meter displays conductivity in mS/cm, which is equivalent to dS/m.

Pressing the TEMP button, the temperature measured by the probe will be shown while the button is held.

Note: Before taking any measurement make sure the meter has been calibrated.

PROBE MAINTENANCE

The **HI 73331** probe is very easy to use. The only precaution to be taken is to clean the area surrounding the connector before removing the probe, in order to avoid dirtying the connector.

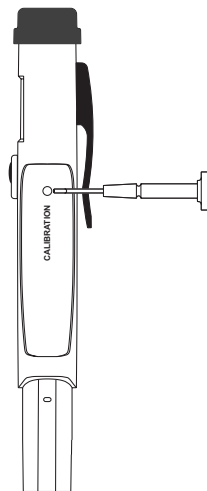
CALIBRATION

For better accuracy, frequent calibration of the instrument is recommended. In addition, the instrument must be recalibrated whenever:

- The conductivity probe is replaced.
- When high accuracy is required.
- At least once a month.

Calibration procedure

Immerse the tip of the probe in a beaker with **HI 70031P** 1413 $\mu\text{S/cm}$ solution. The tip of the probe should be about 2" deep in the liquid. The probe should be kept at least 1" from the walls and the bottom of the beaker. Adjust the trimmer to read 1.41 on the LCD.

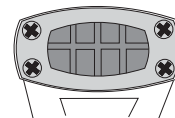


TROUBLESHOOTING

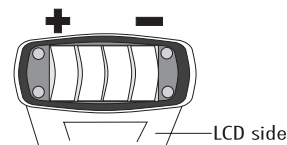
- Batteries must be changed whenever the readings are erratic, the LCD is dim, or the meter loses calibration.
- The meter cannot measure neither conductivity nor temperature without the **HI 73331** probe.

BATTERY REPLACEMENT

To change the batteries, remove the 4 screws located on the top of the meter.



Once the top has been removed, carefully replace the 4 batteries located in the compartment while paying attention to their polarity.



Replace the top, making sure that the gasket is properly seated in place, and tighten the screws to ensure a watertight seal.

ACCESSORIES

- HI 73331** Direct soil penetration conductivity probe
HI 7031M 1413 $\mu\text{S/cm}$ (1.4 mS/cm) @25°C calibration solution, 230 mL bottle
HI 7031L 1413 $\mu\text{S/cm}$ (1.4 mS/cm) @25°C calibration solution, 460 mL bottle
HI 731326 Calibration screwdriver, 20 pieces

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. Avoid touching the probes at all times. 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 voltages at the measurement surface exceed 24 VAC or 60 VDC. To avoid damages or burns, do not perform any measurement in microwave ovens.