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You can read the recommendations in the user guide, the technical guide or the installation guide for HANNA INSTRUMENTS HI 98360. You'll find the answers to all your questions on the HANNA INSTRUMENTS HI 98360 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual HANNA INSTRUMENTS HI 98360
User guide HANNA INSTRUMENTS HI 98360
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Instruction Manual

HI 98360

Autoranging & Logging
Portable Waterproof
Microprocessor
EC/TDS/NaCl/°C Meter



HANNA
instruments
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Manual abstract:

@@@@@If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com or turn to the back cover for our worldwide contact list. This instrument is in compliance with directives. WARRANTY HI 98360 is guaranteed for two years against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. Electrodes and probes are guaranteed for 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 instruments. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. 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 Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packed for complete protection. TABLE OF CONTENTS

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700 1.000 On, OFF On 1999 to 2098 1999 dd:mm 01:01 hh:mm 00:00 Notes: · Once enabled, the Auto Off time is fixed at 5 minutes. · When the battery level test is selected (Chr), LCD will display the remaining percentage of battery charge. 100% means fully charged battery and 0% corresponds to the minimum battery level that allows the meter to operate. The battery charge level calculation is based on a typical alkaline battery discharge curve. If the meter is connected to an external power adapter and "Chr" is selected, the LCD will display "LINE". · At startup, the main LCD shows briefly the reference temperature, while the secondary LCD shows "rEF". 8 TAKING MEASUREMENTS Press the ON/OFF key to turn the meter on. At startup the display will show the reference temperature value with "rEF" indication for a few seconds. Immerse the probe into the solution to be tested.

The sleeve holes must be completely submerged. Tap the probe repeatedly to remove any air bubbles that may be trapped inside the sleeve. If needed, press the RANGE key repeatedly until the desired range (EC, TDS, NaCl) is selected on the LCD. Allow for the reading to stabilize. @@@@ @@@@ @@@@ @@@@ @@@@ To reactivate the instrument press the ON/OFF key. @@@@ @@@@ Always set the reference temperature to 25°C when measuring TDS. @@@@ @@@@ "F1" symbol blinks on the LCD. To restore the autoranging option press ALT+FIXED again. @@@@ To enter the Auto Endpoint mode, press ALT+AutoEnd keys. @@@@ @@@@ Note: While in Auto Endpoint mode, calibration mode can not be entered and it is not allowed to change the temperature compenddot; The meter uses 1.

90%/°C compensation factor during calibration. @@@@ @@@@ @@@@ · Rinse the probe with some of the calibration solution or deionized water. Immerse the probe into HI 7037 solution. The sleeve holes must be completely submerged. Tap the probe repeatedly to remove any air bubbles that may be trapped inside the sleeve.

· The indications "STD" and "CAL" are displayed. The upper LCD shows the uncalibrated NaCl reading in percentage. The lower LCD shows "100". · When the " " symbol stops blinking, the reading is stable. The "CFM" indication starts blinking on the LCD asking for confirmation. · Press ALT+CFM to confirm the calibration. · If everything is satisfactory, the meter displays the "Stor Good" message and returns to measurement mode. Note: If the uncalibrated reading is too far from the expected value, the calibration is not recognized. The "CFM" indication does not appear; the " " and "STD" symbols blink to signal wrong or contaminated calibration solution. TEMPERATURE CALIBRATION (for technical personnel only) The calibration is a 2-point procedure at 0.0 and 50.0°C. · Immerse the probe in a 0°C temperature bath. · To enter temperature calibration mode, press and hold LOG+CAL, then turn the meter on. · The lower LCD displays "0.

0°C"; "STD" and "CAL" tags appear. · When the reading is stable, "CFM" symbol starts to blink. · Press ALT+CFM to confirm. The lower LCD displays 50.0°C. · Immerse the probe in a 50°C temperature bath. · When the reading is stable, "CFM" symbol starts to blink. · Press ALT+CFM to confirm and return to normal operation. 13 ADJUSTMENT TEMPERATURE ADJUSTMEN The temperature reading can be manually fine-tuned by following this procedure: To enter the temperature calibration mode, press and hold LOG+CAL, then turn the meter on. Press CAL to enter the temperature adjustment mode. The upper and lower LCD will display the current temperature reading. Adjust the temperature reading on the upper LCD using the arrow keys. The maximum adjustment is ±1°C around current reading. Press ALT+CFM to confirm. The meter returns to measurement mode and displays the new temperature.

Note: Press LOG+CAL to escape without any changes. 14 LOGGING FUNCTION To store the current reading in memory press the LOG key while in measurement mode. The LCD will display "Stor" along with the "LOG" indication and the sample number for a few seconds. By pressing the LOG key a complete set of information is memorized: date, time, EC/TDS/NaCl and temperature readings. Up to 250 samples can be stored into memory. When the memory is full and the LOG key is pressed, the sample will not be stored and the LCD will display "FULL". In this case it is necessary to delete some data from memory to proceed. TO VIEW LOGGED DATA To retrieve the memorized information press ALT+RCL. The meter displays the date (upper LCD) and the number (lower LCD) of the last logged sample. The "ZERO" indication will be displayed if no samples are stored in memory. · Select the desired sample number with the arrow keys. Pressing the key while the last sample is displayed causes the meter to go to the first sample. · Press RANGE to view remaining data of the selected sample. After the date information, the remaining data will be displayed in the following order: 15 Year Time EC, TDS, NaCl reading; "----" means reading out of range or no probe was connected. Temperature reading; "----" means reading out of range.

· It is always possible to skip to another sample using the up and down arrow keys. For example, if the reading of a sample is displayed, pressing the up arrow key will cause the meter to display the reading of the next sample. · It is possible to return to normal operational mode at any time by pressing ALT+RCL. TO DELETE LOGGED DATA It is possible to delete a single sample or all the memory at one time. To delete a single sample: · Enter the viewing logged data mode and select the desired sample number. · Press ALT+AutoEnd. The "CFM" indication starts blinking asking for confirmation. · Press the ALT+CFM to confirm deletion. Note: Press ALT+AutoEnd to escape without data deletion. When viewing through the logged data, the "NULL" message will be displayed when selecting a deleted sample.

16 To delete all logged data: · Enter the viewing logged data mode. · Press ALT+TC. The "CFM" indication will start blinking asking for confirmation. · Press ALT and CFM to confirm deletion. Note: Press ALT+TC to escape without data deletion.

Note: If no samples are stored in memory and a deletion is attempted, the meter will show the message "Zero" and then returns to normal operational mode.

17 DATA TRANSFER TO PC Connect the meter to a PC through the RS232C output (the connector is located on the top of the meter). Use HI 920011 (5 to 9-pin) connection cable. SPECIFICATIONS Isolated 8-bit data transmission Baud Rate: 2400 Start bit: 1 Stop bit: 1 Parity bit: none SENDING COMMANDS FROM PC It is possible to remotely control the instrument with any terminal programs.



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Connect the meter to the PC through the HI 920011 cable, start the terminal program and set the communication options as follows: 8, N, 1, no flow control. To send a command to the meter, follow the next scheme: <command> <CR> The computer sends the command expressed as a 3-character sequence and a CR character. Note: All the terminal programs that support the ANSI escape sequence, represent the CR character with the string ^M'. The available commands are the following: MOD - to request the firmware code of the meter. RPA - to request the setup parameters setting. LTB - to request the number of logged samples. LOD - to request the logged data. The meter answers with the following order: status byte date (ddmmyy) time (hhmm) measurement (binary) temperature reading (binary) At the end of the logged data the checksum (2 complement) is sent. Note: The meter will send <CAN> if a corrupted or unknown command is received. 18 BATTERY REPLACEMENT When the batteries are inserted and no power adapter is connected, the meter can recognize the following battery charge levels: · Low battery - the battery symbol is displayed on the LCD. @@@@ @@@@ Note: If the meter is not powered for several minutes (e.

g. in dead battery condition), the current date and time are lost. @@In order to replace run down batteries, simply remove the two screws on the rear cover of the instrument and replace the four 1.5V AA batteries with new ones, paying attention to the correct polarity. New batteries allow approx. 200 hours of continuous use (with 2700 mA/h batteries). A 12VDC power adapter can also be used. It is recommended to use the Hanna voltage adapters that use the proper polarity configuration. However, other adapters can be used. In this case, check the polarity of your adapter before connecting it to the meter. PROBE MAINTENANCE Rinse the probe with clean water after measurements. If a more thorough cleaning is required, remove the probe sleeve and clean the probe with a cloth or a nonabrasive detergent. Make sure to reinsert the sleeve onto the probe properly and in the right direction. After cleaning the probe, recalibrate the instrument. 19 CONDUCTIVITY VS.

TEMPERATURE CHART The conductivity of an aqueous solution is the measure of its ability to carry an electrical current by means of ionic motion. The conductivity invariably increases with increasing temperature. It is affected by the type and number of ions in the solution and by the viscosity of the solution itself. Both parameters are temperature dependent. The dependency of conductivity on temperature is expressed as a relative change per degree Celsius at a particular temperature, commonly as percent per °C. The following table lists the temperature dependence of HANNA EC calibration buffers. °C 0 5 10 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 °F 32 41 50 59 60.8 62.6 64.4 66.2 68 69.8 71.6 73.4 75.2 77 78.

8 80.6 82.4 84.2 86 87.8 HI7030 HI8030 (S/cm) 7150 8220 9330 10480 10720 10950 11190 11430 11670 11910 12150 12390 12640 12880 13130 13370 13620 13870 14120 14370 HI7031 HI8031 (S/cm) 776 896 1020 1147 1173 1199 1225 1251 1278 1305 1332 1359 1386 1413 1440 1467 1494 1521 1548 1575 HI7033 HI8033 (S/cm) 64 65 67 68 70 71 73 74 76 78 79 81 82 84 86 87 89 90 92 94 HI7034 HI8034 (S/cm) 48300 53500 59600 65400 67200 68500 69800 71300 72400 74000 75200 76500 78300 80000 81300 83000 84900 86300 88200 90000 HI7035 HI8035 (S/cm) 65400 74100 83200 92500 94400 96300 98200 100200 102100 104000 105900 107900 109800 111800 113800 115700 117700 119700 121800 123900 HI7039 HI8039 (S/cm) 2760 3180 3615 4063 4155 4245 4337 4429 4523 4617 4711 4805 4902 5000 5096 5190 5286 5383 5479 5575 20 ACCESSORIES CONDUCTIVITY CALIBRATION SOLUTIONS HI 70030P 12880 µS/cm solution, 20 mL sachet (25 pcs.) HI 7030L 12880 µS/cm solution, 500 mL bottle HI 7030M 12880 µS/cm solution, 230 mL bottle HI 70031P 1413 µS/cm solution, 20 mL sachet (25 pcs.) HI 7031L 1413 µS/cm solution, 500 mL bottle HI 7031M 1413 µS/cm solution, 230 mL bottle HI 70033P 84 µS/cm solution, 20 mL sachet (25 pcs.) HI 7033L 84 µS/cm solution, 500 mL bottle HI 7033M 84 µS/cm solution, 230 mL bottle HI 7034L 80000 µS/cm solution, 500 mL bottle HI 7034M 80000 µS/cm solution, 230 mL bottle HI 7035L 111800 µS/cm solution, 500 mL bottle HI 7035M 111800 µS/cm solution, 230 mL bottle HI 70039P 5000 µS/cm solution, 20 mL sachet (25 pcs.) HI 7039L 5000 µS/cm solution, 500 mL bottle HI 7039M 5000 µS/cm solution, 230 mL bottle HI 7037L 100% NaCl sea water standard solution, 500 mL bottle PROBE CLEANING SOLUTIONS HI 7061M General Cleaning Solution, 230 mL bottle HI 7061L General Cleaning Solution, 500 bottle 21 OTHER ACCESSORIES HI 76309/1.5 stainless steel 4-ring conductivity/TDS probe with temperature sensor and 1.

5 m cable. HI 710005 12VDC voltage adapter (US plug) HI 710006 12VDC voltage adapter (European plug) HI 710012 12VDC voltage adapter (UK plug) HI 710013 12VDC voltage adapter (S. Africa plug) HI 710014 12VDC voltage adapter (Australian plug) HI 740027 1.5V AA batteries (4 pcs) HI 740036 100 mL plastic beaker (6 pcs) HI 740034 Cap for 100 mL beakers (6 pcs) HI 76405 Electrode holder 22 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, requiring the operator to follow all necessary steps to correct interferences. The metal bands of the probe are sensitive to electrostatic discharges. Avoid touching these metal bands at all times. To maintain the EMC performance of this equipment the recommended cables must be used. 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 damage or burns, do not perform any measurement in microwave ovens. Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice. 23 SALES AND TECHNICAL SERVICE CONTACTS Australia: Tel. (03) 9769.0666 · Fax (03) 9769.0699 China: Tel. (10) 88570068 · Fax (10) 88570060 Egypt: Tel. & Fax (02) 2758.683 Germany: Tel. (07851) 9129-0 · Fax (07851) 9129-99 Greece: Tel.

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