



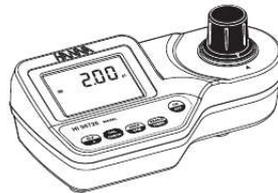
# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for HANNA INSTRUMENTS HI 96726. You'll find the answers to all your questions on the HANNA INSTRUMENTS HI 96726 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 96726**  
**User guide HANNA INSTRUMENTS HI 96726**  
**Operating instructions HANNA INSTRUMENTS HI 96726**  
**Instructions for use HANNA INSTRUMENTS HI 96726**  
**Instruction manual HANNA INSTRUMENTS HI 96726**

Instruction Manual

**HI 96726**  
**Nickel ISM**



**HANNA**  
instruments  
www.hanna-instruments.com



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**Manual abstract:**

*hannainst.com 1 Dear Customer, Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct use of the instrument. 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. TABLE OF CONTENTS PRELIMINARY EXAMINATION ....*

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*3 GENERAL DESCRIPTION .....*

.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....

*.. 4 ABBREVIATIONS .....*

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.... 4 SPECIFICATIONS .*

.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....  
.....  
.....

..... 5 PRECISION AND ACCURACY ....

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

..... 5 PRINCIPLE OF OPERATION ..

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..... 6 FUNCTIONAL DESCRIPTION .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..... 7 ERRORS AND WARNINGS ...

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

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..... @@@@ Make sure that the instrument is not damaged. If any damage occurred during shipment, please notify your Dealer. @@ Any defective item must be returned in its original packing. 3 GENERAL DESCRIPTION The HI 96726 is an auto diagnostic portable microprocessor meter that benefits from Hanna's years of experience as a manufacturer of analytical instruments. It has the advanced optical system based on a special tungsten lamp and a narrow band interference filter that allows most accurate and repeatable readings.

All instruments are factory calibrated and the electronic and optical design minimizes the need of frequent calibration. With the powerful CAL CHECK™ validation function, you are able to validate good performance of your instrument at any time. The validation procedure is extremely user friendly. Just use the exclusive HANNA ready-made, NIST traceable standards to verify the performance of the instrument and recalibrate if necessary. All instruments are splash waterproof and the lamp and filter units are protected from dust or dirt by a transparent cup.

This makes the instruments fulfill field applications. Display messages aid the user in routine operation. The meter has an auto-shut off feature that will turn off the instrument after 10 minutes of non use in measurement mode or after 1 hour if left in calibration mode. The meter uses an exclusive positive-locking system to ensure that the cuvette is in the same position every time it is placed into the measurement cell. It is designed to fit a cuvette with a larger neck making it easier to add both sample and reagents.

The cuvette is made from special optical glass to obtain best results. The HI 96726 meter measures the nickel content in water and wastewater in the 0.00 to 7.00 g/L (ppt) range. The method is an adaptation of the photometric method. The reagent is in powder form and is supplied in packets. The amount of reagent is precisely dosed to ensure maximum repeatability. ABBREVIATIONS °C: °F: g/L: mL: mV: degree Celsius degree Fahrenheit gram per liter. g/L is equivalent to ppt (parts per thousand) milliliter millivolts 4 SPECIFICATIONS Range Resolution Accuracy Typical EMC Deviation Light Source Light Detector Method Environment Battery Type Auto-Shut off 0.00 to 7.

00 g/L 0.01 g/L ±0.07 g/L ±4% @ 25°C Dimensions Weight REQUIRED REAGENTS Code HI 93726-0 ±0.02 g/L Tungsten lamp Silicon Photocell with narrow band interference filter @ 575nm Adaptation of the photometric method. The reaction between nickel and the reagent causes a blue tint in the sample. 0 to 50°C (32 to 122°F); max 95% RH non-condensing 1 x 9 volt After 10' of non-use in measurement mode; after 1 hour of non-use in calibration mode; with last reading reminder. 192 x 102 x 67 mm (7.6 x 4 x 2.6") 290 g (10 oz.).

Description Powder Reagent Quantity/test 1 packet PRECISION AND ACCURACY Precision is how closely repeated measurements agree with each other. Precision is usually expressed as standard deviation (SD). Accuracy is defined as the nearness of a test result to the true value. Although good precision suggests good accuracy, precise results can be inaccurate. The figure explains these definitions.

In a laboratory using a standard solution of 3.50 g/L nickel and a representative lot of reagent, an operator obtained with a single instrument a standard deviation of 0.10 g/L. 5 PRINCIPLE OF OPERATION Absorption of Light is a typical phenomenon of interaction between electromagnetic radiation and matter. When a light beam crosses a substance, some of the radiation may be absorbed by atoms, molecules or crystal lattices.

If pure absorption occurs, the fraction of light absorbed depends both on the optical path length through the matter and on the physical-chemical characteristics of the substance according to the Lambert-Beer Law:  $-\log I/I_0 = c d$  or  $A = c d$  Where:  $-\log I/I_0$  = Absorbance (A) intensity of incident light beam intensity of light beam after absorption molar extinction coefficient at wavelength molar concentration of the substance optical path through the substance Therefore, the concentration "c" can be calculated from the absorbance of the substance as the other factors are known. Photometric chemical analysis is based on the possibility to develop an absorbing compound from a specific chemical reaction between sample and reagents. Given that the absorption of a compound strictly depends on the wavelength of the incident light beam, a narrow spectral bandwidth should be selected as well as a proper central wavelength to optimize measurements. The optical system of Hanna's HI 96 series colorimeters are based on a special subminiature tungsten lamp and narrow-band interference filters to guarantee both high performance and reliable results. HI 96 series block diagram (optical layout) 6 A microprocessor controlled special tungsten lamp emits radiation which is first optically conditioned and beamed to the sample contained in the cuvette. The optical path is fixed by the diameter of the cuvette. Then the light is spectrally filtered to a narrow spectral bandwidth, to obtain a light beam of intensity  $I_0$  or  $I$ . The photoelectric cell collects the radiation  $I$  that is not absorbed by the sample and converts it into an electric current, producing a potential in the mV range. The microprocessor uses this potential to convert the incoming value into the desired measuring unit and to display it on the LCD. The measurement process is carried out in two phases: first the meter is zeroed and then the actual measurement is performed.

The cuvette has a very important role because it is an optical element and thus requires particular attention. It is important that both, the measurement and the calibration (zeroing) cuvettes, are optically identical to provide the same measurement conditions. Whenever possible use the same cuvette for both. It is necessary that the surface of the cuvette is clean and not scratched. This to avoid measurement interference due to unwanted reflection and absorption of light. It is recommended not to touch the cuvette walls with hands. Furthermore, in order to maintain the same conditions during the zeroing and the measuring phases, it is necessary to close the cuvette to prevent any contamination. FUNCTIONAL DESCRIPTION INSTRUMENT DESCRIPTION 1) 2) 3) 4) 5) 6) 7) 8) GLP/ key CAL CHECK key ZERO/CFM key READ/TIMER key ON/OFF key Liquid Crystal Display (LCD) Cuvette alignment indicator Cuvette holder 7 KEYPAD DESCRIPTION · ON/OFF: to turn the meter on and off.



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@@ · READ/TIMER: this is a multi-functional key. @@ In GLP mode press to view the next screen.

· CAL CHECK: this is a bi-functional key. @@ · GLP/: this is a bi-functional key. Just press to enter GLP mode. In calibration mode press to edit the date and time. @@@@ @@@@ The beeper is playing a beep on errors.

@@@@ @@@@ The concentration of the sample is beyond the programmed range: dilute the sample and re-run the test. c) during calibration procedure Standard Low: The standard reading is less than expected. Standard High: The standard reading is higher than expected. d) other errors and warnings Cap error · Replace the cuvette into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove. · Press and hold READ/TIMER for three seconds.

The display will show the countdown prior to measurement. The beeper is playing a beep at the end of countdown period. Alternatively, wait for 1 minute then just press READ/TIMER. @@@@ @@@@ The display will show "CAL" during calibration procedure. The blinking "ZERO" asks for instrument zeroing. · Place the CAL CHECK TM Standard HI 96726-11 Cuvette A into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove. · Press ZERO/CFM and the lamp, cuvette and detector icons will appear on the display, depending on the measurement phase. 17 · After a few seconds the display will show "-0.0-". The meter is now zeroed and ready for calibration.

The blinking "READ" asks for reading calibration standard. · Remove the cuvette. · Place the CAL CHECK TM Standard HI 96726-11 Cuvette B into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove. · Press READ/TIMER and the lamp, cuvette and detector icons will appear on the display, depending on the measurement phase. · After measurement the instrument will show for three seconds the CAL CHECKTM Standard value. Note: If the display shows "STD HIGH", the standard value was too high. If the display shows "STD LOW", the standard value was too low. Verify that both CAL CHECK TM Standards HI 96726-11 Cuvettes, A and B are free from fingerprints or dirt and that they are inserted correctly. Then the date of the last calibration (e.g.

:"01.08.2008") appears on the display, or "01.01.2008" if the factory calibration was selected before.

In both cases the year number is blinking, ready for date input. 18 DATE INPUT · Press GLP/ to edit the desired year (2000-2099). If the key is kept pressed, the year number is automatically increased. · When the correct year has been set, press ZERO/CFM or READ/TIMER to confirm. Now the display will show the month blinking.

or · Press GLP/ to edit the desired month (01-12). If the key is kept pressed, the month number is automatically increased. · When the correct month has been set, press ZERO/CFM or READ/TIMER to confirm. Now the display will show the day blinking. or · Press GLP/ to edit the desired day (01-31). If the key is kept pressed, the day number is automatically increased. Note: It is possible to change the editing from day to year and to month by pressing READ/TIMER. · Press ZERO/CFM to save the calibration date. · The instrument displays "Stor" for one second and the calibration is saved. 19 · The instrument will return automatically to measurement mode by displaying dashes on the LCD.

GLP In the GLP mode, the last user calibration date can be consulted and the factory calibration can be restored. LAST CALIBRATION DATE To display the calibration date: · Press GLP/ to enter GLP mode. The calibration month and day will appear on the main display and the year on the secondary display. · If no calibration was performed, the factory calibration message, "F.CAL" will appear on the main display and the instrument returns to measurement mode after three seconds. FACTORY CALIBRATION RESTORE It is possible to delete the calibration and restore factory calibration. · Press GLP/ to enter GLP mode. 20 · Press READ/TIMER to enter in the factory calibration restore screen. The instrument asks for confirmation of user calibration delete. · Press ZERO/CFM to restore the factory calibration or press GLP/ again to abort factory calibration restore.

· The instrument briefly notifies "done" when restores factory calibration and returns to measurement mode. BATTERY MANAGEMENT To save battery, the instrument shuts down after 10 minutes of non-use in measurement mode and after 1 hour of non-use in calibration mode. If a valid measurement was displayed before auto-shut off, the value is displayed when the instrument is switched on. The blinking "ZERO" means that a new zero has to be performed.

One fresh battery lasts for around 750 measurements, depending on the light level.

The remaining battery capacity is evaluated at the instrument startup and after each measurement. The instrument displays a battery indicator with three levels as follows: · 3 lines for 100 % capacity · 2 lines for 66 % capacity · 1 line for 33 % capacity · Battery icon blinking if the capacity is under 10 %. If the battery is empty and accurate measurements can't be taken anymore, the instrument shows "dead batt" and turns off. To restart the instrument, the battery must be replaced with a fresh one. 21 BATTERY REPLACEMENT To replace the instrument's battery, follow the steps: · Turn the instrument off by pressing ON/OFF.

· Turn the instrument upside down and remove the battery cover by turning it counterclockwise. · Extract the battery from its location and replace it with a fresh one. · Insert back the battery cover and turn it clockwise to close. ACCESORIES REAGENT SET HI 93726-01 HI 93726-03 Reagents for 100 tests Reagents for 300 tests OTHER ACCESORIES HI 96726-11 CAL CHECKTM Standard Cuvettes (1 set) HI 721310 9V battery (10 pcs.) HI 731318 Cloth for wiping cuvettes (4 pcs.) HI 731331 Glass cuvettes (4 pcs.) HI 731335 Caps for cuvettes HI 93703-50 Cuvette cleaning solution (230 mL) HI 741218 Carrying case 22 WARRANTY HI 96726 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to the instructions. 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 your dealer.

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. @@@@ @@@@ Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance.



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*To avoid damages or burns, do not put the instrument in microwave oven. For yours and the instrument safety do not use or store the instrument in hazardous environments. Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice. 23 Hanna Instruments Inc. Highland Industrial Park 584 Park East Drive Woonsocket, RI 02895 USA Technical Support for Customers Tel. (800) 426 6287 Fax (401) 765 7575 E-mail tech@hannainst.com www.*

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