



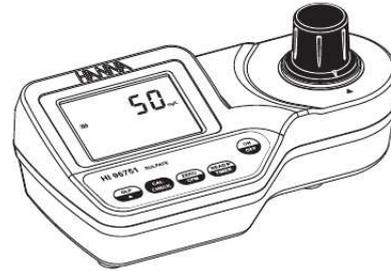
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You can read the recommendations in the user guide, the technical guide or the installation guide for HANNA INSTRUMENTS HI 96751C. You'll find the answers to all your questions on the HANNA INSTRUMENTS HI 96751C in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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Instruction Manual

HI 96751C
Sulfate ISM



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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. PRELIMINARY EXAMINATION Please examine this product carefully. Make sure that the instrument is not damaged. If any damage occurred during shipment, please notify your Dealer. Each HI 96751 Ion Selective Meter is supplied complete with: · Two Sample Cuvettes and Caps · CAL CHECK standard cuvettes · 9V Battery · Scissors · Cloth for wiping cuvettes · Instrument quality certificate · Instruction Manual · Rigid carrying case

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@@@@@Any defective item must be returned in its original packing. @@It has the advanced optical system based on a Light Emitting Diode (LED) 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 LED 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 96751 meter measures the sulfate content in water samples in the 0 to 150 mg/L (ppm) range. Sulfate is precipitated with barium chloride crystals.

The reagent is in powder form and is supplied in packets. The amount of reagent is precisely dosed to ensure the maximum repeatability. Range Resolution Accuracy Typical EMC Deviation Light Source Light Detector Method Environment Battery Type Auto-Shut off SPECIFICATIONS 0 to 150 mg/L 1 mg/L ± 1 mg/L $\pm 5\%$ of reading @ 25°C ± 1 mg/L Light Emitting Diode Silicon Photocell with narrow band interference filter @ 466 nm Sulfate is precipitated with barium chloride crystals. Light absorbance of the suspension is measured. 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 104 x 69 mm (7.6 x 4.1 x 2.7") 360 g (12.7 oz.). Dimensions Weight REQUIRED REAGENTS Code HI 93751-0 Description Indicator 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 75 mg/L sulfate and a representative lot of reagent, an operator obtained with a single instrument a standard deviation of 3 mg/L. 5 ABBREVIATIONS °C: °F: mg/L: mL: mV: degree Celsius degree Fahrenheit milligrams per liter. mg/L is equivalent to ppm (parts per million) milliliter millivolts 4 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 A microprocessor controlled LED 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. 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 96751 colorimeter is based on LED and narrow-band interference filters to guarantee both high performance and reliable results. FUNCTIONAL DESCRIPTION INSTRUMENT DESCRIPTION HI 96751 block diagram (optical layout) 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 6 7 KEYPAD DESCRIPTION · ON/OFF: to turn the meter on and off.



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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. @@@@Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance. 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. 22 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.hannainst.com Local Sales and Customer Service Office Printed in EUROPE (ROMANIA) MAN96751 01/11 24 .



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