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You can read the recommendations in the user guide, the technical guide or the installation guide for HANNA INSTRUMENTS HI 93701. You'll find the answers to all your questions on the HANNA INSTRUMENTS HI 93701 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 93701
Free Chlorine ISM



HANNA instruments
www.hannainst.com

CE
This instrument is in
Compliance with the CE directives

Warranty

HI 93701 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to 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 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 packaged for complete protection. To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase. All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner, Hanna Instruments Inc., Woonsocket, Rhode Island, 02895, USA.

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

Dear Customer,
Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct operation of the meter. 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 to make sure that no damage has occurred during shipment. If there is any damage, notify your Dealer.

Each Ion Specific Meter is supplied complete with

- 9V Battery
- Two Sample Cuvets and Caps
- One Transport Cap

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


General Description

The HI 93701 portable microprocessor meter measures the free chlorine (Cl₂) content in water and wastewater in the 0.00 to 2.50 mg/L (ppm) range. The meter uses an exclusive positive-locking system to ensure that the cuvet is in the same place every time it is placed into the measurement cell.

The reagents are in liquid or powder form and are supplied in bottles or in packets. The amount of reagent is precisely dosed to ensure maximum repeatability.

Display codes aid the user in routine operations. The meters have an auto shut off feature that will turn the instrument off after 10 minutes of non-use.

Specifications



SPECIFICATIONS

Range 0.00 to 2.50 mg/L
Resolution 0.01 mg/L
Accuracy ± 0.03 mg/L ± 3% of reading
Typical EMC Deviation ± 0.01 mg/L
Light Source Light Emitting Diode @ 555 nm
Method Adaptation of the EPA recommended DPD method 830.5. The reaction between free chlorine and the DPD reagent causes a pink tint in the sample

Light Detector Silicon Photocell
Environment 0 to 50°C (32 to 122°F); max 95% RH non-condensing
Battery Type/Life 1 x 9 volt/40 hours
Auto-Shut off After 10' of non-use
Dimensions 80 x 83 x 46 mm (7.1 x 3.3 x 1.8")
Weight 290 g (10 oz.)

REQUIRED REAGENTS

POWDER		
Code	Description	Quantity
HI 93701-0	DPD	1 packet
LIQUID:		
Code	Description	Quantity
HI 93701A-F	DPD1 Indicator	3 drops
HI 93701B-F	DPD1 Buffer	3 drops

Display Code Guide

--- This indicates that the meter is in a ready state and zeroing can be performed.

SIP Sampling in Progress. This prompt appears each time the meter is performing a measurement.

-0.0- This indicates that the meter is in a zeroed state and measurement can be performed.

ZERO A zero reading was not taken. Insert a sample before adding reagent and press ZERO.

0.00 Under range. A blinking "0.00" indicates that the sample absorbs less light than the zero reference. Check the procedure and make sure you use the same cuvet for reference (zero) and measurement.

2.75 Over range. A flashing value higher than the maximum readable concentration (see specifications) indicates that the sample absorbs too much light, meaning that the concentration is too high. Dilute the sample.

CAP Light over range. The cuvet is not inserted correctly and an excess ambient light is reaching the detector. If the cuvet is properly installed, then contact your dealer or the nearest Hanna Customer Service Center.

LO Light under range. The zero sample is too dark for proper zeroing. If this is not the case, contact your dealer or the nearest Hanna Customer Service Center.

V 1.70 The "V" indicates that the battery voltage is getting low and the battery needs to be replaced.

-BA- This indicates that the battery is dead and must be replaced. Note: once this indication is displayed, the meter will lockup. Change the battery to restart.



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Manual abstract:

This manual will provide you with the necessary information for the correct operation of the meter. 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. @@Sampling in Progress. This prompt appears each time the meter is performing a measurement. @@A zero reading was not taken. Insert a sample before adding reagent and press ZERO. Under range. @@@@Over range.

A flashing value higher than the maximum readable concentration (see specifications) indicates that the sample absorbs too much light, meaning that the concentration is too high. Dilute the sample. Light over range. The cuvet is not inserted correctly and an excess ambient light is reaching the detector. If the cover is properly installed, then contact your dealer or the nearest Hanna Customer Service Center.

Light under range. The zero sample is too dark for proper zeroing. If this is not the case, contact your dealer or the nearest Hanna Customer Service Center.

The "V" indicates that the battery voltage is getting low and the battery needs to be replaced. This indicates that the battery is dead and must be replaced.

Note: once this indication is displayed, the meter will lockup. Change the battery to restart. Preliminary Examination Remove the instrument from the packing material and examine it carefully to make sure that no damage has occurred during shipment. If there is any damage, notify your Dealer. Each Ion Specific Meter is supplied complete with ·9V Battery · Two Sample Cuvets and Caps · One Transport Cap Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing. SPECIFICATIONS Range Resolution Accuracy Typical EMC Deviation Light Source Method 0.00 to 2.50 mg/L 0.01 mg/L ±0.

03 mg/L ±3% of reading www.hannainst.com This Instrument is in Compliance with the CE Directives General Description Warranty HI 93701 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to 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 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. @@@@All rights are reserved.

@@@@@Display codes aid the user in routine operations.

@@@· When the LCD displays "- - -", it is ready. @@@@· Do not touch the cuvet walls with hands. @@@@· It is important that the sample does not contain any debris. This would corrupt the readings. @@@@· To obtain accurate measurements, remove such bubbles by swirling or by gently tapping the vial.

· All the reaction times reported in this manual are referred to 20°C (68°F). As a general rule of thumb, they should be doubled at 10°C (50°F) and halved at 30°C (86°F). Accessories REAGENT SETS HI 93701-F Reagents for 300 tests (liquid) HI 93701-01 Reagents for 100 tests (powder) HI 93701-03 Reagents for 300 tests (powder) Liquid reagents procedure · To an empty cuvet add 3 drops of HI 93701A-F DPD1 indicator, 3 drops of HI 93701B-F DPD1 buffer.

Swirl gently to mix and immediately add 10 mL of unreacted sample. OTHER ACCESSORIES HI 710009 HI 710010 HI 721310 HI 731318 HI 731321 HI 731325 HI 93703-50 Blue rubber boot Orange rubber boot 9V battery (10 pcs) Tissue for wiping cuvetts (4 pcs) Glass cuvetts (4 pcs) Caps for cuvetts (4 pcs) Cuvets cleaning solution (230 mL) · Replace the cap and shake gently again.

CE Declaration of Conformity · Reinsert the cuvet into the instrument. · Wait for 1 minute and then press READ DIRECT. The display will show "SIP" during measurements. READ DIRECT · Wait for a few seconds and the display will show "-0.0-". Now the meter is zeroed and ready for measurement. · Remove the cuvet. Powder reagent procedure · Add the content of one packet of HI 93701 DPD reagent. Replace the cap and shake gently for 20 seconds (or 2 minutes in case of seawater analysis). · Replace the cuvet into the holder and ensure that the notch on the cap is positioned securely into the groove.

· Wait for 1 minute and press READ DIRECT. The display will show "SIP" during measurements. READ DIRECT · The instrument directly displays concentration in mg/L of free chlorine on the Liquid Crystal Display. INTERFERENCES Interference may be caused by: Bromine Iodine Chlorine dioxide Ozone Hydrogen peroxide Oxidized Chromium (Cr6+) and Manganese (Mn4+, Mn7+). Alkalinity above 250 mg/L or acidity above 150 mg/L will not reliably develop the full amount of color or it may rapidly fade. To resolve this, neutralize the sample with diluted HCl or NaOH. @· Simply slide off the battery cover on the back of the meter. @@@@· Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance. To avoid damages or burns, do not perform any measurement in microwave ovens. IST93701R4 09/03 SLIDE OFF .



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