

HI735

Total Hardness Low Range



Recommendations for Users

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the checker's performance. For your and the checker's safety do not use or store it in hazardous environments.

Safety Measures

The chemicals contained in the reagent kits may be hazardous if improperly handled. Please review the Safety Data Sheets (SDS) found at <http://sds.hannainst.com> before performing tests. For proper disposal of reagent kits and reacted samples, please contact a local licensed waste disposal provider.

Warranty

HI735 Checker[®]HC is warranted for a period of one year 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. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments Office. 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 checker is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any product, make sure it is properly packaged for complete protection.

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

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3. Remove the old battery, replace it with a new 1.5V AAA battery, inserting the negative end first.

4. Replace the battery cover, fasten and tighten the screw.

Accessories

Reagent Sets

HI735-25 Reagents for 25 Total Hardness Low Range tests

Other Accessories

HI735-11 Total Hardness Low Range certified standard kit

HI731225 Cuvette black cap for Checker[®]HC colorimeters (4 pcs.)

HI731318 Cloth for wiping cuvettes (4 pcs.)

HI731321 Glass cuvette and seal cap for Checker[®]HC colorimeters (4 pcs.)

HI740028P 1.5V AAA battery set (12 pcs.)

HI740143 1 mL graduated syringe (6 pcs.)

HI740144P Plastic pipette tip (10 pcs.)

HI740157P Plastic refilling pipette (20 pcs.)

HI93703-50 Cuvette cleaning solution, 230 mL

Certification

All Hanna Instruments conform to the CE European Directives.

Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment which will conserve natural resources.

Disposal of waste batteries. This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, or the place of purchase.



RoHS compliant



Over Range: Maximum concentration value displayed blinking indicates the measured value is outside the limits of the method. Verify that the sample does not contain any debris. Dilute the sample and repeat the measurement.

350

Battery Low: Battery level is too low for the checker to function properly. Replace the battery with a new one.

bAt

Drained Battery: The battery is drained and must be replaced. Replace the battery with a new one and restart the checker.

bAd

bAt

Tips for an Accurate Measurement

- Insert the cuvette into the measurement cell in the same position for both C.1 and C.2 measurements.
- Ensure the sample does not contain any debris.
- Whenever the cuvette is placed into the checker, it must be dry outside and free of fingerprints, oil and dirt.
- Wipe the cuvette thoroughly with HI731318 microfiber cleaning cloth or a lint-free cloth prior to insertion.
- Shaking the cuvette can generate bubbles, causing higher readings. To obtain accurate measurements, remove such bubbles by swirling or by gently tapping the cuvette.
- Do not let the reacted sample stand too long after reagent has been added, as accuracy will be affected.
- Discard the sample immediately after the reading has been taken or the glass might become permanently stained.



Battery Replacement

To save the battery, the checker shuts down after 10 minutes of non-use. A fresh battery lasts for a minimum of 5000 measurements. When the battery is drained, the instrument displays "bAd" then "bAt", and turns off.

To replace the battery, follow the next steps:

1. Press and hold the ON/OFF button to turn the checker off.
2. Turn the instrument upside down and use a screwdriver to unfasten the screw and remove the battery cover.



Dear Customer,

Thank you for choosing a Hanna Instruments product. Please read this instruction manual carefully before using the Checker[®]HC handheld colorimeter. For more information about Hanna Instruments and our products, visit www.hannainst.com or e-mail us at sales@hannainst.com. For technical support, contact your local Hanna Instruments office or e-mail us at tech@hannainst.com.

Preliminary Examination

Remove the Checker[®]HC handheld colorimeter and accessories from the packing material and examine it carefully. If you require any further information, please contact Hanna Instruments technical support team.

Each HI735 is delivered in a case with custom insert and is supplied with:

- Total Hardness Low Range reagent starter kit (reagents for 12 tests)
- Sample cuvette and cap (2 pcs.)
- 1 mL graduated syringe with tip (2 pcs.)
- Plastic refilling pipette (1 pc.)
- 1.5V AAA alkaline battery (1 pc.)
- Instruction manual

Note: Save all packing material until you are sure that the Checker[®]HC handheld colorimeter works correctly. Any damaged or defective item must be returned in its original packing material with the supplied accessories.

General Description & Intended Use

HI735 Total Hardness Low Range handheld checker is designed to determine total hardness (as CaCO₃) in drinking and process water, heating and cooling systems, swimming pools and spas. Also suitable to be used in agriculture, food and beverage industries.

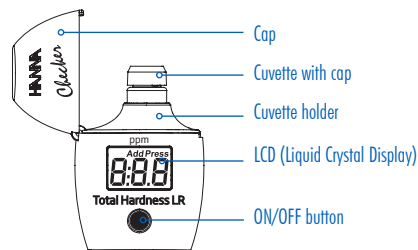
HI735 features a single-button operation system and is easy to use.

The large LCD is easy to read and the auto shut-off feature assures the battery will not be drained.

Specifications

Range	0 to 350 ppm (mg/L) as CaCO ₃
Resolution	1 ppm (mg/L)
Accuracy	±6 ppm ±6% of reading @ 25 °C (77 °F)
Light source	Light Emitting Diode @ 470 nm
Light detector	Silicon photocell
Method	Adaptation of the EPA recommended Method 130.1. The reaction between calcium, magnesium, and the reagents causes a red-violet tint in the sample.
Environment	0 to 50 °C (32 to 122 °F); max. 95% RH non-condensing
Battery type	1.5V AAA Alkaline
Auto shut-off	After 10 minutes of non-use
Dimensions	86.0 x 61.0 x 37.5 mm (3.4 x 2.4 x 1.5")
Weight	64 g (2.3 oz)

Functional Description & LCD Display



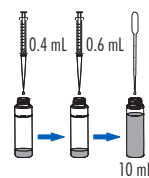
Measurement Procedure

1. Press the ON/OFF button to turn the checker on. All segments will be displayed for a few seconds, followed by "Add", "C.1" with "Press" blinking.



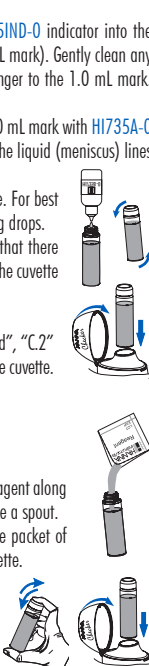
2. Preparing the cuvette for "C.1" measurements:

- Place the syringe tips onto each syringe. Ensure the O-rings remain in the tip for a proper seal.
- Use a syringe to dispense 0.4 mL of **unreacted sample** into the cuvette (lower edge of the seal is on the 0.6 mL mark). Gently clean any excess liquid outside of the tip. Slowly push the plunger to the 1.0 mL mark. Ensure no liquid is left in the tip.
- With the second syringe, dispense 0.6 mL of HI735IND-0 indicator into the same cuvette (lower edge of the seal is on the 0.4 mL mark). Gently clean any excess liquid outside of the tip. Slowly push the plunger to the 1.0 mL mark. Ensure no liquid is left in the tip.
- Use the supplied pipette to fill the cuvette up to the 10 mL mark with HI735A-0 Reagent A. Ensure the low point of the curvature of the liquid (meniscus) lines up with the mark.
- Add two drops of HI735B-0 Reagent B to the mixture. For best results, hold the dropper bottle vertically when adding drops.
- Screw the cap on and invert 5 times to mix. Ensure that there are no bubbles in the mixture and that the outside of the cuvette is dry and clean.
- Insert the cuvette into the checker and close the cap.
- Press the ON/OFF button. When the display shows "Add", "C.2" with "Press" blinking, the checker is zeroed. Remove the cuvette.



3. Preparing the cuvette for "C.2" measurements:

- Using scissors, open one packet of HI735C-0 fixing reagent along the dotted line. Push the two corners together to make a spout.
- Unscrew the cuvette cap, and add the content of one packet of HI735C-0 fixing reagent. Screw the cap onto the cuvette.
- Shake gently for 20 seconds. For the most accurate reading, ensure all fixing reagent is dissolved and there are no visible bubbles.
- Insert the cuvette into the checker and close the cap.



4. Press the ON/OFF button. The instrument displays the total hardness in ppm of CaCO₃. The checker automatically turns off 10 minutes after reading.



Water Hardness Guidelines

Hardness classification	Parts per million (ppm)	Grains per gallon (gpg)*
Very soft	<17.1	<1.0
Soft	17.1 to 60	1 to 3.5
Moderately hard	61 to 120	3.5 to 7.0
Hard	120 to 180	7.0 to 10.5
Very hard	180 +	10.5 +

* 1 grain per gallon = 17.1 ppm

Note: Guidelines based on data from U.S. Geological Survey (USGS). This table can be used as a guide, as water hardness classifications may vary from region to region.

Errors & Warnings

The checker shows clear warning messages when erroneous conditions appear and when measured values are outside the expected range. An explanation of the errors and warnings, and the recommended action to be taken is provided below.

Light High: There is an excess amount of ambient light reaching the detector. Please check the preparation of the zero cuvette.



Light Low: There is not enough light to perform a measurement. Please check the preparation of the zero cuvette.



Inverted Cuvettes: The sample and the zero cuvettes are inverted. Swap the cuvettes and repeat the measurement.



Under Range: A blinking "0" indicates that the sample absorbs less light than the zero reference. Check the measurement procedure and make sure to use the same cuvette for reference (zero) and measurement.

