

## Tips for an Accurate Measurement

- It is important that the sample does not contain any debris.
- Whenever the cuvette is placed into the measurement cell, it must be dry outside, and completely free of fingerprints, oil and dirt. Wipe it thoroughly with HI731318 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 for too long after reagent is added, as accuracy will be affected.
- After the reading it is important to immediately discard the sample, otherwise the glass might become permanently stained.



## Battery Management

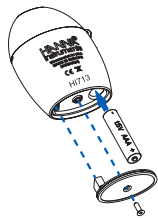
To save the battery, the instrument shuts down after 3 minutes of non-use and 2 minutes after reading.

One fresh battery lasts for a minimum of 5000 measurements. When the battery is dead the instrument will display "bAd" then "bAt" for 1 second and then turns off.

To restart the instrument, the battery must be replaced with a new one.

To replace the instrument's battery:

- Turn the instrument off by holding the button until the meter shuts off.
- Turn the instrument upside down and remove the battery cover with a screwdriver.



- Remove the battery from its location and replace it with a new one, inserting the negative end first.
- Insert the battery cover and replace the screw with a screwdriver.

## Recommendations for Users

Before using Hanna Instruments products, make sure that they are entirely suitable for your specific application and for the environment in which they are used. Operation of these instruments may cause unacceptable interferences to other electronic equipment, thus requiring the operator to take all necessary steps to correct such interferences. Any variation introduced by the user to the supplied equipment may degrade the instrument's 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.

## Accessories

### Reagent Sets

HI713-25	Reagents for 25 Phosphate Low Range tests
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### Other Accessories

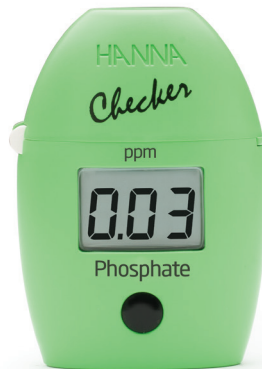
HI713-11	Phosphate LR Certified Standard Kit
HI731225	Cuvette Black Cap for Checker® HC Colorimeters (4 pcs.)
HI731318	Cloth for wiping cuvettes (4 pcs.)
HI731321	Glass cuvettes and Seal Cap for Checker® HC Colorimeters (4 pcs.)
HI731353	Cuvette Seal Cap for Checker® HC Colorimeters (4 pcs.)
HI740028P	1.5V AAA batteries (12 pcs.)
HI93703-50	Cuvette cleaning solution (230 mL)

## Warranty

HI713 is warranted for a period of one year after date of purchase against defects in workmanship and materials when used for their 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 instrument is to be returned to Hanna Instruments, first obtain a Return 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.

# INSTRUCTION MANUAL

## HI713 Phosphate Low Range



# Thank You

Thank you for choosing a Hanna Instruments product. Please read this instruction manual carefully before using the instrument.

For more information about Hanna Instruments and our products, visit [www.hannainst.com](http://www.hannainst.com).

For technical support, contact your local Hanna Instruments Office or e-mail us at [tech@hannainst.com](mailto:tech@hannainst.com).

Find your local Hanna Instruments Office on [www.hannainst.com](http://www.hannainst.com).

## Preliminary Examination

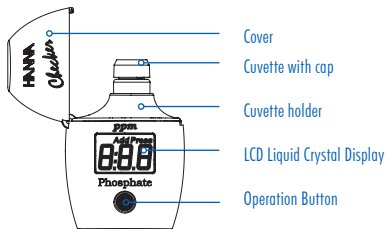
Please examine this product carefully. Make sure that the instrument is not damaged. If any damage occurred during shipment, please contact your local Hanna Instruments Office. Each HI713 meter is supplied complete with:

- Sample Cuvettes and Caps (2 pcs.)
- Reagents for 6 tests
- 1.5V AAA Battery (1 pc.)
- Instruction Manual and Quick Reference Guide

## Specifications

Range	0.00 to 2.50 ppm
Resolution	0.01 ppm
Accuracy	±0.04 ppm ±4% of reading @25 °C/77 °F
Light Source	Light Emitting Diode @525 nm
Light Detector	Silicon Photocell
Method	Adaptation of the Standard Methods for the Examination of Water and Wastewater, 20 <sup>th</sup> edition, Ascorbic Acid method. The reaction between phosphate and the reagent causes a blue tint in the sample.
Environment	0 to 50 °C (32 to 122 °F); max 95% RH non-condensing
Battery Type	1.5V AAA (1 pc.)
Auto-Shut off	After 3 minutes of non-use and 2 minutes after reading
Dimensions	86.0 x 61.0 x 37.5 mm (3.4 x 2.4 x 1.5")
Weight	52 g (1.84 oz.)

## Functional Description



## Errors and Warnings

L.H.

**Light High:** There is too much light to perform a measurement. Please check the preparation of the zero cuvette.

L.Lo

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

Inu

**Inverted Cuvettes:** The sample and the zero cuvette are inverted.

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 cuvette for reference (zero) and measurement.

2.50

**Over Range:** A flashing value of the maximum concentration indicates the reading is over range. Dilute the sample and re-run the test.

bAt

**Battery Low:** The battery must be replaced soon.

bAd

**Dead Battery:** This indicates that the battery is dead and must be replaced. Once this indication is displayed, normal operation of the instrument will be interrupted. Change the battery and restart the meter.

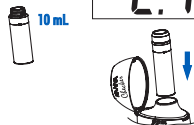
bAt

## Measurement Procedure

- Turn the meter on by pressing the button. All segments will be displayed. When the display shows "Add", "C.1" with "Press" blinking, the meter is ready.



- Fill the cuvette with 10 mL of unreacted sample and replace the cap. Place the cuvette into the meter and close the meter's cap.



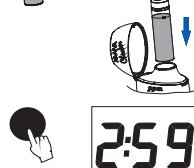
- Press the button. When the display shows "Add", "C.2" with "Press" blinking the meter is zeroed.



- Remove the cuvette from the meter and unscrew the cap. Add the content of one packet of HI713-0 reagent. Replace the cap and shake gently for 2 minutes until the powder is completely dissolved. Place the cuvette back into the meter.



- Press and hold the button until the timer is displayed on the LCD (the display will show the countdown prior to the measurement) or, alternatively, wait for 3 minutes and press the button.



- The instrument directly displays the concentration of phosphate in ppm. The meter automatically turns off after 2 minutes.



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