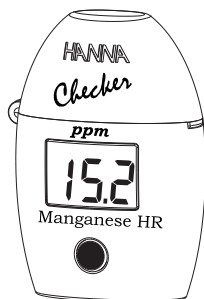


HI 709

Manganese High Range



HANNA
instruments
www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Instruments Product.

Please read this instruction manual carefully before using the instrument. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com or view our worldwide contact list at 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 notify your Dealer.

Each HI 709 meter is supplied complete with:

- Two Sample Cuvettes and Caps
- Six packets of Reagent A
- Six packets of Reagent B
- 1 x 1.5V AAA Battery
- Instruction Manual

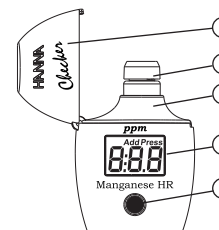


For more details about spare parts and accessories see "Accessories".

Technical specifications:

| | |
|----------------|---|
| Range | 0.0 to 20.0 ppm |
| Resolution | 0.1 ppm |
| Accuracy | ±0.2 ppm ±5% of reading @ 25 °C / 77 °F |
| Light Source | Light Emitting Diode @ 525 nm |
| Light Detector | Silicon Photocell |
| Method | Adaptation of the <i>Standard Methods for the Examination of Water and Wastewater, 18th edition</i> , Periodate method. The reaction between manganese and the reagent causes a pink tint in the sample. |
| Environment | 0 to 50 °C (32 to 122 °F); max 95% RH non-condensing |
| Battery Type | 1 x 1.5V AAA |
| Auto-Shut off | After 10 minutes of non-use |
| Dimensions | 86 x 61 x 37.5 mm (3.38 x 2.4 x 1.5") |
| Weight | 64 g (2.25 oz.) |

Functional description:



1. Dust cover.
2. Cuvette with cap.
3. Cuvette holder.
4. Liquid Crystal Display.
5. Button.

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.

0.0

Under Range: A blinking "0.0" 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.

200

Over Range: A flashing value of the maximum concentration indicates an over range condition. The concentration of the sample is beyond the programmed range: dilute the sample and re-run the test.

bAt

Battery Low: The battery must be replaced soon.

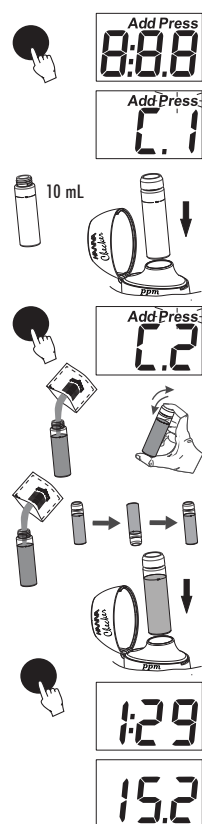
bAd

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 **HI 709A-0** reagent. Replace the cap and shake gently for 2 minutes.
- Unscrew the cap and add the content of one packet of **HI 709B-0** reagent. Replace the cap and invert gently for 2 minutes. 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 1 minute and 30 seconds and press the button.
- The instrument displays the concentration in ppm of manganese. The meter automatically turns off after 10 minutes.

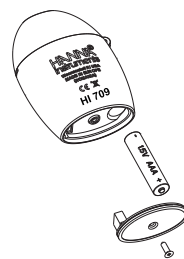


Tips for an accurate measurement

- 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 **HI 731318** or a lint-free cloth prior to insertion.
- Shaking the cuvette can generate bubbles, causing higher readings. To obtain accurate measurements, remove 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 10 minutes of non-use. 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.

Accessories:

REAGENT SETS

HI 709-25 Reagent for 25 Manganese High Range Tests

OTHER ACCESSORIES

HI 709-11 Manganese HR Certified Standard Kit
HI 731318 Cloth for wiping cuvettes (4 pcs.)
HI 731321 Glass cuvettes (4 pcs.)
HI 731225 Black cuvette cap for checker HC (4 pcs.)
HI 731353 Cuvette seal for checker HC (4 pcs.)
HI 740028 1.5V AAA batteries (4 pcs.)
HI 93703-50 Cuvettes cleaning solution (230 mL)

Recommendations for Users

Before using this product, make sure that it is entirely suitable for your specific application and for the environment in which it is used.

Operation of this instrument may cause unacceptable interferences to other electronic equipment, thus requiring the operator to take all necessary steps to correct interferences.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

To avoid damage or burns, do not put the instrument in microwave oven. For the safety of you and the instrument do not use or store the instrument in hazardous environments.

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

For additional information, contact your dealer or the nearest Hanna Customer Service Center. To find a Hanna Office in your area, visit our web site:

www.hannainst.com

