

GB Photometer Iron

● Operation



Switch the unit on using the ON/OFF switch.

FE.1

The display shows the following:



Select the test required using the MODE key:
FE.1 → FE.2 → FE.1 → (Scroll)

METHOD

The display shows the following:

Fill a clean vial with the water sample up to the 10 ml mark, screw the cap on and place in the sample chamber with the Δ-mark on the vial aligned with the ∇-mark on the instrument.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

0.0.0

The display shows the following:

After zero calibration is completed, remove the vial from the sample chamber.

Add the appropriate reagent tablet; a colour will develop in the sample.

Screw the cap back on and place the vial in the sample chamber with the Δ and ∇ marks aligned.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

The result appears in the display.

Repeating the analysis:

Press the ZERO/TEST key again.

New zero calibration:

Press the MODE key until the desired method symbol appears in the display again.

● User messages

EOI

Light absorption too great. Reasons: zero calibration not carried out or, possibly, dirty optics.

+Err

Measuring range exceeded or excessive turbidity.

-Err

Result below the lowest limit of the measuring range.

LO BAT

Replace 9 V battery, no further analysis possible.

● Technical data

Light source:	LED: λ = 528 nm (filter)
Battery:	9 V-block-battery (life = approx. 600 tests).
Auto-OFF:	Automatic switch off 10 minutes after last keypress
Ambient conditions:	5-40°C 30-90% rel. humidity (non-condensing).
CE:	DIN EN 55 022, 61 000-4-2, 61 000-4-8, 50 082-2, 50 081-1, DIN V ENV 50 140, 50 204

● Iron (II und III-ions) 0,02-1,0 mg/l

0.0.0

Perform zero calibration (see "Operation").
Add one IRON LR tablet straight from the foil to the 10 ml water sample, and crush using a clean stirring rod. Mix well with the stirring rod to dissolve the tablet. Screw the cap on and replace the vial in the sample chamber making sure the Δ and ∇ marks are aligned.

Wait for a colour reaction time of 5 minutes!



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l total dissolved iron.

Measuring tolerance: ± 0,05 mg/l

● Iron (II und III-ions) 0,2-10 mg/l

FE.2

The display shows the following:

Pour 1 ml of the water sample into a clean vial and fill with deionised water to the 10 ml mark. Close the vial by screwing the cap on, and place in the sample chamber with the ∇-mark on the vial aligned with the Δ-mark on the instrument.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

0.0.0

The display shows the following:

Add one IRON LR tablet straight from the foil to the water sample, and crush using a clean stirring rod. Mix well with the stirring rod to dissolve the tablet. Screw the cap on and replace the vial in the sample chamber making sure the Δ and ∇ marks are aligned.

Wait for a colour reaction time of 5 minutes!



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l cyanuric acid.

Measuring tolerance: ± 0,5 mg/l

● Notes on the chemical methods

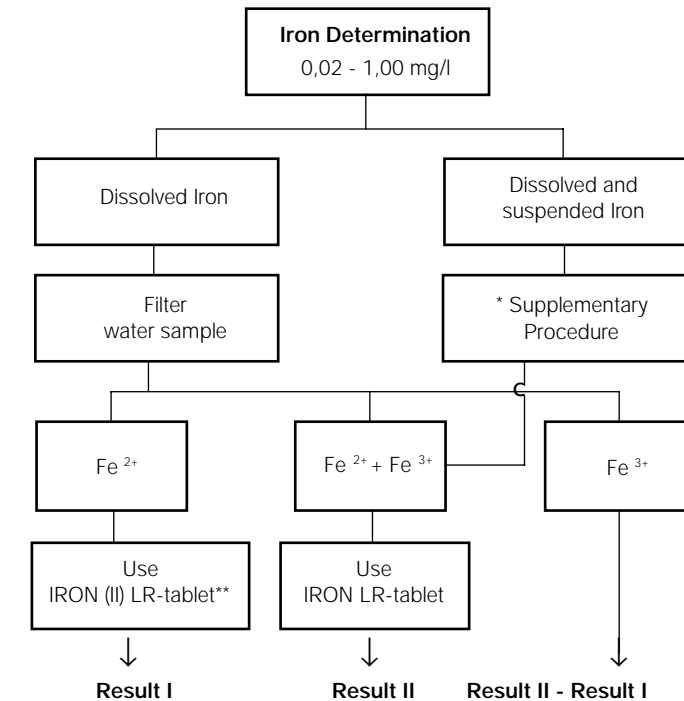
The IRON (II) LR tablet is used for differentiation - as described above - in place of the IRON LR tablet.

Observe application options, analysis regulations and matrix effects of methods. Reagent tablets are designed for use in chemical analysis only and should be kept well out of the reach of children.

If necessary, request safety data sheets.

Ensure proper disposal of reagent solutions.

● Differentiation

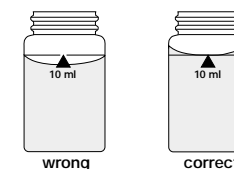


● * Supplementary Procedure

Add 1 ml of concentrated sulphuric acid to 100 ml of the water sample. Heat and boil for 10 minutes or until all particles have dissolved. After cooling down the sample is set on a pH-value of 3 to 6 by using ammonia solution. Refill with distilled water to the previous volume of 10 ml. Mix well. Pour into the vial and fill to the 10 ml mark. Add an IRON LR-tablet, crush and mix well to dissolve. Allow to stand for 5 minutes. Water which has been treated with organic compounds as corrosion inhibitors must be oxidised where necessary to break down the iron complexes - add 1 ml of concentrated sulphuric acid and 1 ml of concentrated nitric acid to a 100 ml sample and boil to approximately half volume. After cooling down proceed with the analysis as described above.

** not included

● Correct filling of the vial



● Calibration mode



Press MODE key and **keep it depressed**.



Switch unit on using ON/OFF key.
Release MODE key after approx. 1 second.

CAL

FE.1

The display shows the following in alternating mode:



Perform zero calibration (see "Operation").
Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

0.0.0

CAL

The display shows the following in alternating mode:



Place the calibration standard to be used in the sample chamber with the Δ and ∇ marks aligned.
Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

CAL

The result is shown in the display, alternating with CAL.

If the result displayed corresponds with the value of the calibration standard (within the tolerance quoted), exit calibration mode by pressing the ON/OFF key.



Otherwise, pressing the MODE key once increases the displayed value by 1 digit.



Pressing the ZERO/TEST key once decreases the displayed value by 1 digit.

CAL

Pressing the relevant key until the displayed value equals the value of the calibration standard.



By pressing the ON/OFF key, the new correction factor is calculated and stored in the user calibration software.



Confirmation of calibration (3 seconds).

● Note

It is not necessary to make a calibration of the FE.2-range as the software refer to the calibration of the FE.1-range.

CAL

Factory calibration active.

cAL

Calibration has been set by the user.

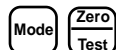
● Recommended calibration value

Iron: between 0,3 and 0,7 mg/l

● User calibration : cAL

Manufacturing calibration : CAL

To reset the calibration to the factory setting:



Press both the MODE and ZERO/TEST and **keep them depressed**.



Switch the unit on using the ON/OFF key. Release the MODE and ZERO/TEST keys after approx. 1 second.

The following messages will appear in turn on the display:

SEL

The calibration is reset to the factory setting.

CAL

(SEL stands for Select)

or:

SEL

Calibration has been set by the user. (If the user calibration is to be retained, switch the unit off using the ON/OFF key.)

cAL



Calibration is reset to the factory setting by pressing the MODE key. The following messages will appear in turn on the display:

SEL

CAL



Switch the unit off using the ON/OFF key.

● User notes

E 10

Calibration factor "out of range"

E 70

Manufacturing calibration incorrect / erase

E 71

User calibration incorrect / erase

● Troubleshooting: Guidelines for photometric measurements

1. Vials, stoppers and stirring rods should be cleaned thoroughly **after each analysis** to prevent errors being carried over. Even minor reagent residues can cause errors in the test results. Use the brush provided for cleaning.
2. The outside of the vial must be clean and dry before starting the analysis. Fingerprints or droplets of water on the sides of the vial can result in errors.
3. Zero calibration and test must be carried out with the same vial as there may be slight differences in optical performance between vials.
4. The vials must be positioned in the sample chamber for zero calibration and test with the graduations facing toward the housing mark.
5. Zero calibration and test must be carried out with the sample chamber lid closed.
6. Bubbles on the inside of the vial may also lead to errors. In this case, fit the vial with a clean stopper and remove bubbles by swirling the contents before starting test.
7. Avoid spillage of water in the sample chamber. If water should leak into the photometer housing, it can damage electronic components and cause corrosion.
8. Contamination of the windows over the light source and photo sensor in the sample chamber can result in errors. If this is suspected check the condition of the windows.
9. The reagent tablets should be added to the water sample without being handled.
10. Large temperature differentials between the photometer and the operating environment can lead to incorrect measurement due to, for example, the formation of condensate in the area of the lens or on the vial.
11. To avoid errors caused by stray-light do not use the instrument in bright sunlight.