

GB Photometer Urea

● Operation



Switch the unit on using the ON/OFF switch

U.1

The display shows the following:



Select the test required using the MODE key:
U.1 → U.2 → U.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 replace 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 reagents, a colour will develop in the sample. Screw the cap back on and replace 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. Reason - e.g. 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.

● Technische Daten

Optics:	LED: λ = 660 nm
Battery:	9 V-block battery (Life 600 tests)
Auto-OFF:	Automatic switch-off 20 minutes after last key-press
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

● Urea 0,1 - 3 mg/l

0.0.0

Perform zero calibration (see "Operation"). Add 2 drops of Urea reagent 1 to the 10 ml sample. Screw the cap on and swirl to mix. Open the vial, add 1 drop of reagent (Urease), screw the cap on and swirl to mix.

Wait for a colour reaction time of 5 minutes!

Add an AMMONIA No. 1 tablet to the vial straight from the foil and mix to dissolve using a clean stirring rod. Add an AMMONIA No. 2 tablet to the same sample straight from the foil and mix to dissolve using a clean stirring rod. Allow the tablet to dissolve completely. Screw the cap on and replace the vial in the sample chamber making sure that the Δ and ∇ marks are aligned.

Wait for a colour reaction time of 10 minutes!

Press the ZERO/TEST key.



U.1

The method symbol flashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l urea.

Tolerance: ± 0,2 mg/l

● Urea 0,2 - 6 mg/l

U.2

The display shows the following:

Pour 5 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 Δ-mark on the vial aligned with the ∇-mark on the instrument.



Press the ZERO/TEST key.

METHOD

The method symbol flashes for approx. 3 seconds.

0.0.0

The display shows the following:

Add 2 drops of Urea reagent 1 to the 10 ml sample. Screw the cap on and swirl to mix. Open the vial, add 1 drop of reagent (Urease), screw the cap on and swirl to mix.

Wait for a colour reaction time of 5 minutes!

Add an AMMONIA No. 1 tablet to the vial straight from the foil and mix to dissolve using a clean stirring rod. Add an AMMONIA No. 2 tablet to the same sample straight from the foil and mix to dissolve using a clean stirring rod. Allow the tablet to dissolve completely. Screw the cap on and replace the vial in the sample chamber making sure that the Δ and ∇ marks are aligned.

Wait for a colour reaction time of 10 minutes!

Press the ZERO/TEST key.



U.2

The method symbol flashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l urea.

Tolerance: ± 0,4 mg/l

● Notes

1. The sample temperature should be between 20 and 30°C; determination at the latest one hour after sample taking.
2. Do not store below 10°C. Granulation possible.
3. Store reagent 2 (Urease) in the refrigerator at a temperature of 4 - 8°C.
4. Ammonium and chloramines are also measured during urea measurement.
5. Always adhere to the sequence of tablet addition.
6. The AMMONIA No. 1 tablet does not dissolve fully until the AMMONIA No. 2 tablet has been added.
7. Before analysing seawater samples, a measuring spoon of "Ammonia Conditioning Powder" must be added to the sample and swirled to dissolve before the AMMONIA No. 1 tablet is added.

● Method notes

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.

Material Safety Data Sheets: www.tintometer.de

Ensure proper disposal of reagent solutions.

● Calibration mode



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



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

CAL

U.1

The display shows the following in alternating mode:



Perform zero calibration as described.
Press the ZERO/TEST key.

METHOD

0.0.0

CAL

The method symbol flashes for approx. 3 seconds.

The display shows the following in alternating mode:



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

METHOD

RESULT

CAL

The method symbol flashes for approx. 3 seconds.

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

If the result 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

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

RESULT + x



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 U2-range as the software refer to the calibration of the U1-range.

CAL

Factory calibration active.

cAL

Calibration has been set by the user.

● Recommended calibration values

Urea: between 1 and 2 mg/l CH₄N₂O

● User calibration : cAL

Factory calibration : CAL

The unit can be reset to delivery condition (factory calibration) as follows:



Press MODE and ZERO/TEST together and **hold depressed**.



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

The following messages appear in the display in alternating mode:

SEL

The unit is in delivery condition.

CAL

(SEL stands for Select)

or:

SEL

The unit operates with a calibration performed by the user. (If the user calibration is to be retained, switch the unit off using the ON/OFF key.)

cAL



Factory calibration is activated by pressing the MODE key. The following messages appear in alternating mode in the display:

SEL

CAL



Switch the unit off using the ON/OFF key.

● User notes

E 10

Calibration factor "out of range"

E 70

U1: Manufacturing calibration incorrect / deleted

E 71

U1: User calibration incorrect / deleted

● 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 the 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. Clean using a moist cloth and cotton buds.
9. The reagent tablets should be added to the water sample straight from the foil without being handled.
10. Large temperature differentials between the photometer, the operating environment or the sample 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.