

● **Operation**



Switch the unit on using the "power" switch.

**pH**

This display shows the method. Press the "mode" key until the desired method is displayed.

Fill a clean vial with the 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**

Confirms zero calibration.

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

Add the appropriate reagent tablet; a color will develop in the sample (see "Method Preparation"). 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.

**Repeat 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 measuring range limit.

**LO BAT**

Replace 9 V battery, no further analysis are possible.

● **Technical data**

Light source: LED, filter (λ = 528 nm)  
 Battery: 9 V-block battery (Life 600 tests).  
 Auto-OFF: Automatic switch-off occurs approx. 5 minutes after last keypress.  
 Ambient conditions: 5-40°C  
 rel. humidity (non-condensing).  
 Compliance: 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 FCC Part 15 Class A ICES – 003 Issue 2

● **pH-value 6.5 - 8.4 Method Preparation**

**0.0.0**

Perform zero calibration (see "Operation"). Remove the vial from the sample chamber. Add a PHENOLRED/PHOTOMETER tablet and mix to dissolve using a clean stir rod. Screw the cap on and replace the vial in the sample chamber making sure the Δ and ∇ marks are aligned.



Press the "zero/test" key.



The method symbol flashes for approx. 3 seconds.

**RESULT**

The pH value is shown in the display.

Rinse the vial and cap thoroughly after each test.

**Tolerance:** ± 0.1 pH

● **Calibration Standards**

Standards for calibration should be prepared similar to samples.

● **Chemical method notes**

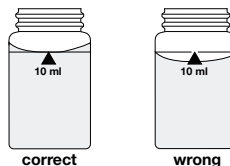
● **pH**

For photometric determination of pH values, only use PHENOLRED-tablets in black printed foil pack and marked PHOTOMETER. pH values below 6.5 and above 8.4 can produce results inside the measuring range. A plausibility test (pH meter) is recommended. Samples with low values of Total Alkalinity-M may give wrong pH readings.

● **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. Ensure proper disposal of reagent solutions. If necessary request material safety data sheets.

● **Correct filling of the vial**



● **Avoiding errors in photometric measurements**

1. Vials, caps and stir rods should be cleaned thoroughly **after each analysis** to prevent carry-over errors. 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 since there may be slight differences in optical performance between vials.
4. The vials must be positioned in the vial compartment for zero calibration and test with the graduations aligned with the housing mark.
5. Zero calibration and test must be carried out with capped vials.
6. Bubbles on the inside of the vial may also lead to errors. In this case, cap the vial and remove bubbles by swirling the contents before starting test.
7. Avoid spilling water into the vial compartment. 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 vial compartment can result in errors. If this is suspected check the condition of the windows.
9. When using reagent tablets, use only tablets in black printed foil.
10. The reagent tablets should be added to the sample without being handled.
11. 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.  
 Specified tolerances at T = 20 °C.
12. For best results pipette samples.

## ● Calibration Mode



Press and hold "mode" key.



Switch unit on using "power" key.  
Release "mode" key after approx. 1 second.

**CAL**

These messages will alternate in the display.  
If necessary, press "mode" key until the desired method alternates with CAL.

**pH**



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



The method symbol flashes for approx. 3 seconds.

**0.0.0**

These messages will alternate in the display.

**CAL**



Place the calibration standard to be used in the sample chamber with the  $\Delta$  and  $\nabla$  marks aligned (see "Method Preparation"). Press the "zero/test" key.



The method symbol flashes for approx. 3 seconds.

**RESULT**

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

**CAL**

If the result displayed corresponds with the value of the calibration standard (within the allowed tolerance), exit calibration mode by pressing the "power" 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 "power" key twice, the new correction factor is calculated and stored in the user calibration software.

**:**

Confirms calibration (3 seconds).

## ● Note

**CAL**

Factory calibration active.

**cAL**

Calibration has been set by the user.

## ● Recommended calibration value for upper range

pH: between 7.6 and 8.0

## ● User calibration : cAL

**Manufacturing calibration : CAL**

To reset the calibration to the factory setting:



Press and hold both the "mode" and "zero/test" together.



Switch the unit on using the "power" key. Release the "mode" and "zero/test" keys after approx. 1 second.

The following messages will alternate in 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 "power" key.)

**cAL**



Calibration is reset to the factory setting by pressing the "mode" key. The following messages will alternate in the display:

**SEL**

**CAL**



Switch the unit off using the "power" key.

## ● User notes

**E 10**

Calibration factor "out of range"

**E 70**

pH: Manufacturing calibration incorrect / erased

**E 71**

pH: User calibration incorrect / erased