

● **Operation**



Switch the unit on using the ON/OFF switch.

CLt

The display shows the following:

Attention:

The unit is designed to measure chlorine either with tablet reagents or with powder packs. Please select the required chlorine method as described below.



Select the test required using the MODE key: CLt → CLP → CLt → (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.

METHOD

The method symbol -ashes for approx. 8 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.

METHOD

The method symbol ashes for appr ox. 3 seconds.

RESULT

The result appears in the display. The result is saved automatically.

Repeating the analysis:

Press the ZERO/TEST key again.

New zero calibration:

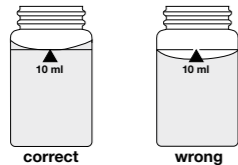
Press the MODE key until the desired method symbol appears in the display again.

● **Display backlight**



Press the ! key to turn the display backlight on or off. The backlight is switched off automatically during the measurement.

● **Correct filling of the vial**



● **Chlorine 0.05 - 6.0 mg/l (CLt)**

(a) Free Chlorine

CLt

Perform zero calibration (see "Operation").

0.0.0

Empty the vial and then add a DPD No. 1 tablet. Crush the tablet with a clean stirring rod then add the water sample to the 10 ml mark. 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.



Press the ZERO/TEST key.

CLt

The method symbol ashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l free chlorine.

(b) Total Chlorine

Remove the vial and add one DPD No. 3 tablet to the coloured test solution. Mix to dissolve with the stirring rod. Replace the cap and put the vial back into the sample chamber, repositioning the Δ and ∇ marks.



Wait for a colour reaction time of two minutes.

Press the ZERO/TEST key.

CLt

The method symbol ashes for approx. 3 seconds.

RESULT

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

Rinse the vial and cap thoroughly after each test.

(c) Combined Chlorine

Combined Chlorine = Total Chlorine - Free Chlorine

Tolerance: 0-1 mg/l: ± 0.05 mg/l > 3-4 mg/l: ± 0.30 mg/l
> 1-2 mg/l: ± 0.10 mg/l > 4-6 mg/l: ± 0.40 mg/l
> 2-3 mg/l: ± 0.20 mg/l

● **Chlorine 0.01 - 2.0 mg/l with powder pack (CLP)**

(a) Free Chlorine

CLP

Perform zero calibration (see "Operation").

0.0.0

Remove the vial from the sample chamber. Add a Camlab Chlorine FREE-DPD/F10-powder pack. Screw the cap on and swirl the vial for 20 seconds. Replace the vial in the sample chamber immediately making sure the Δ and ∇ marks are aligned.



Press the ZERO/TEST key.

CLP

The method symbol ashes for appr ox. 3 seconds.

RESULT

The result is shown in the display in mg/l free chlorine. Rinse the vial and cap thoroughly after each test.

(b) Total Chlorine

Perform zero calibration (see "Operation").

Remove the vial from the sample chamber. Add a Camlab Chlorine TOTAL-DPD/F10-powder pack. Screw the cap on and swirl the vial for 20 seconds. Replace the vial in

the sample chamber making sure the Δ and ∇ marks are aligned.

Wait for a colour reaction time of 3 minutes.

Press the ZERO/TEST key.



CLP

The method symbol ashes for appr ox. 3 seconds.

RESULT

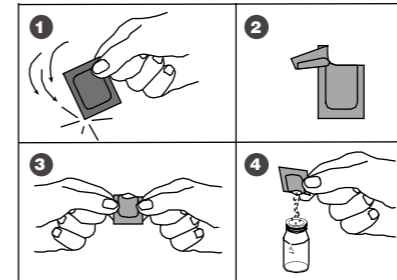
The result is shown in the display in mg/l total chlorine. Rinse the vial and cap thoroughly after each test.

(c) Combined Chlorine

Combined Chlorine = Total Chlorine - Free Chlorine

Tolerance: 0-1 mg/l: ± 0.05 mg/l ; > 1-2 mg/l: ± 0.10 mg/l

● **Opening Powder Packs**



● **Method notes**

Observe application options, analysis regulations and matrix effects of methods. Reagents 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. Material Safety Data Sheets: www.camlab.co.uk

● **Error codes**

Some errors must be confirmed by the MODE or the ZERO/TEST key. If user calibration is active for a method, the CAL-arrow is displayed when a result is shown.

E001	Light absorption too great. Reasons: zero calibration not carried out or, possibly, dirty optics.
HI	Measuring range exceeded or excessive turbidity.
LO	Result below the lowest limit of the measuring range.
LO BAT	Replace 9 V battery, no further tests possible.
E010	Calibration factor "out of range"
E070	CLt: Manufacturing calibration incorrect / erase
E072	CLP: Manufacturing calibration incorrect / erase
E071	CLt: User calibration incorrect / erase
E073	CLP: User calibration incorrect / erase

Store	Date
1	2
3	4
Time	Cal

If the user calibration is active in one method the CAL-arrow is displayed during the result is shown.

● **Menu selections**



Press the MODE key and hold it depressed.



Switch the unit on using the ON/OFF key. Allow the 3 decimal points to be displayed before releasing the MODE key.



The "!" key allows for selection of the following menu points:

Store	Date
1	2
3	4
Time	Cal

recall stored data

setting the date and time

user calibration

The selected menu is indicated by an arrow in the display.



Confirm the selection with the MODE key.

● **Recall of stored data**

The meter shows the most recent measurements taken in the following format (automatically proceeds every 3s until result is displayed):

Number n xx (xx: 16...1)
Year YYYY
Date mm.dd
Time hh:mm
Test Method
Result x,xx



The ZERO/TEST key repeats the current data set.



The MODE key scrolls through all stored data sets.



Quit the menu by pressing "!" key.

● **Setting date and time (24-hour-format)**



After confirming the selection with the MODE key the value to be edited will be shown for 2 sec.

SET

The setting starts with the year (YYYY) followed by the actual value to be edited. Same applies for month (mm), day (dd), hour (hh) and minutes (mm). Set the minutes first in steps of 10, press the "!" key to continue setting of minutes in steps of 1.

DATE

YYYY

(2 sec.)



Increase the value by pressing the MODE key.



Decrease the value by pressing ZERO/TEST key.



Proceed to the next value to be edited by pressing "!" key. After setting the minutes and pressing the "!" key the display will show "IS SET" and instrument returns into the measurement mode.

When the battery is taken of for more than 1 minute, the unit will automatically enter the date/time menu when switched on again.

● **Calibration Mode**

- cAL** user calibration (Display in mode cAL)
- CAL** factory calibration (Display in mode CAL)
- Mode** After confirming the selection with the MODE key the instrument will show CAL Cl. Scroll through methods using the MODE key. Once chosen perform Zero calibration by pressing ZERO/TEST key.
- CAL**
- Cl**
- Zero Test** Perform zero calibration (see "Operation"). Press the ZERO/TEST key.
- METHOD** The method symbol flashes for approx. 3 seconds.
- 0.0.0** The display shows the following in alternating mode:
- CAL**
- Place the calibration standard to be used in the sample chamber with the Δ and ▽ marks aligned. Press the ZERO/TEST key.
- Zero Test**
- METHOD** The method symbol flashes for approx. 3 seconds.
- RESULT**
- CAL** The result is shown in the display, alternating with CAL.
- If the reading corresponds with the value of the calibration standard (within the specified tolerance), exit calibration mode by pressing the ON/OFF key.
- Mode** Change the shown value: 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.
- Zero Test**
- CAL** Press the corresponding key until the reading equals the value of the calibration standard.
- RESULT + x**
- Power** By pressing the ON/OFF key, the new correction factor is calculated and stored in the user calibration software.
- :** **:** Confirmation of calibration (3 seconds).

● **Recommended calibration values**

Chlorine: between 0.5 and 1.5 mg/l*

● **Retrieving the factory calibration**

- Resetting of the user calibration to factory calibration is only possible together for all methods. A user calibrated method will be indicated by an arrow in the display.
- To reset the calibration to the factory setting:
- Mode Zero Test** Press both the MODE and ZERO/TEST and **keep them depressed**.
- Power** 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 factory setting is active. (SEL stands for Select)
- CAL**
- 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:
- Mode**
- SEL**
- CAL**
- Power** Switch the unit off using the ON/OFF key.
- Replacement reagents
- Free Chlorine powder Pillows pack 100 Ref: CW/53.01.00
- Total Chlorine powder Pillows pack 100 Ref: CW/53.01.20
- DPD No. 1 Tablets pack 100 Ref: TT/53.10.60
- DPD No. 3 Tablets pack 100 Ref: TT/53.10.80

● **Technical data**

- Light source: LED, filter
- Battery: 9 V-block battery (Life 600 tests), without display light.
- Auto-OFF: Automatic switch off 5 minutes after last keypress
- Ambient conditions: 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



Camlab Water CW1000 Chlorine Colorimeter

Powder pillow reagents
Reference CW/27.00.05*

Tablet reagents
Reference CW/27.00.00*



Camlab Limited, Camlab House, Norman Way, Over
Cambridge CB24 5WE
Tel: 01954 233110 • Fax: 01954 233101
www.camlab.co.uk

Technical changes may occur without notice

* Supplied with one type of reagent only
Compatible with both types of reagents