



**NIEUWKOOP**

METEN.NL

# USER MANUAL



## CL1000

CHLORINE METER, DIGITAL



TO MEASURE  TO KNOW



Scales : 0/1999 PPB  
0.00/19.99 PPM  
-20/120°C

Cod. 2800613  
Rev. B  
Valid from S/N 39830

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## 1 GENERAL WARNINGS AND INFORMATION FOR ALL USERS

### 1.1 WARRANTY

This product is guaranteed for all manufacturing defects.

Please take a look at the terms and conditions described on the Warranty certificate at the end of the manual.

### 1.2 AFTER SALES SERVICE

Nieuwkoop B.V./B&C offers to all of its Customers the following services:

- a free of charge technical assistance over the phone for problems regarding installation, calibration and regular maintenance;
- a repairing service in our Aalsmeer (Netherlands) headquarter for all types of damages, calibration or for a scheduled maintenance.

Please take a look at the technical support data sheet at the end of the manual for more details.

### 1.3 CE MARKING

This instrument is manufactured according to the following European Community directives:

- 2011/65/EU "Restriction of the use of certain hazardous substances in electrical and electronic equipment"
- 2014/30/EU "Electromagnetic compatibility" EMC
- EN 61326-2-3/2013 "Electromagnetic compatibility" EMC
  - Controlled electromagnetic environment
- EN 55011/2009 "Radio-frequency disturbance characteristics"
  - Class A (devices for usage in all establishment other than domestic)
  - Group 1 (Industrial equipment that do not exceed 9kHz)

The marking  is placed on the packaging and on the S/N label of the instrument.

### 1.4 SAFETY WARNINGS

It is important to underline the fact that electronic instruments are subject to accidents. For this, it is important to take all necessary precautions to avoid damages caused by malfunctions.

All types of operations must be performed by authorized and trained staff.

The use of this controller must respect the parameters described in chapter "Technical specification", so to avoid potential damages and a reduction of its operating life.



## 2 GENERAL

The instrument uses the potentiostatic method to measure dissolved free chlorine or dissolved ozone.

The measurement is based on an electrochemical technique referred to as controlled potential amperometry, whereby chlorine/ozone are reduced on the surface of a platinum cathode.

The current resulting from the electrode reaction is directly proportional to the concentration of the active chlorine HOCl in equilibrium with OCl<sup>-</sup>.

The equilibrium HOCl/OCl<sup>-</sup> is dependent on pH.

In the range from 4 to 6.5 pH the active chlorine is equal to free chlorine.

In the range from 9 pH to 14 pH the free chlorine concentration is zero.

Because of the potentiostatic measuring method, it is not necessary to recalibrate the zero, the measurement is very accurate and the direct chlorine reading is shown on the display.

Also this method prevents the fluctuation of the Chlorine/Ozone levels as experienced with the amperometric and ORP methods.

This special probe includes a chlorine/ozone sensor and Temperature sensor for temperature indication and automatic compensation.

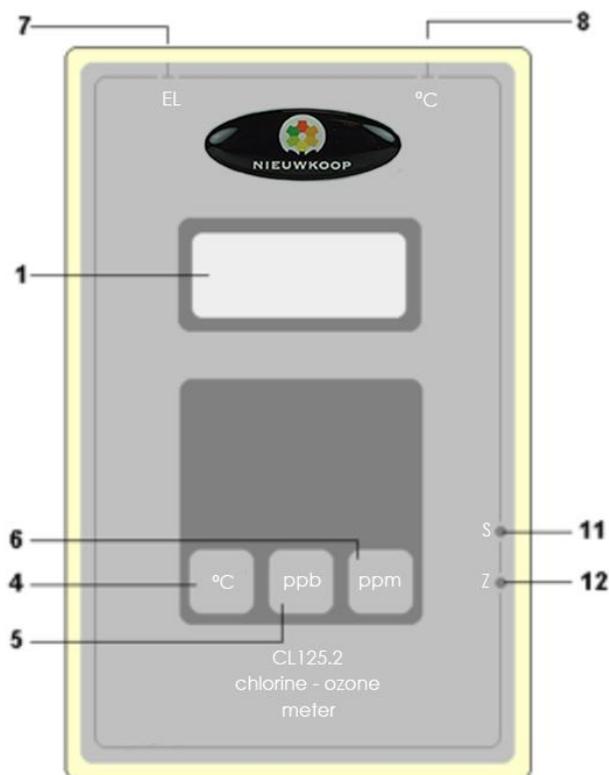
Calibration is carried out by means of the DPD method.

## 3 SPECIFICATIONS

Range:	0.00 /+19.99 0/1999 PPB - 20.0 /+120.0 °C
Input:	from potentiostatic sensor and from Pt 1000
Power:	9 V battery
Battery life:	100 hours (approx.)
Dimensions:	92 x 155 x 33 mm.
Weight:	300 gr. (approx.)



PORTABLE CHLORINE/OZONE – TEMPERATURE METER



1. Display
4. Temperature display actuator
5. PPB scale selector
6. PPM scale selector
7. Electrode input
8. TRD input
11. Sensitivity adjustment
12. Zero adjustment



## 4 OPERATION

### 4.1 ACTIVE CHLORINE MEASURING

- Connect the chlorine/ozone and temperature sensor to the unit
- Press the key marked PPM or PPB
- Immerse the sensor into the sample and shake gently.  
The readout will increase slowly depending on the shaking action up to the maximum value which is the actual value of the chlorine/ozone content.
- When you immerse the sensor into the sample shaken by a magnetic stirrer, notice that chlorine or ozone content decreases quickly due to evaporation.

### 4.2 FREE CHLORINE MEASURING

- Check the pH value between 4 and 6,5 pH and adjust with Acetic Acid if necessary
- Connect the chlorine and temperature sensor to the unit
- Press the key marked ppm.
- Immerse the sensor into the sample and shake gently.
- The readout will increase slowly depending on the shaking action up to the maximum value which is the actual value of the chlorine content.
- When you immerse the sensor into the sample shaken by a magnetic stirrer, notice that chlorine content decreases quickly due to evaporation.

Follow the same procedure for dissolved ozone measuring.

### 4.3 TEMPERATURE MEASURING

- Insert the temperature sensor in the jack connector
- Immerse the sensor into the sample
- Press the Key marked "°C"
- The readout will show the Temperature value of the sample in °C.

## 5 CALIBRATION

The instrument CL 125.2 is delivered laboratory calibrated but requires a field calibration before use by the operator.

This calibration must be repeated when it is necessary to check the efficiency of the sensor.

### 5.1 FREE CHLORINE CALIBRATION

Use the unit in normal operation and verify the actual Chlorine content in the water using the DPD method.



Proceed as follows:

- Verify that the display indicates 0.00 when the sensor is not immersed.  
Adjust the trimmer I2 in order to read 0.00.
- Prepare a sample with chlorine content and measure the value by DPD.
- Check the pH value and adjust the value using Acetic acid until a reading between 4.00 and 6.5 pH is obtained.
- Immerse the sensor into the sample and shake gently.  
The readout will increase slowly depending on the shaking action up to the maximum value which is the actual value of the chlorine content.
- When you immerse the sensor into the sample shaken by a magnetic stirrer, notice that chlorine content decreases quickly because of evaporation.
- Adjust the sensitivity trimmer I1 marked "s" in order to indicate the correct chlorine value on the display.

As the sensitivity decreases, a larger amount of adjustment will be required to calibrate. This indicates the electrode requires cleaning. (See the maintenance section).

## 5.2 TEMPERATURE CALIBRATION

Use of a quality RTD sensor will not require any calibration.

Note: use a small screw driver for adjustments without forcing.

## 6 MAINTENANCE

Keep the unit dry during storage in order to avoid erroneous readings due to the presence of residual internal moisture. If electrode is not used, then save in a solution of pH4 with 1/100 part of KCl. (In sensor protective cap pH4 with 1 drop KCl).

The operator may think that the instrument requires calibration and consequently perform unnecessary adjustments.

Wait several minutes until any condensate evaporates.

Clean the instrument only with a wet tissue. Avoid solvents and abrasives.

When the electrode loses sensitivity and does not have enough adjustment to calibrate, it is necessary to clean the Platinum rings with a paper tissue.

Press and rotate the tissue paper on the rings to remove residual organics which are deposited on them.

### 6.1 BATTERY REPLACEMENT

When the signal "batt" appears on the display it is necessary to replace the battery.  
Open the rear panel door and replace the 9 Volt battery.



# WARRANTY CERTIFICATE

- 1) Your product is covered by Nieuwkoop B.V./B&C Warranty for 5 years from the date of shipment. In order for this Warranty to be valid, the Manufacturer must determine that the instrument failed due to defective materials or workmanship.
  - 2) The Warranty is void if the product has been subject to misuse and abuse, or if the damage is caused by a faulty installation or maintenance.
  - 3) The Warranty includes the repair of the instrument at no charge. All repairs will be completed at the Manufacturer's facilities in Aalsmeer, The Netherlands.
  - 4) Nieuwkoop B.V./B&C assumes no liability for consequential damages of any kind, and the buyer by accepting this equipment will assume all liability for the consequences of its use by the Customer, his employees, or others.
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## REPAIRS

- 1) In order to efficiently solve your problem, we suggest You to ship the instrument along with the Technical Support's Data Sheet (following page) and a Repair Order.
- 2) The estimate, if requested by the Customer, is free of charge when it is followed by the Customer confirmation for repair. As opposite, if the Customer shall not decide to have the instrument repaired, he will be charged to cover labor and other expenses needed.
- 3) All instruments that need to be repaired must be shipped pre-paid to Nieuwkoop B.V./B&C. All other expenses that have not been previously discussed will be charged to Customer.
- 4) Our Sales Dept. will contact you to inform you about the estimate or to offer you an alternative, in particular when:
  - the repairing cost is too high compared to the cost of a new instrument,
  - the repairing results being technically impossible or unreliable
- 5) In order to quickly return the repaired instrument, unless differently required by the Customer, the shipment will be freight collect and through the Customer's usual forwarder.



# TECHNICAL SUPPORT

## *Data sheet*

In case of damage, we suggest You to contact our Technical Support by email or phone. If it is necessary for the instrument to be repaired, we recommend to photocopy and fill out this data sheet to be sent along with the instrument, so to help us identifying the problem and therefore accelerate the repairing process.

**ESTIMATE**

**REPAIR**

---

COMPANYNAME

---

ADDRESS

ZIP

CITY

---

REFER TO MR./MISS.

PHONE

---

MODEL

S/N

DATE

---

Please check the operator's manual to better identify the area where the problem seems to be and please provide a brief description of the damage:

SENSOR

ANALOG OUTPUT

POWER SUPPLY

SET POINT

CALIBRATION

RELAY CONTACTS

DISPLAY

PERIODICAL MALFUNCTIONING

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➤ **DESCRIPTION**

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.....

.....



TO MEASURE  TO KNOW

**Nieuwkoop BV**

Aalsmeerderweg 249 -S

1432 CM AALSMEER

0297 325836

[info@nieuwkoopbv.nl](mailto:info@nieuwkoopbv.nl)

[www.meten.nl](http://www.meten.nl)



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